Aleutians West CRSA
1007 West 3rd Avenue
Suite 201
Anchorage, AK 99501

ENVIRONMENTAL ASSESSMENT

Westward Seafoods, Inc. Seafood Processing, WA #40; Captains Bay, Unalaska, Alaska

raises some significant issues re: mixing and BOD mass loading indication - proceed cautiously

Submitted to:

U. S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, WA 98101

Submitted by:

Jones & Stokes Associates
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missing pages 19 & 20 from earlier

OFFICE OF
MANAGEMENT & BUDGET

JAN 17 1991

GOVERNMENTAL
COORDINATION

April 30, 1990

United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

Alaska
Idaho
Oregon
Washington

EPA

REPLY TO
ATTN OF: WD-136

JAN 18 1991

FINDING OF NO SIGNIFICANT IMPACT

To all interested government agencies, public groups, and individuals:

In accordance with Environmental Protection Agency (EPA) procedures for complying with the National Environmental Policy Act, 40 CFR Part 6, Subpart F, EPA has completed an environmental review of the following proposed action:

Issuance of New Source National Pollutant Discharge Elimination System (NPDES) Permit No.

AK-004978-6 to:

Westward Seafoods, Inc.

authorizing the discharge of wastewater to Captains Bay, Unalaska, Alaska

OFFICE OF MANAGEMENT & BUDGET

JAN 17 1991

GOVERNMENTAL COORDINATION

The proposed action is issuance of an NPDES permit authorizing the discharge of seafood processing wastewater, fishmeal processing wastewater, and non-process wastewaters to Captains Bay from a shore-based facility to be located near Unalaska, Alaska.

The proposed permit authorizes the discharges subject to its stated effluent limitations, monitoring, and other requirements. Permit requirements are specified in the draft NPDES permit for the facility; the Fact Sheet describes the basis for these requirements.

An environmental assessment has been completed and is attached. Based on this assessment, including consideration of the proposed NPDES permit conditions, and in accordance with the guidelines for determining the significance of proposed federal actions in general (40 CFR 1508.27) and EPA criteria for initiating an environmental impact statement (EIS) (40 CFR 6.605), EPA has concluded that the proposed action will not result in a significant effect on the human environment. The proposed action will not significantly affect land use patterns or population, wetlands or floodplains, threatened and endangered species, farmlands, ecologically critical areas, historic resources, air quality, water quality, noise levels, fish and wildlife resources, nor will it conflict with approved local, regional, or state land use plans or policies. The proposed project will also be in conformance with the Alaska (air quality) State Implementation Plan (SIP). EPA has determined that an EIS will not be prepared.

The proposed project will conform with all applicable National Ambient Air Quality Standards (NAAQS), applicable prevention of significant deterioration (PSD) increments, and the Alaska SIP. This finding is based on EPA's review of the initial screening-level air quality modeling analysis for the project, available project air emissions control technology, and requirements of the Alaska Department of Environmental Conservation (ADEC) Permit to Operate regulations. Additional refined air quality modeling analyses and review of available control technology will be required for the air quality Permit to Operate application pursuant to the federal Clean Air Act, and the EPA-approved SIP. An air quality Permit to Operate can be issued by ADEC only if the permit application demonstrates that the project will comply with the NAAQS, applicable PSD increments, and other provisions of the SIP. The permit will require installation of air emissions control technology so as to assure compliance.

Comments pertaining to this Finding of No Significant Impact may be submitted in writing to:

Rick Seaborne
Environmental Protection Agency
Environmental Review Section
1200 Sixth Avenue, WD-136
Seattle, WA 98101

No administrative action will be taken for at least 30 days after the release of this Finding of No Significant Impact. EPA will fully consider all comments before taking final action.

Sincerely,

Robert S. Burd
Director, Water Division

Attachment (Environmental Assessment)

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**ENVIRONMENTAL ASSESSMENT FOR WESTWARD SEAFOODS, INC.
NPDES PERMIT APPLICATION #AK-004978-6
UNALASKA ISLAND, ALASKA**

INTRODUCTION

Proposed Action

The proposed action is the issuance by the U. S. Environmental Protection Agency (EPA) of a National Pollutant Discharge Elimination System (NPDES) permit to Westward Seafoods, Inc. The NPDES permit will authorize, subject to its stated effluent limitations, conditions, and monitoring requirements, the discharge of seafood processing wastewater from a land-based seafood processing plant owned by Westward Seafoods, Inc. to Captains Bay, near Dutch Harbor, Alaska. EPA has determined that the proposed facility is a New Source, under 40 CFR Part 122.29, and is subject to the provisions of the National Environmental Policy Act (NEPA) under 40 CFR Part 6, Subpart F. Therefore, an environmental assessment (EA) will be prepared that will provide the basis for EPA's decision whether to issue a Finding of No Significant Impact (FNSI) or prepare an environmental impact statement for the proposed action.

PROJECT DESCRIPTION

Existing Facilities

The proposed fish processing plant will be built at the site of the Royal Dutch Inn, approximately 1.2 miles (2 kilometers) southwest of Unalaska on Captains Bay Road (Figures 1 and 2). The Inn and an abandoned dock are present at the proposed site. Access to the site is via Captains Bay Road. Captains Bay Road is a city maintained, gravel/bedrock road which extends from the City of Unalaska to the head of Captains Bay. The Inn, which will be incorporated into the proposed facility, is already connected to the City of Unalaska's electrical utility. The City of Unalaska's domestic water supply system has the capacity to provide the freshwater needs of the proposed facility. - says who

There are several facilities currently located along Captains Bay Road beyond the proposed site. These include Pacific Alaska Fuel (fuel storage and fueling dock), Offshore Systems, Inc. (providing logistical support for the factory fleet), one full time residence, and two cabins (Reed pers. comm.).

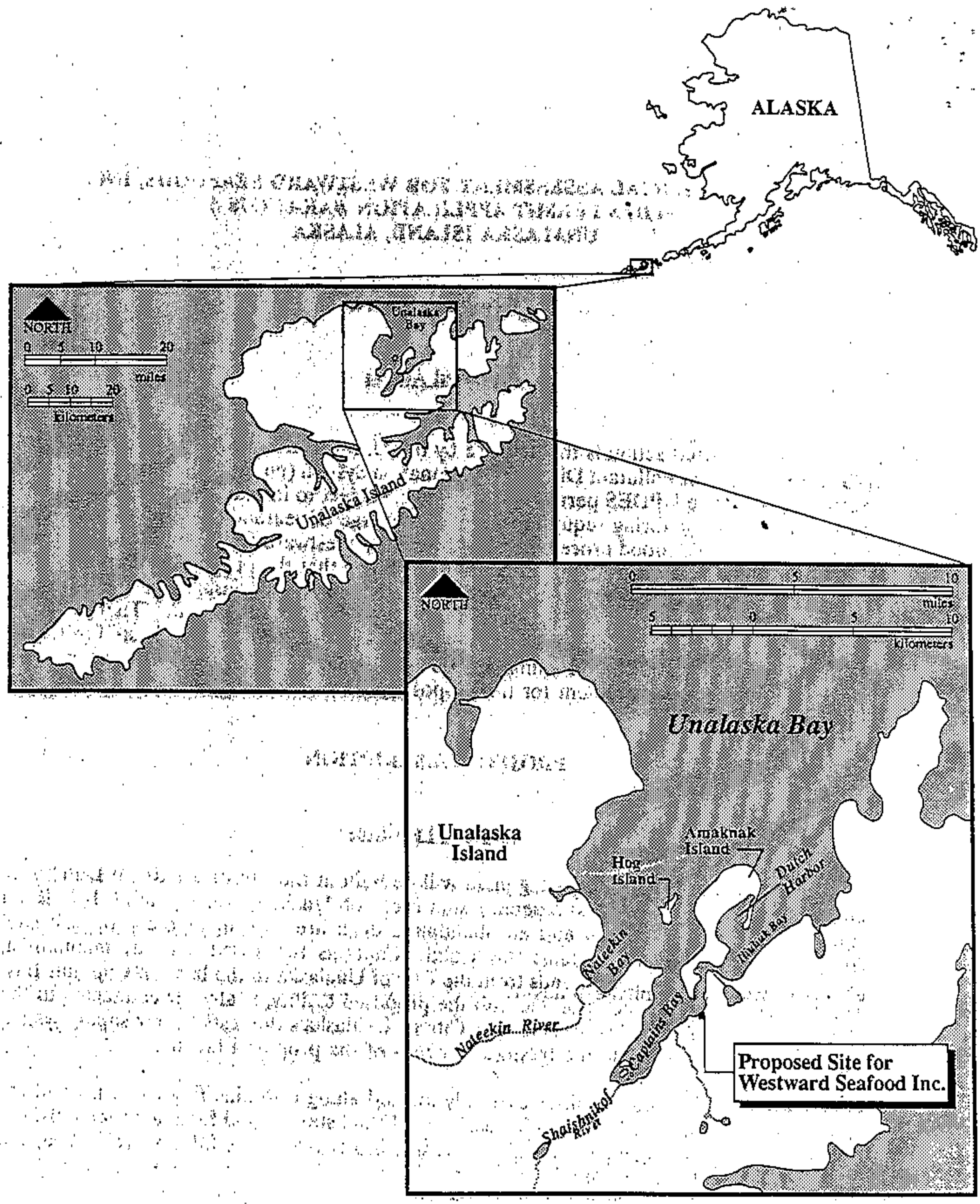


Figure 1. Vicinity Map

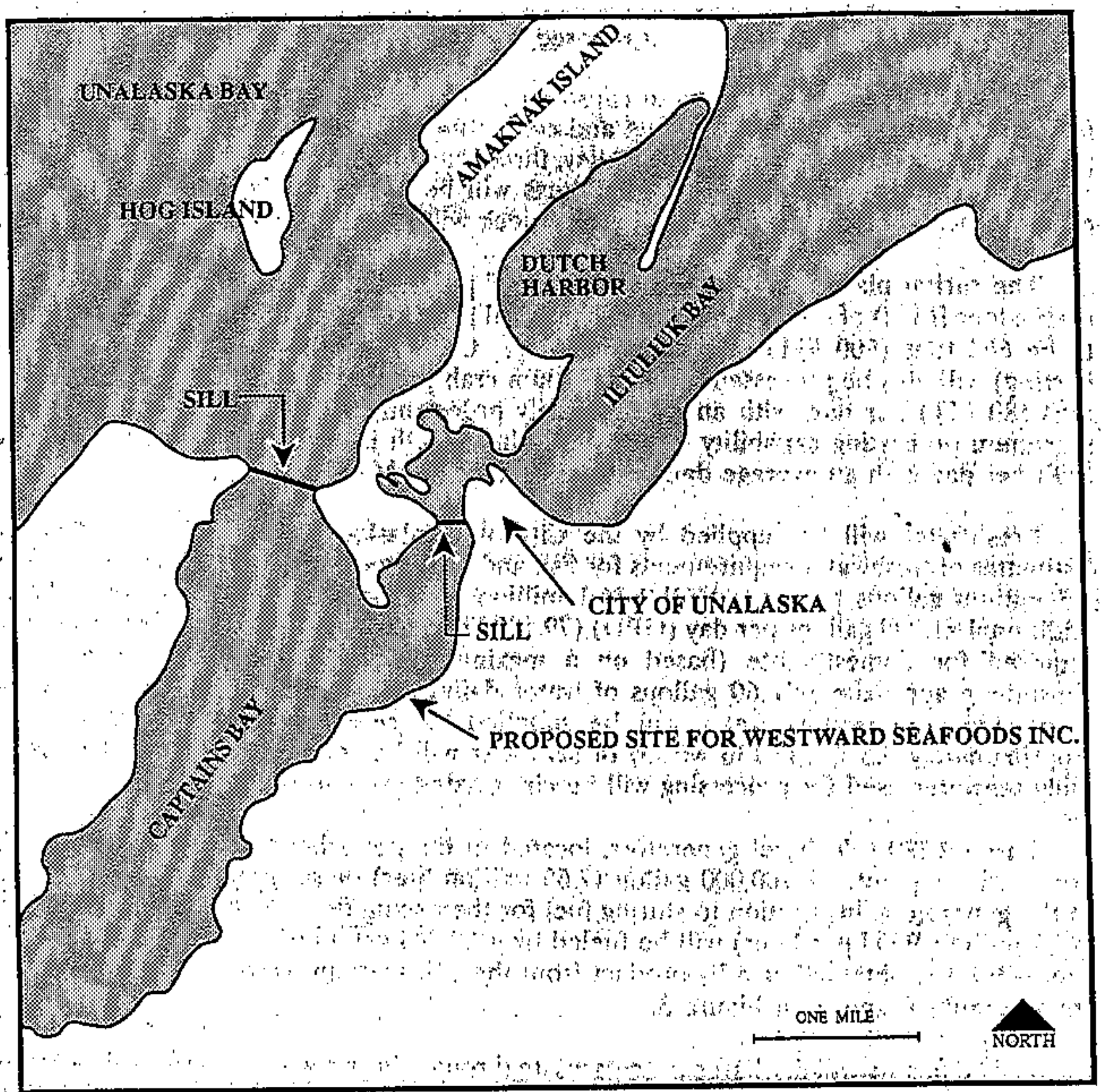


Figure 2. Location of Westward Seafoods' Proposed Processing Plant.

Proposed Facilities

Westward Seafoods proposes to construct an 85,000-square foot (7,897-square meter) facility consisting of a fish processing and cold storage building, surimi plant, meal plant, powerhouse, repair shop, warehouse, galley, three bunkhouses, and two town houses (Figure 3). Construction of the processing buildings will be in previously filled tidelands. The existing dock will be abandoned and a new dock will be built for the proposed facility.

The surimi plant will have the capability of processing a maximum of 880 tons (800 metric tons [MT]) of pollock per day. The typical processing rate for the facility is expected to be 662 tons (600 MT) of pollock per day. Crab and other fish (primarily cod and herring) will also be processed. The maximum crab processing capability will be about 88 tons (80 MT) per day, with an average daily processing rate of 39 tons (35 MT). The maximum processing capability of cod and other finfish is estimated to be 110 tons (100 MT) per day with an average daily rate of 55 tons (50 MT).

Freshwater will be supplied by the City of Unalaska Pyramid Lake water supply. Estimates of freshwater requirements for fish and crab processing at maximum capacity are 1.6 million gallons per day (MGD) (6.1 million liters per day [MLD]) (Figure 4). An additional 21,000 gallons per day (GPD) (79,500 liters per day [LPD]) of freshwater will be required for domestic use (based on a maximum employment of 350 people, each consuming approximately 60 gallons of water daily). Seawater for fish processing, crab processing, and cooling water will be supplied via several intakes in Captains Bay. Approximately 9.5 MGD (36 MLD) of seawater will be required at maximum capacity. Only seawater used for processing will be chlorinated prior to use.

including

Three 2,220 kW diesel generators, located in the powerhouse, will provide electrical power to the plant. A 700,000 gallon (2.65 million liter) diesel fuel tank will supply fuel to the generators, in addition to storing fuel for the fishing fleet. Boilers in the meal plant (29.3 million BTU per hour) will be fueled by a 60,000 gallon (227,000 liter) fish oil tank. The fish oil is obtained as a by-product from the fish meal process. Location of the fuel storage tanks is shown in Figure 3.

fuel

The facility will discharge process waste through three separate outfalls. The primary wastewater outfall will extend into Captains Bay a minimum of 200 feet (60 meters) to a depth of approximately 30 feet (9 meters) Mean Lower Low Water (MLLW). This outfall will carry wastes from the drain systems in the processing and surimi buildings, stickwater from the meal plant, and ground crab waste. A second outfall will discharge water from the chilled refrigeration systems (bailwater) of trawlers unloading at the dock. Fish are unloaded by suction pump. The catch is dewatered before entering the plant, and the bailwater is discharged from the dock at the surface. A third outfall will discharge cooling waters from the powerhouse. See later discussion for waste characterization, anticipated daily flow and waste loading from these outfalls.

Sanitary wastewater will be transferred to a wastewater treatment plant operated by the City of Unalaska. The sewer lines between Westward Seafoods and the treatment plant are not yet in place. The facility will produce approximately 21,000 GPD (79,500 LPD) of sanitary wastewater (based on a maximum of 350 employees, each processing 60 GPD).

So what happens in meantime. are they in now?

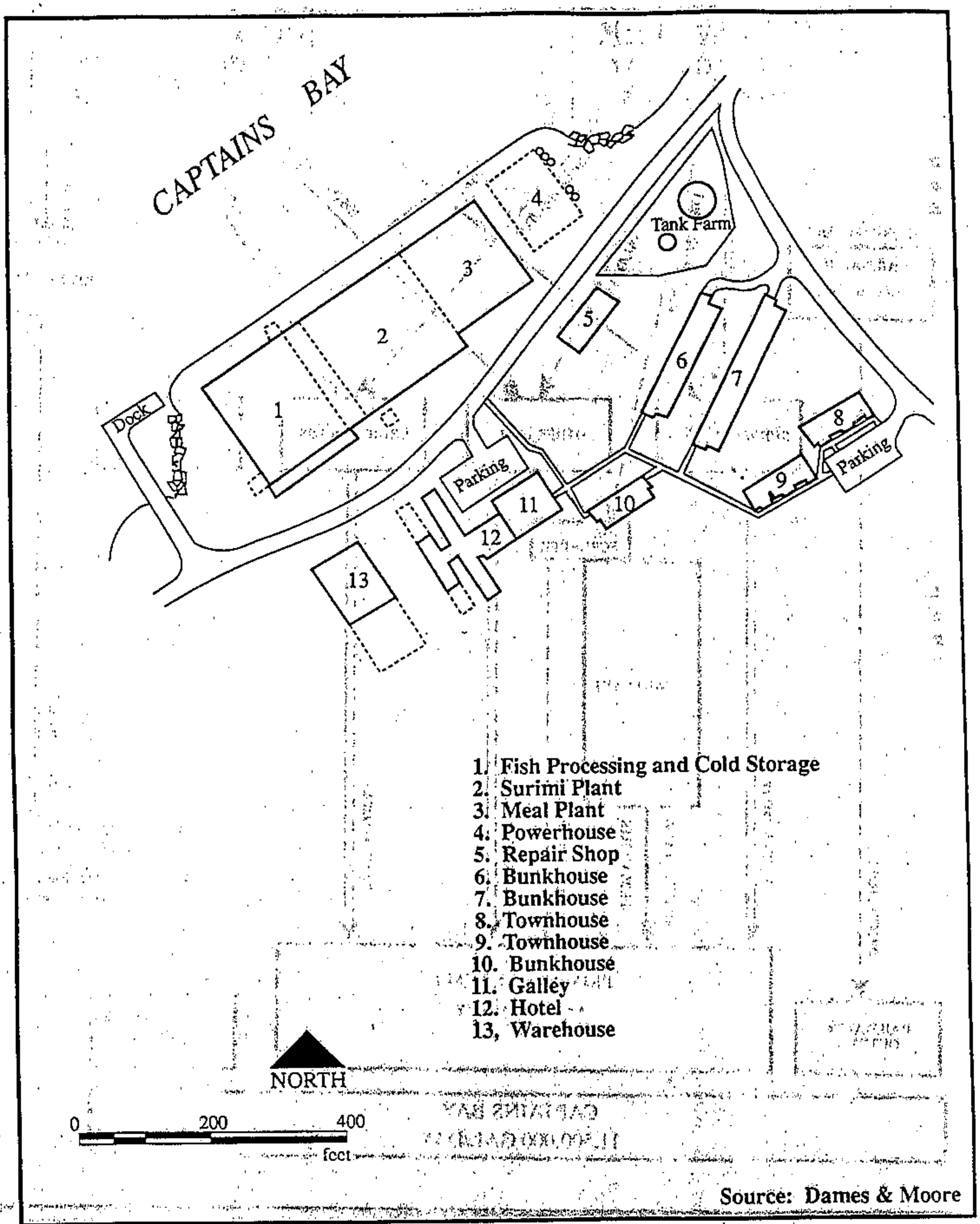


Figure 3. Site Plan for Proposed Westward Seafoods Facility

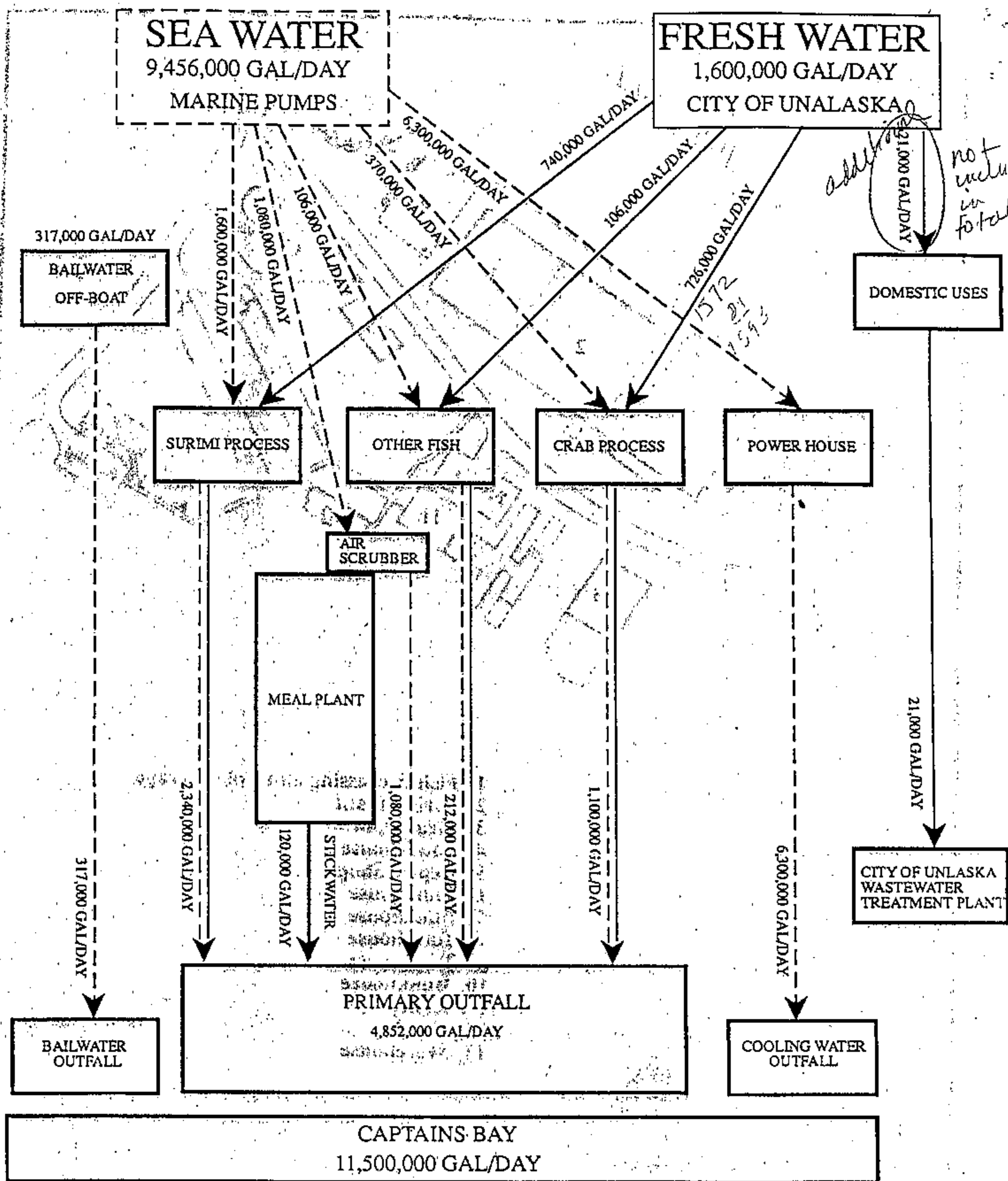


Figure 4. Water Flow for Westward Seafoods' Proposed Facility

Captains Bay Road will provide the sole means of land travel to and from the plant. The road is also used by other industries and residents for a variety of purposes.

The estimated cost of the facility is $67.5 million. An estimated 350 people will be employed during periods of peak production.

EXISTING ENVIRONMENT

Climate and Air Quality

The eastern Aleutian Islands are characterized by a maritime climate. Low-lying fog, overcast skies, rain, and drizzle dominate weather conditions along the archipelago due to air masses over the warmer Pacific Ocean encountering chilled air over the colder Bering Sea. The islands are well-known for adverse, and oftentimes, extreme weather conditions. Generally, the northern shores of the islands experience better weather than the southern shores.

The Dutch Harbor area has a cold marine climate with summer air temperatures ranging from 50 to 60°F (10 to 15°C) and winter temperatures between 25 to 35°F (-4 to 2°C). Extreme temperatures may reach 80°F (27°C) in summer and 5°F (-15°C) in winter. Mean annual air temperature at Dutch Harbor is 40°F (4°C).

Average annual precipitation in the Dutch Harbor area is approximately 60 inches (152 centimeters), some of which falls as snow. Fog occurs frequently in summer, about 20 percent of the time in June.

Dutch Harbor weather data indicate moderate to strong winds throughout the year; winds exceeding 100 knots are not uncommon in the area. Localized violent squalls of short duration (known as williwaws) with winds to 65 knots are also known to occur. Local topography plays an important role in wind speed and direction. Most gales originate from the north and east in the fall and winter; highest average wind speeds occur in March.

Geology

Unalaska Island, and the Aleutian Islands in general, are composed almost entirely of Tertiary and Quaternary volcanic and volcanistic rocks. Geologic forces are continually uplifting and eroding the region.

Volcanic and seismic activities indicate that mountain building in the Aleutian Islands has resulted from the Pacific Ocean Plate descending northwest under the platform along the offshore Aleutian Trench. Subduction activities in the region make earthquake activities prevalent. Shallow earthquakes tend to be south of the Aleutians with deeper earthquakes occurring along an active zone north of the Aleutian Trench, usually under 185 miles (300 kilometers) in depth (Aleutians West 1989). The Aleutian Islands are generally considered one of the most seismically active areas in the world.

Unalaska Island is the second largest island in the arcuate chain of the Aleutians. The island measures approximately 87 miles (140 kilometers) long and 37 miles (60 kilometers) wide. The island is ruggedly mountainous and deeply indented by fjords, with the exception of the northern bulge.

Unalaska Island is heavily glaciated with glacial landforms prominent as valleys, cirques, and arretes. The Unalaska Formations dominate the geology of the island; a thick sequence of coarse and fine sedimentary and pyroclastic rocks. The Makushin Volcano occupies the northern portion of the island and is known to have erupted at least 14 times since 1760. Volcanic cinder cones, composite cones and lava flows are scattered about the base of the volcano. Faults and joints are abundant in the area. The strong topographic alignment of Beaver Inlet and Makushin Bay suggests the presence of a major fault (Motyka 1981). The surrounding terrain is rugged with glacier-carved valleys, sharp ridges, and peaks.

Soils

The remoteness, inaccessibility, and extreme climatic conditions of the Aleutian Islands has limited most geological investigations to reconnaissance level expeditions (Aleutians West 1989). Unalaska Island is volcanic in origin and the soils in the vicinity of the Westward Seafoods facility were derived from weathered volcanic rock and ash.

The shoreline of Captains Bay is composed primarily of exposed rock. The Westward Seafoods facility will be constructed on a somewhat level bench of land extending inland from the shoreline approximately 400 feet (122 meters). Soil sampling at the site indicates that the depth to bedrock varies considerably across the site, ranging from about 0.5 to 20 feet (.15 to 6 meters). There is considerable lateral heterogeneity in the soil profile across the site. Soils underlying the site consist mostly of sandy gravels and cobbles. The depth to groundwater ranges from approximately 2.5 to 6 feet (.76 to 1.8 meters). A layer of peat approximately 1 to 3 feet (.3 to .9 meters) thick has developed on top of the soils across most of the site. The property of the proposed facility currently contains minimal vegetation because of previous grading.

Water Quality and Bathymetry

old data if existent at all

The literature provides limited data on water quality in the general area of Unalaska Bay, including Dutch Harbor, Unalaska Harbor, and Captains Bay. Most of the available data concerning Captains Bay was collected in 1967 and between June and October of 1975 through 1978. There has been virtually no water sampling in the area of Captains Bay since that time, making generalizations about annual water cycles in Captains Bay difficult. Studies conducted in the mid-1970s were performed to determine the effect of waste disposal by the local seafood processing plants on benthic infauna, epifauna, and water chemistry. Parameters measured by these studies included dissolved oxygen (DO) in the water column, and nutrients such as ammonia, nitrate and nitrite, nitrogen, phosphorus, and silicate. In addition, hydrology and sedimentology of the area were studied. The available sources of water quality data for Captains Bay are listed in the references to this assessment.

Captains Bay is bounded on the east, south, and west by Unalaska Island, and to the north by Amaknak Island (Figure 2). The maximum depth of Captains Bay is roughly 330 feet (100 meters). Two outlets connect Captains Bay to Unalaska and Illiuliuk Bays. Unalaska Bay is reached through the channel that separates Arch Rock on the east from the opposing headland of Unalaska Island on the west. Illiuliuk Harbor connects with Captains Bay to the northeast. The maximum depth at the sill that lies beneath the first of these outlets is approximately 82 feet (25 meters). However, this depth is at the bottom of a narrow notch which is only about 656 feet (200 meters) wide. Much of the sill is at a depth of only 39 feet (12 meters). The maximum depth of the sill that lies beneath the second of the outlets is 33 feet (10 meters). The effect of the sills is twofold; first, they tend to isolate much of Captains Bay from the movement of deep currents in Unalaska Bay; and second, they act to trap settleable solids and nutrients introduced to Captains Bay.

The waters of Captains Bay are marine with a salinity range between 24 to 34 parts per thousand (ppt), with lower salinity at the shallower head of Captains Bay where the Shaishnikof River enters, and near the northeastern end, where the Unalaska River drains into Illiuliuk Harbor. Mean surface water temperatures vary from 36°F (2.0°C) in February to 49°F (9.5°C) in March.

The EPA has investigated water quality in the area of Dutch Harbor, Illiuliuk Harbor, and Captains Bay (EPA 1977). These investigations focused on wastewater discharges by seafood processors and included studies of water quality, bottom sediment chemistry, visual inspections in the vicinity of seafood processing plant outfalls, and evaluations of water current. Water quality measurements were taken at five stations in Captains Bay. At four of the stations, DO values near the bottom of Captains Bay measured below 6 mg/l. At all stations DO declined with increasing depth. DO that declines with depth is indicative of a basin in which limited mixing with aerated surface waters occurs. These findings were thought by the investigators to be representative of natural conditions existing in Captains Bay.

Colonell and Reeburgh (1978) measured temperature, salinity, density, DO, and nutrient profiles at 10 stations in the Dutch Harbor region, including one station in Captains Bay near its deepest point. Their data were collected in September and October of 1977. The Captains Bay station showed significant oxygen depletion (from 7.12 mg/l to 2.45 mg/l) with depth. The nutrient profiles in Captains Bay evidenced a moderate increase in phosphate and nitrate concentrations with depth. The study concluded that the disposal of processing waste added to the natural organic loading within Captains Bay, extended the duration of near anoxic conditions that occur in deeper water on an annual cycle, and possibly expanded the anoxic zone into the sediments.

Feder and Burrell (1982) essentially duplicated the measurements taken by Colonell and Reeburgh (1978). They located two sampling sites in Captains Bay and collected oxygen and nutrient data in addition to hydrographic data. One of the sampling sites was placed in the location used by Colonell and Reeburgh in 1977, permitting direct comparisons of the two data sets. Compared to the 1977 data, Feder and Burrell measured less of a decline in DO with depth than previously: 9.5 mg/l to 6.1 mg/l. Nutrient profiles were similar, but bottom concentrations determined by Feder and Burrell were not as high.

A comparison was made between these two studies and a previous one undertaken in June, 1967, by Brickell and Goering (1971). The June, 1978 results were very similar to those of Brickell and Goering, while the October, 1977 data showed lower oxygen concentrations and higher nutrient concentrations at depth. Based on these studies, it may be concluded that there is a natural cycle in the DO concentration in Captains Bay. Over the summer, DO is depleted, and concentrations decline throughout Captains Bay. However, during the winter months, Captains Bay is reaerated and the higher DO concentrations, as measured in both June, 1967 and June, 1978, are restored. The return of more highly oxygenated conditions over the winter is probably due to the loss of vertical density stratification and to the influx of oxygenated water from the Bering Sea by winter storms.

Seafood Waste Deposits

There have been few direct observations and investigations of existing seafood waste deposits in Captains Bay. The EPA (1977) investigated seafood waste piles at a number of processing plants in the Dutch Harbor area, including the Pacific Pearl crab processing facility located on Captains Bay. This facility, since abandoned, was located approximately 0.9 miles (1.4 kilometers) southwest of the proposed Westward Seafoods location. The discharge pipe for the Pacific Pearl facility was located at a depth of 59 feet (18 meters) at the face of the loading dock.

Direct observations of the seafood waste deposit created by Pacific Pearl have not taken place since 1977 to ascertain dispersal over time. At the time of the EPA study, crab waste had accumulated to a depth of 5 to 6 inches (13 to 15 centimeters) in the immediate vicinity of the discharge. Further offshore the deposits were 2 to 3.5 inches (5 to 9 centimeters) thick at a depth of 59 feet (19 meters). No significant accumulations were found at the 100-foot (30-meter) radius of the discharge. Reexamination of this remnant pile would be useful for an understanding of waste dispersal in Captains Bay over time.

Marine Biota

Captains Bay is one of several semi-protected embayments on Unalaska Island. It has an assemblage of marine plants and animals similar to those found in less exposed waters elsewhere on the island. Field reports on the marine biota at several locations in Captains Bay and nearshore areas near its mouth were prepared by Smith (1989) and See (pers. comm.). There is no information on marine biota within the project area.

Smith (1989) described the seafloor near the head of Captains Bay as being relatively shallow, reaching a maximum depth of about 12 feet (3 meters) at the end of the divers' transect. The substrate was mainly cobble. This site was highly productive, with more species diversity than any other site observed during inspections made in the Unalaska Bay area. Common species observed included algae (Fucus and Agarum), anemones (Tealia and Metridium), clams (Protothaca, Saxidomus, and Mya), seastars (Solaster and Evasterias), and crabs (Oregonia and Elassochirus). Dominant organisms were the seastar

Smith (1989) also reported results of divers' surveys of the shallow subtidal bottom areas on the southwest shoreline of Amaknak Island, at the mouth of Captains Bay. The maximum depth was 35 feet (12 meters), and the substrate was sand and cobble. Dominant plants and animals were similar to those seen at the head of Captains Bay. Other organisms included the blue mussel (Mytilus edulis), juvenile Pacific cod (Gadus macrocephalus), unidentified sculpins, juvenile king crab (Paralithodes sp.), and helmet crab (Telmessus).

See (pers. comm.) mapped the distribution of mussel beds in Captains Bay in mid-1989. This work was done as a follow-up to an earlier mussel bed survey on Amaknak Island completed by National Marine Fisheries Service (NMFS) staff. A narrow band of mussels grew in the intertidal zone on rocks in most areas, including the project area. There was a dense mussel bed in the intertidal zone on a gently sloping sand/gravel bottom at the head of Captains Bay.

Freshwater Biota

Unalaska Island is located near the center of one of the most productive fishing regions in the world, a resource vitally important to the economy of the region. Vast resources of demersal fish (e.g., cod, pollock) occur in the southeastern Bering Sea. Salmon, halibut, crab, and shrimp are, or have been, historically abundant in the region. Marine mammals, waterfowl, and pelagic birds are abundant, with large colonies of nesting birds occurring throughout the area.

Marine mammals potentially occurring on or near Unalaska Island in the project vicinity include Steller sea lion (recently listed as a federally threatened species), harbor seal, northern fur seal, sea otter, whale, and dolphin and porpoise species. No Steller sea lion rookeries or major harbor seal haulouts are known to occur on the island; however, Steller sea lion rookeries do occur to the east at Cape Morgan on Akutan Island, and to the northwest at Bogoslof Island (Marine Mammal Commission [MMC] 1988). Bogoslof Island also supports one of two remaining breeding areas for northern fur seals in the United States (Aleutians West 1989). Fur seal pups have been observed in the bays of Unalaska Island in November during their southward migration (Aleutians West 1989). Approximately 89,000 Steller sea lions and 85,000 harbor seals occupy the Aleutian Islands (MMC 1988). These species could also occur in Unalaska Bay. Although sea otters primarily occur on the eastern, southern and northwestern coasts of Unalaska Island (MMC 1988), this species could also occur in the Unalaska Bay vicinity. Whale, dolphin, and porpoise species potentially occurring in the Unalaska Bay area include gray whale, killer whale, and harbor porpoise.

Unalaska Island is the largest producer of salmon in the Aleutian chain, with populations generally being limited only by the availability of suitable stream habitats. The largest run of pink salmon occurs in the Nateekin River entering Nateekin Bay, approximately 5 miles (8.1 kilometers) northwest of the proposed Westward Seafoods facility. A number of streams support populations in excess of 100,000 adults.

The Shaishnikof River (which discharges to Captains Bay approximately 4 miles [6.4 kilometers]) south of the proposed Westward Seafoods facility), and Pyramid Creek (which discharges to Captains Bay approximately 1.5 miles [2.4 kilometers] south of the proposed

The Shaishnikof River (which discharges to Captains Bay approximately 4 miles [6.4 kilometers]) south of the proposed Westward Seafoods facility), and Pyramid Creek (which discharges to Captains Bay approximately 1.5 miles [2.4 kilometers] south of the proposed facility), both support spawning populations of coho and pink salmon, and dolly varden (Ward pers. comm.). Based on pre-emergence studies in the Shumagin Islands, pink salmon fry probably begin to emerge from the gravel and enter Captains Bay in early April. These fish will then migrate along shore to the mouth of Captains Bay, generally staying within the intertidal to shallow subtidal (above -8 to -10 feet) zone.

Obernoi Creek is an intermittent stream running through the site and enters Captains Bay just south of the proposed facility. It is not thought to support resources of aquatic value. In addition, Captains Bay supports commercial fishing for Dungeness, king, and Bairdi crab. trout in past

Captains Bay is generally regarded as a high use resource. It provides a protected environment for a variety of activities including sport and subsistence hunting, commercial, sport, subsistence and personal use fisheries, and other recreational activities (Ward pers. comm).

Terrestrial Habitat

A variety of coastal habitats occur in the Aleutian Islands including offshore areas; rocky islands and seacliffs; estuaries; wetlands and tideflats; rivers, lakes, and streams; and uplands.

The vegetation of the Aleutian Islands has been classified as maritime tundra and is representative of alpine conditions (Aleutians West 1989). The upland areas and mountain slopes often support a variety of lichens, mosses, and low-growing alpine plants. Lowlands are typically covered with herbaceous meadows.

Vegetation in the vicinity of Captains Bay and the proposed Westward Seafoods facility is virtually treeless with a low-lying, meadow-like cover of maritime tundra. There are no ponds in the vicinity of the site. The local plant community is predominantly composed of grasses and sedges. Much of the vegetation was previously removed from the site, except at the proposed location of the fuel storage area. There are no wetlands known to exist at the proposed site.

Several mammalian species have been introduced on or near Unalaska Island (Alaska Department of Fish and Game [ADFG] 1978). Red fox, introduced in the early 1900s, occur throughout the island, as do arctic ground squirrel, which were transplanted from the mainland in the late 1800s (ADFG 1978). Native only to Atka and Attu Islands of the Aleutian Chain, arctic fox currently inhabit Unalga Island, east of Unalaska Island (ADFG 1978). European rabbits occur on Hog Island in Unalaska Bay (ADFG 1978, Aleutians West 1989).

Peale's peregrine falcon, a non-threatened or endangered subspecies of the American peregrine falcon, could also occur in the project area (Garret pers. comm.). Nest sites have

been located on 17 islands (Aleutians West 1989) and approximately 300 pairs of Peale's peregrines are thought to occupy the Aleutians (Ambrose et al. 1988). Rock ptarmigan occur throughout Unalaska Island, and several sea bird colonies exist in the island vicinity (ADFG 1978). Glaucous-winged gull, pigeon guillemot and horned puffin colonies occur on the southern tip of Amaknak Island in Captains Bay, directly north of the project site (ADFG 1978). In addition to these species, colonies of double-crested and red-faced cormorants, tufted puffin, common murre and ancient murrelet occur on Unalga and Baby Islands to the east, and at Cape Izigan of southwestern Unalaska Island (ADFG 1978). These and other marine bird and waterfowl species including auklet, storm-petrel, fulmar, harlequin duck, common eider and northern pintail could nest, forage and winter in Unalaska Bay.

Threatened and Endangered Species

No threatened or endangered plants or wildlife are known to occupy the proposed site (Garret pers. comm.; Murray and Lipkin 1987); however, as previously noted, the Steller sea lion, a threatened species, and bald eagle could at times occur in the project vicinity. The Aleutian Canada goose, an endangered species, is known to nest on 7 islands in the Aleutian chain (Aleutians West 1989). Although the geese are not known to nest on Unalaska Island (Garret pers. comm.), they could occasionally occur in the general project vicinity. Information concerning the presence of whales in the Aleutian Islands is limited (Aleutians West 1989), making the likelihood of their occurrence in the project area difficult to determine. Nonetheless, it should be recognized that gray, humpback, fin, sei, blue, sperm, right, and bowhead whales are listed as federally endangered species (Aleutians West 1989).

Archaeological and Cultural Resources

The Aleutian Islands have known human occupation for millennia. The distribution of known cultural and historic sites suggests a concentration in some areas and absence in others. However, identified sites are probably more indicative of locations of past archaeological work than the actual occurrence and frequency of cultural sites (Aleutians West 1989).

Cultural sites in the Unalaska area include pre-historic locations of Aleut activity, historic locations from Russian occupation, and historic sites from World War II. National Historic Register sites include the Holy Ascension Orthodox Church, the Bishop's House, Sitka Spruce Plantation, and Fort Schwatka, among others.

There have been no comprehensive cultural surveys conducted in the vicinity of the proposed Westward Seafoods plant. The Alaska Office of History and Archaeology reports that there is a "moderate to high" potential for such resources to be located in the area (Klinger pers. comm.).

Land Use

The City of Unalaska is a first-class city with a five-member Planning Commission whose responsibilities include plat approvals, variance approvals and conditional use permits (Aleutians West 1989). A Subdivision Ordinance was enacted in 1985 and a Zoning Ordinance was enacted in 1987. The zoning ordinance created 10 districts in the City for permitted uses, property development standards, conditional uses, and prohibited uses. Westward Seafoods' proposed facility lies on lands which are currently zoned for industrial use.

Socioeconomics

The first recorded contact with Native Aleuts in the Unalaska region occurred in 1741 by Russian explorers. At that time Unalaska had an Aleut population estimated at well over 1,000 people dispersed in 24 villages (Aleutians West 1989). Trade in otter skins was the major economic activity until the turn of the century. The Russians transplanted Aleuts from Unalaska to the Pribilof Islands to harvest fur seals. The Aleut population rapidly declined after contact with the fur traders.

With the transfer of Alaska to the United States, Unalaska became a company town for the Alaska Commercial Company, supporting activities of the Pribilof Island fur seal operations. Seafood processing of salmon, herring, and whale was established in the early 1900s. Following World War II, interest in the fishing industry increased. The king crab fishery was established in the early 1960s and its growth was rapid. By 1979 Unalaska was a leading port in the fishing industry, both in terms of money and production. Since that time, the level of activity associated with commercial fishing and fish processing has diversified and continues to be the basis of the local economy.

Of all the communities in the Aleutian Islands, Unalaska and Dutch Harbor have the most diversified and complex economies (Aleutians West 1989). Commercial fishing and fish processing are the major economic components. Fishing and the port-related service sector are also well developed. The amount of fish processed at the ports of Unalaska and Dutch Harbor ranks second in the Sate behind Kodiak. The ports have consistently been top ranking in the U. S. in the amount and value of commercial fish landed.

The population of Unalaska has varied considerably over time. Since 1939 the population has ranged from 298 to 1,331, depending on the economic condition of the fishing industry (Aleutians West 1989). Recent growth has occurred with the diversification of bottomfish processing and marine vessel support services.

The non-resident seasonal component of Dutch Harbor and Unalaska is also significant. Between 1972 and 1977, the non-resident component of the population increased from 21.5 percent to 68.8 percent of the total population (Aleutians West 1989). Currently, during peak seasonal periods, approximately 5,000 people (resident and non-resident) work in Dutch Harbor and Unalaska (Reed pers. comm.).

While Unalaska is no longer a Native Aleut community, Native residents do participate in subsistence activities, although dependence has declined since the 1960s (Aleutians West 1989). Important subsistence resources utilized by the Native population include sea lion, harbor seal, and other marine mammals; salmon, halibut, cod, and other fish; a variety of marine invertebrates such as crab, shrimp, and mussels; and berries and other plants. The area of subsistence harvest activities covers the northern third of Unalaska Island from Beaver Inlet to Skan Bay and includes Captains Bay.

Public Services

Water and Sewage

The City of Unalaska provides water and sewer services to residents and industrial facilities in the region. Metered water consumption indicates a use level of more than 22 million gallons (83.3 million liters) per month, with fish processing facilities consuming a significant portion of this volume. Over the past two years, the State has invested $3.5 million in the City's water system to accommodate an expanded demand for freshwater associated with the growing commercial fishing and seafood processing industry (Aleutians West 1989). System upgrades will result in two new wells and 10,000 feet of new pipe, allowing the City to serve at least four additional processing plants, including the proposed Westward Seafoods facility.

The original sewage system was built in the 1940s by the Navy and has recently been upgraded to accommodate the increasing number of fish processing plants. In some areas, septic systems and holding tanks are also being used, but not by fish processing facilities. There are currently no sewer lines extending to the proposed facility.

Solid Waste

The City of Unalaska operates a 10-acre landfill for municipal and industrial waste disposal. There are several problems with the landfill including a limited area for expansion, exposure to high winds and weather, and lack of suitable cover material. With the support and urging of the commercial fishing industry, Annex V of MARPOL (Pollution Prevention Requirements of Annex V of MARPOL [FR; April 28, 1989], 33 CFR Parts 151, 155, and 158; 46 CFR Part 25) became effective on December 31, 1988, to prohibit the disposal of plastics and other refuse at sea, and to require that ports, fish plants, and fuel docks provide convenient refuse collection facilities. The treaty provisions seek to curb the dumping of plastic and other solid wastes that have washed up on a number of beaches. The treaty also requires all plastics to either be incinerated on board the vessels or brought to shores for land disposal

Within the Aleutians, Unalaska/Dutch Harbor is the principal port which is affected by this treaty since they are required to accept vessel wastes. In 1988, more than 115 ships made port calls to Dutch Harbor. The total is expected to be much higher in 1989 (Aleutians West 1989). The community's present sanitary landfill is small and not situated in a location which can easily be expanded to meet the increased needs of MARPOL V.

Electricity

The City of Unalaska provides power generation from a 4.1 megawatt diesel generating plant and an additional 3 megawatt generator has been proposed to meet increased future demand. Some fish processors purchase their power from the City while others, like Westwards Seafoods' proposed facility, will have their own electrical generation capability. However, the City of Unalaska currently supplies electricity to the Royal Dutch Inn, which will be incorporated into Westward Seafoods' facility.

FISH AND CRAB PROCESSING AT THE PROPOSED FACILITY

Non-pollock finfish and crab will be processed in Westward Seafoods' proposed fish processing building. The amount of waste produced from non-pollock fish processing varies depending on species and final product. Processing Pacific cod will produce approximately 50 percent waste. Processing of halibut and black cod produce approximately 10 and 30 percent waste, respectively (Riley pers. comm.). Herring is normally frozen whole. King, Tanner, and Dungeness crab produce approximately 40 percent waste after processing into sections (Brown and Caldwell 1979).

Westward Seafoods intends to process all of the pollock into surimi and fish meal. The amount of pollock processed into surimi is contingent on the market, availability of fish, and ultimately the processing capacity of the meal plant. Pollock processed by the surimi line will produce approximately 79 to 83 percent waste (Riley pers. comm.). A brief description of the surimi process is presented below. A more detailed description of surimi processing is provided by the Alaskan Writers Group (1987).

Pollock will be off-loaded from trawlers at the Westward Seafoods' dock by wet pumps to minimize damage to fish flesh. The catch is then dewatered and carcasses are washed prior to being sorted and processed. Filleting the pollock is accomplished by mechanized filleting machinery. Fillets are minced by a mechanical deboner which extrudes the fillets through small perforations in a stainless steel drum, effectively removing skin and bone. The mince is delivered to a tank which mixes the mince with freshwater to the desired consistency. Washing the mince in freshwater removes the water-soluble proteins, enzymes, and other unwanted constituents, leaving the myofibrillar protein. The mince washing process is performed in three stages, with partial dewatering between stages. After the final washing, the mince is transported to the refiner, which removes the remaining imperfections from the mince by forcing the mince through screens in a high speed rotating spiral drum. The remaining water is then removed from the mince with screw press dehydrators. The mince is then mixed with cryoprotectives (sugar, sorbitol and phosphates), extruded into polyethylene bags, and frozen.

Water Flow

The proposed facilities on Captains Bay will use both freshwater and seawater. A schematic of proposed water flow through the plant is presented as Figure 4. Freshwater will be provided by the City of Unalaska. Freshwater will be used for domestic purposes as well as for fish processing. The total freshwater needs at full production are estimated to be approximately 1.6 MGD (6.1 MLD).

Seawater needs will be supplied by marine intakes which will be located offshore in Captains Bay. Approximately 9.5 MGD (36 MLD) of seawater will be used when the facilities are at full production. Seawater will be used in several processes within the proposed facility, principally as a wash water in crab processing and other non-pollock processing lines. Seawater will also be used in the meal plant as a scrubbing agent to reduce odors associated with the meal plant, and as cooling water in the facility's powerhouse. Only seawater used in the processing operations of the facility will be chlorinated prior to process use.

The meal plant will be equipped with an air scrubber system for odor control. The system functions to scrub aromatic organic compounds from the air prior to venting and release to the atmosphere. The air scrubber system is estimated to use 1.1 MGD (4.2 MLD).

Approximately 6.3 MGD (24 MLD) of seawater will be used by the power plant cooling system. All process wastewater, except cooling water, will be discharged through the primary outfall. The cooling water will be discharged through a separate outfall.

Domestic wastes from all sources within the proposed facility will be transferred to the wastewater treatment plant operated by the City of Unalaska.

Waste Streams

Several waste streams will be produced by the proposed facilities. As discussed above, nearly all solid waste produced by finfish processing will be conveyed to the meal plant for processing. Solid waste from crab processing will be ground and screened through 0.5-inch (1.27-centimeters) screens, collected in a drainage system, and routed to the primary outfall.

There are several essentially liquid waste streams that contain varying amounts of solids which will be discharged by the proposed facility including:

- bailwater;
- process water collected in the plant's drainage systems;
- stickwater from the meal plant;
- water used for the air scrubbing process in the meal plant; and,
- cooling waters from the generators used to power the facility.

The total loading and concentration of solids in the liquid waste streams will depend on the amount of fish and crab processed.

The maximum amount of solid waste produced per day by the facility is controlled by the capacity of the meal plant. Although rated at 440 tons per day (400 MT), the meal plant can reduce 717 tons (650 MT) of fish waste to meal per day (Alden pers. comm.) This allows for a maximum production of 882 tons (800 MT) of raw pollock for surimi assuming 83 percent waste. It should be noted, however, that the Westward Seafoods' facility rarely expects sustained production at these maximum levels (perhaps one or two days each year) (Baker pers. comm.). Average production levels will generally be lower. The maximum amount of crab processed in a day is expected to be 88 tons (80 MT).

Since surimi production yields the highest percentage of waste (approximately 74 to 83 percent by weight), surimi production at full capacity (882 tons of raw fish per day), and crab production at full capacity (88 tons per day) will be used to characterize waste streams. Under no circumstances will Westward Seafoods exceed the capacity of the meal plant and discharge fish wastes to Captains Bay.

Volume and characteristics of individual waste streams are presented below. All calculations are based on information supplied by Westward Seafoods unless otherwise noted. Figure 5 summarizes the volume of effluents discharged and the concentration and mass loading of the biochemical oxygen demand (BOD) of the wastes produced by the facility. Table 1 provides a summary of effluent characteristics based on maximum production as described above; flows provided are estimates.

Table 1. Summary of Estimated Flow and BOD$_5$ Loading of Wastes Discharged by the Captains Bay Shoreplant per Day at Maximum Production of 800 MT of Pollock (Surimi Process) and 80 MT of Crab (Sectioned) per Day

Effluent	Flow (1,000 gpd)	BOD Conc. (mg/l)	BOD Loading (lb/day)
Bailwater	317	5,330	14,080
Process Water			
Crab Process	1,100	692	6,336
Surimi Line	2,340	420	8,210
Stickwater	120	48,000	47,000
Scrubber Water	1,080	0	0
Cooling Water	6,300	0	0
Total	11,258		75,626

what is the acceptable level

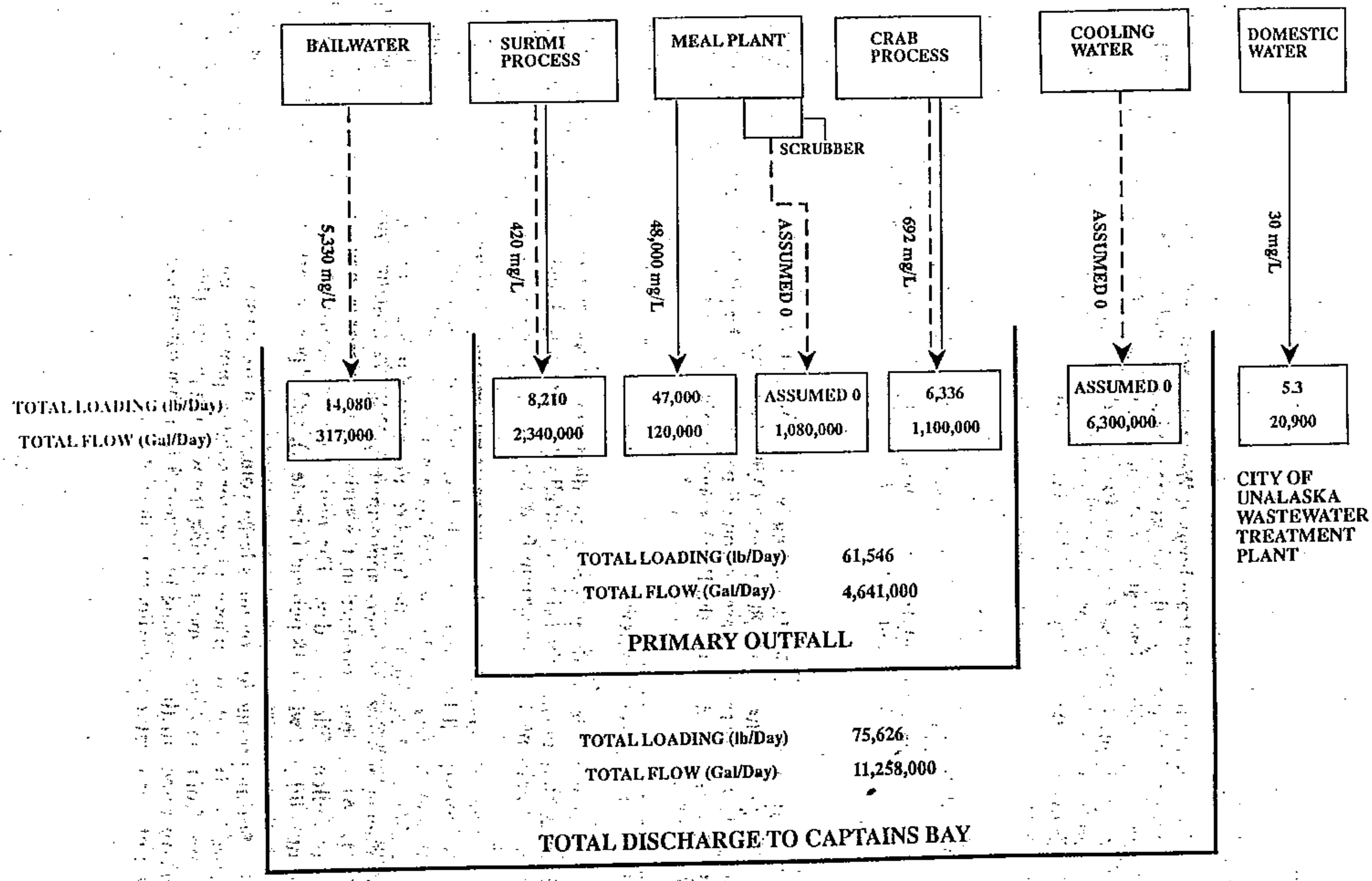


Figure 5. BOD_5 of Effluent from Proposed Westward Seafoods Processing Facility

Bailwater — what will be contents scales — creates foam, accumulation

Fish will be unloaded from boats at Westwards Seafoods' dock. It is anticipated that two to three vessels per day will frequent the plant. Fish and associated water are pumped from the ship's holds. The catch is dewatered (bailwater) prior to processing. The bailwater is shunted back to Captains-Bay and discharged. The amount of bailwater produced by offloading 880 tons (800 MT) of fish per day is was estimated by Westward Seafoods to be 329,000 GPD (1.2 MLD). Typical bailwater characteristics reported by EPA (1975) are:

BOD_5	16 pounds/ton raw fish (8 kg/MT)
Suspended Solids	10 pounds/ton raw fish (5 kg/MT)
Grease and Oil	6 pounds/ton raw fish (3 kg/MT)

This equates to a BOD_5 loading of approximately 14,080 pounds (6,392 kilograms) per day and a discharge of 8,800 pounds (3,995 kilograms) of suspended solids and 5,280 pounds (2,397 kilograms) of grease and oil per day when the plant is at maximum capacity. At 317,000 GPD (1.2 MLD), the BOD_5 concentration of bailwater would be approximately 5,330 mg/l.

Surimi Plant Drainage System

Westward Seafoods proposes to discharge water collected in the surimi plant drainage system through the primary outfall after screening through a 1-inch screen. Water drains to the plant drainage system from several processes in the surimi line.

When the surimi plant is operated at full capacity, 880 tons (800 MT) of pollock (round weight) will be processed each day. After the carcasses are washed, pollock are filleted, and the head, backbone, and viscera are conveyed to the meal plant. The fillets are minced, which purees the flesh and removes the skin and remaining bone. The filleting and mincing processes recovers approximately 33 percent of the round weight of the fish as fillets. At maximum production, the surimi line can process approximately 292 tons (265 MT) of pollock fillets per day. The mince contains approximately 80 percent water, 19 percent solids (of which 18 percent is protein), and 1 percent ash (which is mostly salts).

Surimi production requires large volumes of freshwater. The majority of water in the process is used to remove the water-soluble proteins and other unwanted soluble fractions from the minced meat during the washing process (Figure 6). The ratio of wash water to mince in the washing process is 5:1, or approximately 350,000 GPD (1,330,000 LPD) of wash water at maximum production.

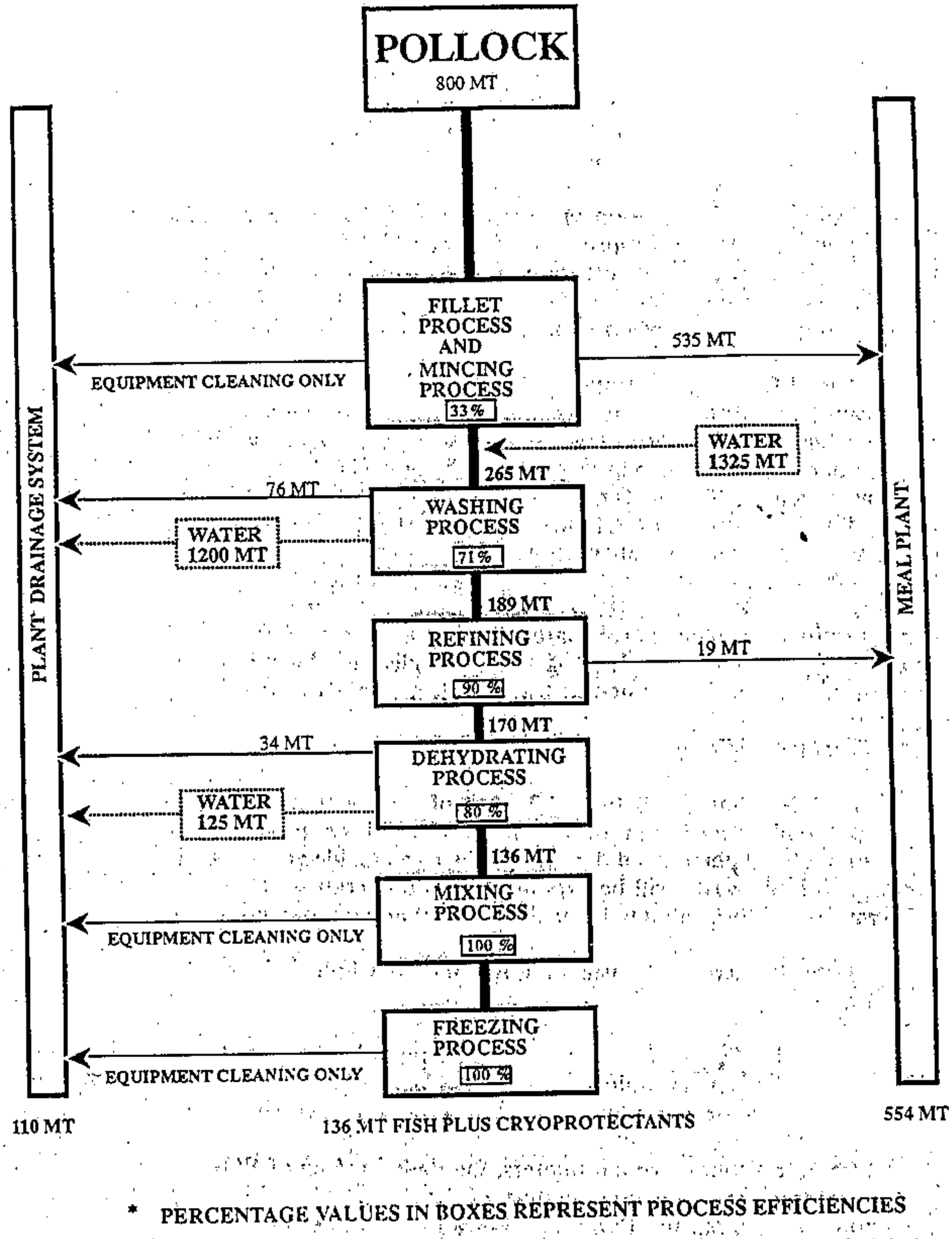


Figure 6. Maximum Daily Mass Flow of Solids in Metric Tons for Proposed Surimi Line at the Westward Seafoods Plant near Unalaska, AK.

The total loading of suspended solids from the washing process at maximum production would be approximately 4.1 tons (3.7 MT) (based on a suspended solids concentration of 2,840 mg/l; Kuramoto pers. comm., experimental data from a similar surimi line in Hokkaido, Japan).

During the dehydration process the remaining water is squeezed from the mince. At maximum production, approximately 3 tons (2.7 MT) of suspended solids would enter the drainage system. Total suspended solids loading from the surimi process would be 7.1 tons (6.4 MT) per day. An additional 10 to 100 pounds (4.5 to 45 kilograms) of solid waste is likely to be produced when equipment is cleaned (once a week) (Riley pers. comm.).

The BOD_5 concentration of water generated from the mince washing and dehydrating processes of a similar pollock surimi line (without decanters) in Japan range between 2,800 to 5,700 mg/l (Kuramoto pers. comm.). These values are variable depending on the time elapsed between when the fish were caught and when they were processed. The lower value (2,800 mg/l) more accurately represents fresher fish, which would be more typical for the Westward Seafoods' facility. At a process flow volume of 350,000 GPD (1,330,000 LPD), a conservative estimate of 8,210 pounds (3,724 kilograms) of BOD_5 would be discharged with process water each day at peak production. When diluted with the total discharge of 2.34 MGD (8.86 MLD) from the surimi processing line, the BOD_5 concentration would be approximately 420 mg/l. This assumes that the BOD in equipment cleaning water and carcass cleaning water is negligible. Most of the BOD in the water used in the filleting step is assumed to travel with the solids to the meal plant (Figure 6).

Crab Processing Waste

At full capacity, 88 tons (80 MT) of crab will be processed per day (based on maximum daily production of crab). Crab will be processed into sections, yielding approximately 40 percent solid waste (Brown and Caldwell 1978). Thus, approximately 35 tons (32 MT) of waste will be produced each day crab is processed at full capacity. The solid wastes will be ground to 0.5 inch (1.27 cm) and discharged through the primary outfall.

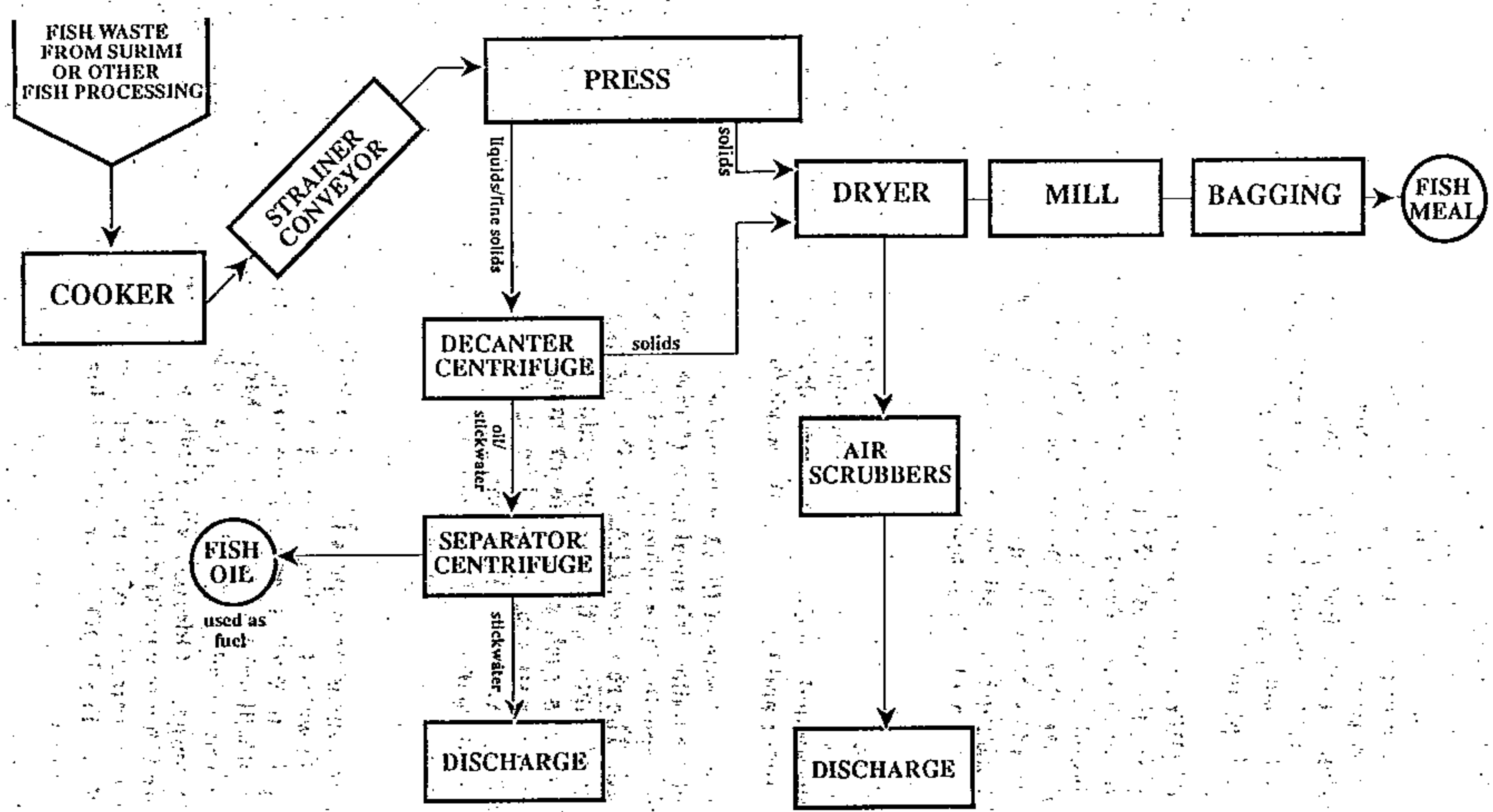
Typical unscreened waste loads for Alaskan whole crab and sections reported in EPA (1974) are:

BOD_5	72 pounds/ton whole crab (36 kg/MT)
Suspended Solids	44 pounds/ton whole crab (22 kg/MT)
Grease and Oil	16 pounds/ton whole crab (8 kg/MT)

Based on the above parameters, the daily loading of BOD_5 would be 6,336 pounds (2,877 kilograms). At a flow volume of 1.1 MGD (4.16 MLD) of processing water at maximum production, the BOD_5 concentration of the effluent would be 692 mg/l. Daily values for suspended solids and grease and oil would be 3,872 pounds (1,758 kilograms) and 1408 pounds (639 kilograms), respectively.

Stickwater

Stickwater is a waste liquor produced in the processing of fish and bone meal (Figure 7). Solid fish waste from the surimi and other fish processing lines will be separated and



FLOW (Gal/Day)	120,000	1,080,000
BOD (mg/L) (Reilly pers. comm.)	48,000	ASSUMED 0
BOD LOADING (lb/Day)	47,000	0

Figure 7. Proposed Fish Meal Process and Maximum Daily Effluent Characterization

conveyed to the meal plant. The meal is cooked, then dehydrated with a mechanical press. The liquid resulting from dehydration (which is a slurry of hot liquid and fine solids) is decanted to remove the solids. Some of the solid fractions are recycled into the meal. Liquids are centrifuged to remove light oils which will be burned by Westward Seafoods as fuel. Westward Seafoods proposes to discharge the remaining hot liquid (stickwater) through the primary outfall. In the draft permit issued for the Trident Seafoods processing facility (February 1990), EPA required 17 percent recycling of stickwater into the meal plant. It is likely that EPA will require some level of stickwater recycling as a condition of the Westward Seafoods permit.

Trident Seafoods (Riley pers. comm.), a similar plant located in Akutan Harbor, reported that at their plant the amount of stickwater produced is approximately equal to 70 percent of the amount of fish processed into meal. At maximum capacity, the Westward Seafoods meal plant should be able to process 717 tons (650 MT) of fish waste to meal (Alden pers. comm.). At this rate, Westwards Seafoods' meal plant will produce approximately 502 tons (455 MT), or approximately 120,000 GPD (445,000 LPD) of stickwater. Expected constituents of stickwater have been described by Trident Seafoods (Riley pers. comm.) and EPA (1975) as follows:

Trident	BOD_5	66 pounds/ton raw solids (33 kg/MT)
EPA	BOD_5	130 pounds/ton raw solids (65 kg/MT)
EPA	Suspended Solids	110 pounds/ton raw solids (55 kg/MT)
EPA	Grease and Oil	50 pounds/ton raw solids (25 kg/MT)

Tridents Seafoods' estimate of BOD_5 concentration is based on extrapolation of the BOD_5 concentration of a smaller fish meal plant (Unisea) in Dutch Harbor, Alaska, to a plant of their proposed capacity. The value reported by EPA (1975) is the average of fish meal plants they studied. The reported EPA (1975) value may be too high for the proposed Westward Seafoods meal plant if the average value was calculated from meal plants processing oilier fish species such as alewife or menhaden. Using Trident Seafoods' estimate, BOD_5 loading from stickwater would be approximately 23.6 tons (21.5 MT) per day at maximum capacity. At this level of loading the BOD_5 concentration of stickwater produced at the Westward Seafoods plant would equal approximately 48,000 mg/l.

Scrubber Water

As an odor control measure, vapors from the meal plant will be channelled through a spray of seawater. The water functions to scrub aromatic organic compounds in the air from the meal plant prior to venting and release to the atmosphere. The system at the Westward Seafoods plant will use approximately 1.08 MGD (4.09 MLD) of seawater, which will be discharged to the primary outfall. There is currently no information on the character of this discharge. Odorous chemicals are often detected by humans at concentrations measured in a few parts per billion. For the purposes of impact assessment, it is assumed that the concentration of aromatic compounds in the scrubber water will be in a few parts per billion. The BOD_5 exerted by this loading in 1.08 MGD (4.09 MLD) is expected to be almost zero.

Sanitary Wastewater

Sanitary wastewater produced by the proposed facility will be treated at the City of Unalaska's wastewater treatment facility.

Cooling Water

Westward Seafoods is proposing to install and operate three 2,220 kW diesel generators to produce power for the facility. Seawater will be used as cooling water for these generators. The system will use approximately 6.3 MGD (23.8 MLD) for cooling purposes. Heat from the generators is expected to raise the temperature of this water 3 to 4°F above ambient temperatures (10°F maximum). However, the cooling water discharge is not expected to have significant thermal effects on the receiving waters of Captains Bay. The discharge outfall will be located near the surface (no site map available). As the cooling water will not be used in the fish processing operations, BOD_5, suspended solids, and oil and grease are not expected to be above ambient levels. why not?

ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION

The proposed Westward Seafoods processing plant includes the construction and operation of a fish processing facility, cold storage building, surimi plant, and fish meal plant. Support facilities will include a powerhouse, repair shop, warehouse, galley, three bunkhouses, and two town houses. The existing Royal Dutch Inn will be incorporated into the proposed facility. The existing dock will be abandoned and a new dock will be built for the proposed facility. The facility is expected to be operational by January 1991.

With the exception of the fuel storage area, the site has been altered due to activities associated with construction of a marine support facility in the mid-1980s. This activity was not conducted in conjunction with Westwards Seafoods' proposal. The prior construction resulted in filling a portion of Captains Bay in the immediate vicinity of the Westward Seafoods site and construction of a bulkhead. The proposed facilities are not expected to have an impact on endangered and threatened species because these species are unlikely to occur on the site or in the near vicinity of Captains Bay.

Potential impacts of the proposed action on air quality, soils, terrestrial habitat, archaeological resources, water quality, marine and aquatic biota, socioeconomics, and public services are described below.

Air Quality

Westward Seafoods is proposing to install and operate three 2,220 kW diesel generators to produce power for the facility. In addition, two boilers, which will be fueled by fish oil (primarily) and diesel (occasionally), will be operated as part of the fish meal production process. Total emission estimates from all sources, including fuel storage tanks are as follows (Dames & Moore 1990): → ? nothing

left out more stuff on air quality and soils p19 and 20 of earlier version

Liquid Wastes

Water quality impacts are not expected from the scrubber water discharge because the concentration and mass loading of BOD_5, solids, and other constituents from this source is expected to be negligible.

BOD_5 loading of bailwater is expected to consist primarily of fish scales, feces and urine, mucus, and small quantities of tissue fluids. Discharge at the water surface during unloading is expected to rapidly aerate, dilute, and disperse the organic load. However, divers' surveys have found persisting accumulations of tissue (primarily scales) in areas where bailwater is discharged (Smith pers. comm.). Areas of up to 1 acre, and accumulations 15 inches (38 cm) thick were noted by Smith. These types of accumulations could impact benthic habitat near the point of discharge.

Surface foam can also be created by these bailwater discharges. This can be mitigated by discharging beneath the water surface. Windy conditions in the harbor are also expected to maintain oxygen concentration in the surface waters. Bailwater is estimated to comprise nearly 25 percent of the total BOD_5 loading.

The fate of liquid wastes from the surimi plant discharge and stickwater from the meal plant is heavily dependent on water column characteristics, circulation patterns within the receiving waters, and the method of discharge.

Without an understanding of these water quality dynamics as they operate in Captains Bay, it is difficult to make definitive statements concerning the potential impacts of surimi plant and stickwater liquid waste discharges on the overall water quality of Captains Bay.

The primary discharge from the proposed Westward Seafoods facility will carry a maximum freshwater discharge of 1.57 MGD, consisting of a mixture of 120,000 GPD of stickwater, 740,000 GPD of process water, 726,000 GPD of crab processing water, and 106,000 GPD from other types of fish processing. In addition, approximately 3.16 MGD of seawater will also be discharged.

The proposed Trident seafood processing facility on Akutan Island is similar in size to that of Westward Seafoods. However, the discharge at maximum capacity at Trident Seafoods is roughly equivalent to average discharge at the Westward Seafoods facility. For that assessment, water quality modelling of the combined discharge of surimi plant process water and stickwater into Akutan Bay was conducted (EPA 1989). Modelling was conducted using stickwater discharge with a BOD_5 concentration of 48,000 mg/l. Based on a minimum initial dilution of 20:1 and an initial wastefield width of 16 feet, the farfield dissolved oxygen concentration from that discharge was expected to exceed 8.3 mg/l and was not expected to violate State water quality criteria for dissolved oxygen.

Under the above assumptions, dissolved oxygen concentrations would be expected to exceed that modelled for Akutan Harbor assuming similar water quality characteristics and flow dynamics (i.e., 8.3 mg/l). Violations of State water quality standards would not be expected under such a scenario. The extent to which these assumptions can actually be applied to Westwards Seafoods' proposed facility in Captains Bay is unknown. More

Nitrogen Dioxide (NO_2):	1,044 ton/yr (947 MT/yr)
Sulfur Dioxide (SO_2):	116 ton/yr (105 MT/yr)
Total Suspended Particulates (TSP):	35.6 ton/yr (32.3 MT/yr)
Hydrocarbons (HC):	27.9 ton/yr (25.3 MT/yr)
Carbon Monoxide (CO):	50.4 ton/yr (45.7 MT/yr)

The proposed project is required to comply with the National Ambient Air Quality Standards (NAAQS) and the more stringent Prevention of Significant Deterioration (PSD) increments. Screening level modeling of project power plant emissions was conducted to determine impacts to the ambient air quality (Dames & Moore, 4/90). Meteorological data for Dutch Harbor collected in the early 1950s and current data from Adak Island were used to simulate climatic conditions. The screening model incorporates conservative "worst-case" assumptions regarding meteorological conditions in the vicinity of the project site. A summary of the modeling results in comparison with the applicable NAAQSs and PSD increment follows:

	NO_2 Annual	SO_2 Annual	SO_2 24 hour	SO_2 3 hour
PSD increment ($\mu g/m^3$)	25	20	91	512
NAAQS ($\mu g/m^3$)	100	80	365	1300
Maximum predicted air quality impact without controls ($\mu g/m^3$) [1]	185	32	198	714
Overall control required to comply with PSD increments (%)	86	38	54	28

The conservative screening level analysis indicates that project diesel plant emissions, without controls, would exceed the annual PSD increment for NO_2 and the annual and 24 hour PSD increment for SO_2 for continuous operation of three generators. The percentage control required to comply with the increments is indicated above. EPA has determined that air emissions control technology is available to attain the stated required control percentages and reduce the estimated emissions to levels below the PSD increments.

Westward Seafoods is currently working with the Alaska Department of Environmental Conservation (ADEC) to obtain an air quality Permit to Operate. On-site monitoring of meteorological conditions is being conducted to obtain this permit. Westward Seafoods has submitted a Meteorological Monitoring Plan to ADEC describing planned monitoring procedures. Site-specific meteorological data will be used to prepare a final air quality impact analysis. This analysis would be expected to provide a more accurate representation of project-related air quality impacts than does the "worst-case" screening level approach.

[1] EPA Valley model

An air quality Permit to Operate can be issued by ADEC only if the permit application demonstrates that the project will comply with the NAAQS and applicable PSD increments. This permit will require the installation of air emissions control equipment necessary so as to assure compliance.

Releases of non-combustion air from the fish processing operations may contain odorous compounds, the chemical nature of which is unknown. Odors from processing operations will be reduced by channeling vapors through a scrubber to remove aromatic compounds from the air prior to venting.

Soils

Due to the topography of Unalaska Island, most development activities occur near the shoreline. The importance of coastal resources to the economy of the region necessitates sound planning to ensure protection of the coastal resources. The proposed Westward Seafoods facility will be developed on property that has already been altered by other construction activities. Approximately 3.5 acres of tidelands has been filled for the construction and operation of a marine support facility. This activity required a Section 404 permit from the U. S. Army Corps of Engineers (COE 1986). Mitigation measures for this activity have been implemented.

Some potential exists for on-site erosion due to the construction of Westwards Seafoods' proposed facilities. Hydraulic erosion of the exposed soil could result in the introduction of runoff into the waters of Captains Bay and the deposition of transported sediments in nearshore waters. In addition to being visually displeasing, erosion-induced turbidity and sedimentation of nearshore waters could potentially smother or adversely affect marine habitats and production in the area of influence. However, these impacts would likely be less than significant.

Water Quality

Under the proposed action there will be two primary types of waste streams generated from the Westward Seafoods' plant in Captains Bay: a solid waste stream consisting of ground seafood waste (primarily crab), and liquid wastes consisting of effluent and discharges from a variety of sources including:

- bailwater;
- surimi plant;
- fish meal plant;
- air scrubber discharges; and,
- powerhouse cooling water.

In a quiescent body of water such as Captains Bay, the ground solids are expected to create a persistent pile. The liquid waste stream will include a relatively insignificant fraction of settleable solids relative to the proposed quantity of ground crab.

detailed information of water quality and circulation patterns within Captains Bay would be needed to verify the assumption.

The maximum change in pH following initial dilution was also calculated for the proposed Trident Seafoods facility. The change in pH of the combined surimi plant discharge waste and stickwater was calculated to be 0.11 units following an initial dilution of 24:1. For the Westward Seafoods facility it is unlikely that violations of the Alaska water quality standard (maximum allowable change of 0.1 pH unit) would be expected if the initial dilution prior to discharge is at least 24:1.

Seawater used for cooling generators will not be used for fish processing purposes and will be discharged to a separate outfall. BOD_5 loading from this source is not expected and other water quality impacts, including temperature changes, are expected to be negligible.

<u>**Seafood Waste Deposits**</u>

<u>Deep Waters</u>. The limited observations that are available suggest that in late summer the deeper waters of Captains Bay can have an oxygen content below Alaska State water quality standards (5 mg/l). The limited observations also suggest higher levels of dissolved oxygen at depth during early summer than during the later summer months. This information is not sufficient to formulate a realistic statement of potential dangers should additional BOD_5 demands be placed upon Captains Bay. There is a need for clarification on the mechanisms, timing, and biological cycles linked to renewals of deep waters within Captains Bay.

Unanswered questions include the following:

- Does renewal occur every year, or could some years not have a renewal process?
- Does renewal occur as a result of single events or is it gradual with many small renewals of deep waters?
- How does renewal relate to large scale wind and oceanographic conditions in the Gulf of Alaska and the Bering Sea?
- Are there biological cycles, particularly larval related cycles, that would be severely impacted by additional stress on the DO in deeper waters?
- Would DO at depth be indirectly affected by introduction of additional nutrients in the surface and mid-waters of Captains Bay?

<u>Near the Outfall</u>. The prime concern near the proposed outfall is the ability of the environment to effectively disperse effluent. The effluent includes warm water which would naturally be in the surface waters, saline waters containing fish products which would separate into settleables and neutrally buoyant fractions, and crab shell waste which would quickly settle to the bottom.

The abandoned Pacific Pearl outfall, located in the vicinity of the proposed Westward Seafoods facility, generated a pile of crab waste that persisted for some time (EPA 1977). It is not known if the pile still exists, nor is the total production of Pacific Pearl known. Definitive statements could be made concerning the future of a crab waste pile generated by Westward Seafoods if comparisons with Westwards Seafoods' estimated production and Pacific Pearl's production were available along with recent information on the fate of the Pacific Pearl crab shell pile. Alternative methods for assessing the ability of the dump site to disperse crab wastes could come from bottom surveys comparing the sediment texture and plant life to other crab processing waste disposal areas in and around Dutch Harbor. Specifically, is the area similar to areas with known crab pile dispersion, or similar to areas of minimal crab waste dispersion? Short term, current meter observations are unlikely to answer questions about the annual persistence of a crab waste pile. Diver surveys could tell if the subsurface topography is such that wastes would fall off into deep holes or if it would be trapped in local rocky outcrops.

Settleable fish wastes pose a similar difficulty to the crab waste problem. There is not enough information available to assess environmental impacts or the potential for effluent dispersion violations within Captains Bay.

The neutral and positively buoyant fractions of the plant discharge do not pose an obvious environmental problem. There may be aesthetic problems in the vicinity of the outfall, but the overall impact on Captains Bay appears to be minor when the discharge volumes are compared with the volume of water in Captains Bay. Periodic winds and runoff into Captains Bay should be sufficient to mix surface layers and transport fresher waters out of Captains Bay.

Models of Crab Wastes. EPA conducted a number of surveys (EPA 1979) of known crab shell piles in the Dutch Harbor area. The typical shape of a pile was determined to be elliptical, with maximum thickness at the outfall and tapering off to thicknesses on the order of centimeters at distances of 30 meters or more from the outfall. In order to visualize a pile of a given volume, a mathematical function was constructed whose contours are similar to observed crab waste piles. This function can be assumed to contain a given volume of material and its contours provide a visualization of the dimensions of the pile. We chose the function:

$$d(x,y) = A(x^2 + y^2)^{.5} e^{-.1(x^2 + 10y^2)^{.5}}$$

The volume of this curve over a flat bottom is estimated by utilizing the estimated annual crab production of the Westward Seafoods facility. This model further assumes crab waste disposal occurs for one year without dispersion. It is also assumed that there is no waste decay during this period. The area and thickness of a pile produced after a single year are displayed as Figure 8. Four discharge volumes were used by the model.

a) 100 percent at the proposed annual discharge;
b) 80 percent of the proposed annual discharge;
c) 40 percent of the proposed annual discharge; and
d) 10 percent of the proposed annual discharge.

Alaska regulations (18 AAC 70.033) establish zones of deposit beyond which degradation of water quality is not allowed. Zones of deposit are established by ADEC in

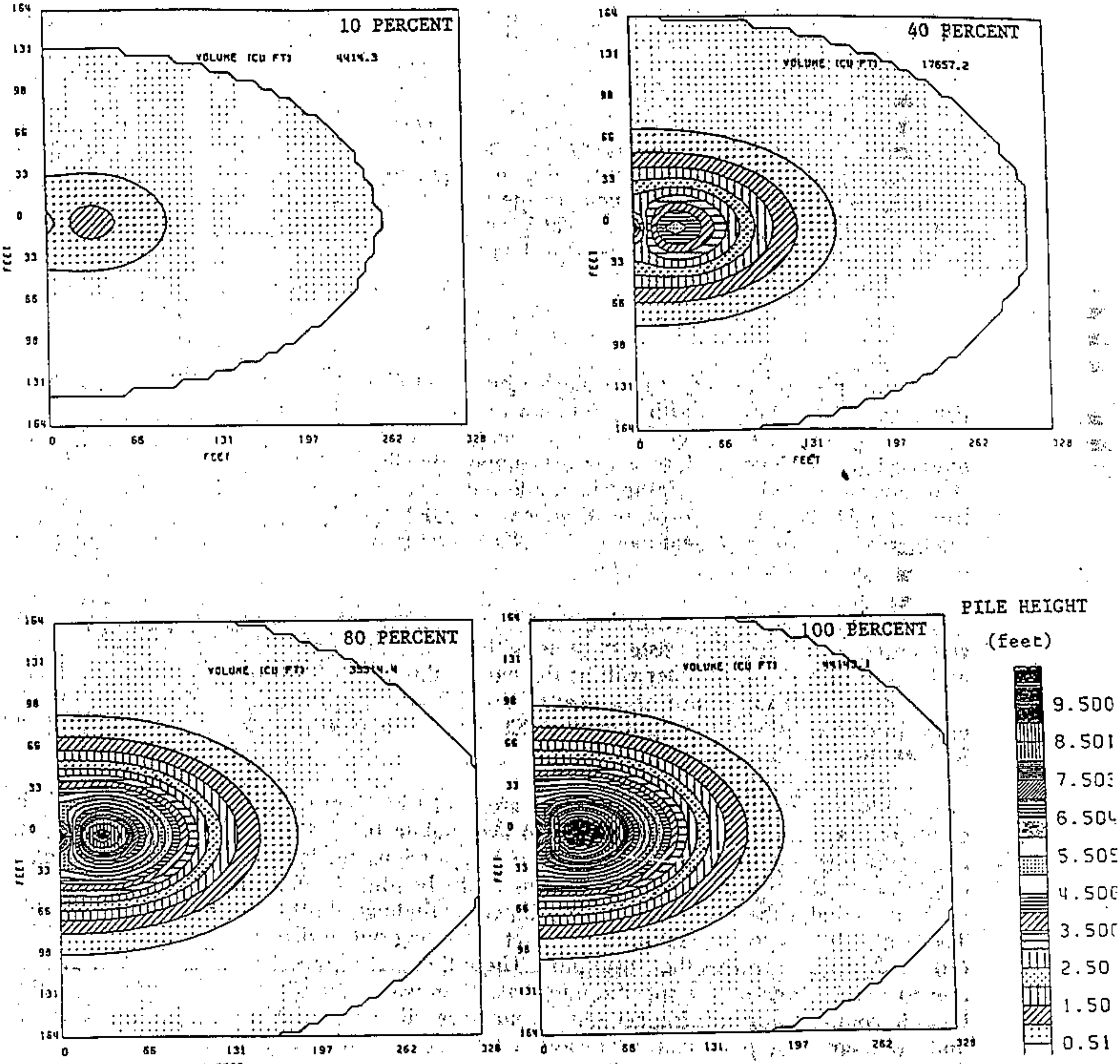


Figure 8. Theoretical Annual Crab Waste Pile Volumes at 10, 40, 80, and 100 Percent of Proposed Production Level (see text for assumptions)

variances issued under 18 AAC 70.015 or in permits issued pursuant to 18 AAC 15. For an assumed 100-foot zone of deposit, the pile model suggests that to satisfy this requirement, natural dispersion must be such that 90 percent of the crab waste is dispersed. A relatively high energy environment is needed to satisfy this criteria since crab waste piles are often observed outside of the 100-foot (30-meter) zone of deposit. Brown and Caldwell (1979) proposed that crab wastes be placed nearer to the surface (between 50 to 100 feet [15 to 30 meters]) for processors operating on Amaknak Island. This environment is more energetic than the environment near to the proposed site because it is exposed to open ocean swells. The evidence suggests that Westward Seafoods may have difficulties meeting regulations requiring zones of deposit of less than 100 feet (30 meters).

Marine Biota

The primary impacts to the marine biota will be those directly associated with the fish processing operation, with some minor impacts due to the off-loading of fish and crab from trawler boats. Construction impacts should be relatively minor. The site was originally intended to be developed as a marine support facility. As a result, a portion of the shoreline was filled and a riprap/sheet-pile bulkhead was added. Permits were obtained from the U. S. Army Corps of Engineers (COE) for this activity and subsequently transferred to Westward Seafoods (COE 1986). The impacts of this activity were mitigated off site.

Fish and shellfish processing produces a number of independent liquid and solid waste streams. All of the waste streams, with the exception of bailwater, domestic waste, and power plant cooling water will be discharged through a single outfall located near the southwestern side of the property, near Obernoi Point. The primary discharge outfall will extend into Captains Bay a minimum of 200 feet (60 meters) to a depth of approximately 30 feet (9 meters).

Waste from crab processing will be ground (0.5 inch or smaller) and discharged into Captains Bay. This waste is expected to accumulate on the bottom and cover an area approximating that modeled (discussed in the previous section of this report). Anoxic conditions in the sediments and smothering of the benthic infaunal communities will occur in the area under the seafood waste pile, based on findings of previous surveys (EPA 1979). There may be a zone of less severe impact extending outward from about 30 to 200 feet (10 to 60 meters) around the waste pile. The full extent of this zone is difficult to predict due to the absence of site-specific information on water currents. Characteristics of the benthic community in the impact zone around the pile could include low species richness, and dominance by polychaetes typically associated with high organic inputs and bottom disturbance.

A liquid waste from surimi and fish meal processing will also be discharged with the crab waste. Removal of solids and processing of the fish solids in the fish meal plant will significantly reduce the volume of settleable material. This material is unlikely to have a direct physical impact on the benthos. There was an indication, based on existing water quality reports, of poor mixing and low dissolved oxygen concentrations in Captains Bay. Available information is inadequate to evaluate the impact of BOD_5 mass loadings from the proposed waste discharge. Impacts, if they did occur, would likely be associated with vertically migrating plankton, such as the larvae of mussels and clams, and benthic or epibenthic organisms within the area surrounding the outfall. Overall impacts from liquid wastes are expected to be less than significant.

Powerhouse cooling water will be discharged at the surface. ADEC water quality standards for marine discharges require that the temperature of the receiving water body not exceed 10°C. Surface water temperature differences will be small and are unlikely to significantly impact any organisms in the water column.

Freshwater Biota

Adult and juvenile salmonids migrating along the shoreline of Captains Bay may encounter wastewater plumes. Based on studies of sockeye salmon in the vicinity of Bristol Bay (Straty 1969), adults bound for the Shaishnikof River would travel directly and actively toward the river once they find themselves in those portions of Captains Bay influenced by the river's flow. These fish are sensitive to temperature and oxygen gradients when in saltwater, and will avoid the more concentrated portions of the plume in the area immediately surrounding the processing plant.

A similar condition would exist for juvenile salmon. While these fish are shoreline dependent, they may actively avoid the wastewater plumes. A wastewater discharge in the intertidal zone (for example cooling plant waters) may force the fish to swim further offshore, and expose them to open water predators, such as larger salmonids. However, the overall impact to salmonids is expected to be less than significant.

Terrestrial Habitat

Westwards Seafoods' site development and construction activities could potentially disturb and/or displace existing terrestrial habitat by altering productivity, changing existing species composition, or converting habitat to other uses. At the proposed Westward Seafoods site most of the vegetation and existing habitat, with the exception of the fuel tank storage areas, has been removed as a result of previous construction activities. Westwards Seafoods' facility will not significantly impact the terrestrial habitat in the area.

Threatened and Endangered Species

No critical habitat for threatened or endangered plant or wildlife species are expected to be affected by construction or operation of the proposed facility. Therefore, no significant impact to threatened or endangered species are anticipated.

Archaeological and Cultural Resources

Due to previous construction activities at the site, most cultural or archaeological resources of importance would have been discovered or disturbed. At present, there are no known archaeological or cultural resources in the immediate vicinity of the proposed project (Klinger, pers. comm.). If historical or archaeological sites are discovered during construction, potentially damaging activities should cease until the site can be further evaluated and/or surveyed.

Land Use

The proposed Westward Seafoods facility will be built on land zoned for industrial use. Therefore, no impacts to existing land use are anticipated.

Socioeconomics

Development of the proposed Westward Seafoods processing facility would result in the maximum employment of 350 persons. This would be expected to expand tax revenues for the City of Unalaska as well as the State of Alaska. The proposed facility would also support a number of businesses in Dutch Harbor and Unalaska, including warehousing, shipping, boat repair, refueling operations, and commercial support operations.

The City of Unalaska has virtually no available housing to support significant population expansions (Aleutians West 1989). Westward Seafoods proposes to construct three bunkhouses and two town houses for its employees.

Within the Unalaska/Dutch Harbor area, residents have observed that the small boat fishery has depleted local stocks of fish previously harvested for subsistence and personal use. In the Unalaska inner harbor, king, Dungeness, and Tanner crab appear to be reduced in number. Residents report that increased pollution within inner Unalaska Bay (possibly from seafood waste discharge, sewage discharge, or oil discharged into marine waters from bilge pumping) has effectively contaminated razor clams, steamer clams, cockles, and mussels and made them unfit for consumption (Aleutians West 1989).

Public Services

Expansion of the work force at the proposed Westward Seafoods facility is not expected to have an adverse impact on public services. The City of Unalaska's domestic water supply system has the capacity to provide the freshwater needs for the proposed facility. The necessary supply system is already in place. Sanitary wastewater will be transferred from the proposed facility to the City. The City already has the capacity on their existing permit to treat increased sanitary waste flows from Westward Seafoods. The sewer lines between Westward Seafoods and the treatment plant are not yet in place. Sewer lines would parallel the existing road, and are not expected to have any impact on terrestrial habitat. Westward Seafoods proposes to provide its own power supply, thereby mitigating any potential impact on the City's system.

The City of Unalaska operates a 10-acre landfill. There are several problems associated with the landfill, including limited area for expansion, exposure to high winds, and lack of suitable cover material. With new federal requirements for onshore disposal of certain shipboard wastes associated with MARPOL, there is some concern over the landfill's capability to handle these wastes (Aleutians West 1990). Solid waste generated by 350 additional employees and the proposed operation could exacerbate pressures on the local landfill.

CUMULATIVE IMPACTS OF THE PROPOSED ACTION

Because no other seafood processing facilities are currently located in Captains Bay and there has been a low historical discharge of seafood waste into Captains Bay, the proposed discharge from Westward Seafoods' plant is not expected to contribute to any cumulative impacts to water quality in Captains Bay. Its relative isolation from Dutch Harbor and the City of Unalaska mitigate a number of other potential impacts that may be associated with the facility. The proposed facility, however, is one of a number of seafood processing plants, both shorebased and floating, that are presently operating and discharging into waters in and around Dutch Harbor and the City of Unalaska. There are at least 14 such facilities presently in operation within close proximity to Dutch Harbor and the City of Unalaska (Aleutians West 1989). The cumulative impacts of these facilities over time on both the natural environment (e.g., water and air quality) and the supporting infrastructure (e.g., public and social services) may be significant.

Potential cumulative impacts were assessed for the following resources: water quality, air quality, and public services. The first step in evaluating the potential for cumulative impacts on these resources was to establish the general level of seafood processing occurring in the vicinity of the proposed Westward Seafoods facility.

Water Quality

The proposed Westward Seafoods facility is the only facility being considered for development within Captains Bay proper. Most shorebased processing facilities are located in Illiuliuk Bay and Unalaska Bay, north of the proposed Westward Seafoods site. No discharges from floating processors are allowed in Captains Bay. Discharges from the Westward Seafoods facility are not expected to contribute significantly to individual discharges from the other facilities. Shallow sills located at the entrance to Captains Bay make it a relatively quiescent, isolated body of water, and may serve to restrict water movement to Unalaska and Illiuliuk Bays where most of the processing facilities are located. However, because ambient DO in Captains Bay appears to be low in the summertime, additional BOD_5 loading may cause local violations of state water quality standards for DO. While Westward Seafoods' discharge to Captains Bay may potentially contribute to some water quality degradation within Captains Bay it is unlikely that these discharges would interact and cause a significant cumulative impact outside Captains Bay.

Air Quality

Air quality impacts associated with the Westward Seafoods facility are expected to remain localized. Average wind speeds of approximately 11 mph would be expected to flush air contaminants from the area on a regular basis (Aleutians West 1990). However, if other facilities are constructed on the southeastern tip of Amaknak Island in the future, cumulative air quality impacts could potentially occur.

Public Services

Development projects often result in an influx of people to areas which do not have the infrastructure to accommodate the demands of the increased population. Additional transportation services, communication systems, and health services may be required to meet demands on present systems. The proposed Westward Seafoods facility will employ a maximum of 350 people during periods of peak production. The City of Unalaska has recently expanded its water and sewage systems to meet the expected demands of additional processing facilities, including the proposed Westward Seafoods facility. At the same time, Westward Seafoods proposes to provide its own housing for employees of the facility. These measures are expected to reduce any stress on public services that may accompany the project.

Westward Seafoods proposes to truck the finished products (surimi, fish meal, and other fish and crab products) to Dutch Harbor for transfer to vessels. Westward Seafoods anticipates that this will require 10 to 12 truck trips per day between the proposed facility site and the port of Dutch Harbor. Additional traffic along Captains Bay Road may lead to additional congestion and increased maintenance of the road system.

An area of potential concern is the impact of Westward Seafoods' facility on the City's landfill. The landfill is a small, poorly located facility that has limited room for expansion. The ability of this facility to meet the future needs of the City is questionable. The City is experiencing an increase in solid waste generation and disposal needs as a result of increasing disposal of ship wastes, industrial wastes from development activities, and municipal wastes from an increasing population. With limited space available for development of a new facility, solid waste problems may become compounded by the proposed Westward Seafoods facility.

ALTERNATIVES AND THEIR ENVIRONMENTAL EFFECTS

There are a variety of operational and discharge alternatives. Operational alternatives include:

- Alternative 1 - Operation at Proposed Production Levels Without a Fish Meal Plant; and
- Alternative 2 - No Action: NPDES Permit Not Issued.

For each wastewater discharge alternative described, it is assumed that cooling water from the power plant will be discharged separately from a near surface outfall. Of the remaining waste streams, several alternative discharge scenarios are evaluated:

- alternative bailwater disposal;

- recycling of stickwater;

- removal and disposal of crab waste solids by means of
  - barging, back haul
  - landfilling,
  - incineration, or
  - alternative by-product development.

Operational Alternatives

— should discuss making it better not worse. Get real.

Alternative 1 - Operation at Proposed Production Levels Without Fish Meal Plant

Westward Seafoods is proposing to process 148,800 tons (134,988 metric tons) of pollock, 3,445 tons (3,348 metric tons) of crab, and 14,553 tons (14,143 metric tons) of non-pollock finfish annually. Without a fish meal plant, the discharge would be on the order of 123,500 tons (120,017 metric tons) of waste annually, and would create a pile volume nearly two orders of magnitude (100 times) larger than the pile predicted to occur with the operation of a meal plant.

Environmental Consequences. If Westward Seafoods processes at its maximum rate and discharges seafood processing wastes to Captains Bay without operation of the fish meal plant, a substantial accumulation of seafood waste at the outfall will result.

Growth of a seafood waste pile of this magnitude will increase the size of the benthic infauna impact zone substantially. The extent of the impact zone beyond the waste pile and the period of time necessary for the benthic community to recover would depend on the nature and magnitude of the sediment quality impacts arising from the main waste pile.

In addition to physical deterioration of benthic habitat, discharge of all process wastes will increase BOD_5 loading to Captains Bay significantly. Based on ambient conditions within Captains Bay, it is likely that there would be significant impact to near bottom dissolved oxygen.

It is also likely that Alaska State water quality standards for residues (floating solids, foam, and scum) would be violated at projected levels of pollock production with no fish meal plant.

Economic Consequences. Operation of the facility without the fish meal plant would save Westward Seafoods the capitol costs associated with construction of that facility. Income derived from the sale of fish meal would be lost as a result of not building the fish meal plant.

Alternative 2 - No Action: NPDES Permit Not Issued

If EPA determines that an NPDES permit should not be issued, the Westward Seafoods plant proposal for Captains Bay would either have to be abandoned or relocated.

Environmental Consequences. There would be no further impacts to the waters or shoreline of Captains Bay from the proposed project if EPA decides to not issue an NPDES permit to Westward Seafoods.

Economic Consequences. Abandonment or relocation of the proposed project would pose severe economic impacts upon Westward Seafoods. The capital investment made by Westward Seafoods would be lost or, at best, greatly diminished. The City of Unalaska would lose a significant tax base.

Discharge Alternatives

Various discharge options under the proposed action are evaluated below.

Alternative Discharge of Bailwater

Westward Seafoods proposes to discharge bailwater through a surface discharge at the loading dock. They estimate that up to 317,000 GPD (1.2 LPD) of bailwater will be discharged off-dock at maximum production levels. This discharge can create substantial deposition piles, primarily fish scales, and add to BOD_5 loading in the vicinity of the discharge.

Most trawlers expected to off-load raw fish at Westwards Seafoods' dock will use chilled refrigeration systems. The fish pump removes all of the fish and associated water and waste from the system in off-loading the catch. The fish/water mixture is run over a dewatering conveyor; the water is captured in another plumbing system, and the fish are transported to the processing facilities. This provides the opportunity for three alternatives to the proposed discharge method:

- recycling of bailwater to the trawler;
- discharge of bailwater through the surimi plant's drainage system, where it can be screened, ground, and discharged through the primary outfall; or
- removal of solids from the bailwater; solids can then be reduced in the meal plant, and the liquid fraction can be discharged through the primary outfall.

need to reduce screen size to .5" or less, 1"

The first two alternatives are easily implemented. A two-way valve can be installed in the plumbing system close to the point of bailwater collection (after the catch is dewatered). The valve allows operators to shunt bailwater directly back to the trawler, or to the surimi plant's drainage system. Installation of the valve would take minimal reconfiguration of the proposed bailwater transport system.

In some cases, Westward Seafoods expects to off-load vessels which use ice to chill fish, rather than a chilling system. In this case, bailwater cannot be recycled to the trawler. However, by resetting the valve, the bailwater could be easily shunted to the surimi plant's drainage system and discharged through the primary outfall.

The third alternative, removal and transport of solids to the meal plant, would be more difficult to implement. Solids in the surimi plant's drainage system are screened through a 1-inch screen, which would not retain smaller particles such as fish scales. The technology to remove solids from bailwater has not been fully developed; however there are several potential options such as:

- hydroscreens;
- decanters;
- centrifuges;
- rotating drum screens; or
- sand filtration.

<u>Environmental Consequences</u>. Recycling bailwater back to the trawler could eliminate most of the impacts of bailwater discharge to Captains Bay. The bailwater would eventually be dumped, but at a much lower rate (greater dilution) and over a wider area, resulting in less accumulation of solids on benthic habitats. A stipulation could also be implemented restricting trawlers from exchanging water from chilled seawater systems at the dock or within Captains Bay, further decreasing potential water quality impacts.

Shunting bailwater through the surimi plant's drainage would eliminate the impacts of bailwater in the vicinity of the dock; however, bailwater solids would be deposited from the primary outfall. The relative contribution of solids and BOD_5 loading from bailwater to the primary outfall would be small compared to those being contributed by other proposed processes.

Removal and transport of solids to the meal plant would eliminate impacts of solids deposition; however, the liquid fraction, and its associated BOD_5 would still need to be discharged. The potential BOD_5 loading from the liquid fractions would be considerably less with the solids removed, and would contribute relatively little additional loading compared to other proposed processes.

<u>Economic Consequences</u>. Minimal capital would be required to implement the first two alternatives. Some small additional operational cost would be incurred in pumping bailwater; however, this would be extremely small compared to total costs of the proposed operation. Returning the bailwater to the trawler is a benefit to the trawler. If bailwater were dumped, the trawler would have to take on a fresh supply of water and expend time and energy chilling the system to the desired temperature. By recycling the bailwater back to the trawler, cooler system temperatures can be maintained, saving the trawler operator time and money.

if did this - could also take crab waste

The third option is also considered to be economically feasible, with some small increase in capital and operational cost. However, specific details and economic assessments would have to be evaluated.

<u>Recycling of Stickwater and Discharge of All Other Wastes Through the Proposed Outfalls</u>

Recycling of the stickwater produced during the production of fish meal involves evaporation of the stickwater. Some of the solids remaining after evaporation can be added back to the fish meal. Approximately 5.7 percent (by weight) of stickwater is solids (Plesha pers. comm.). With 100 percent recycling of stickwater, the amount of solid wastes requiring disposal would decrease by approximately 28 tons (25.4 MT) per day, with a subsequent decrease in BOD_5 loading of 23 tons (21 MT) per day. However, addition of these solids to the meal results in a product of higher salt content. Fish meal with a salt content above 3 percent is of much lower economic value than fish meal with a salt content of less than 2 percent. The upper limit of salt content in fish meal is 7 percent. However, there is currently no market for meal with a salt content of 3 percent or higher.

A second alternative is to evaporate the stickwater and rather than adding all of it to the meal plant, excess solids might be used in another market, or disposed outside of Captains Bay. Landfilling residual solids is not considered a viable option because of limited land disposal sites and health concerns. If barging of crab waste is required, residual stickwater solids could be barged and dumped at a deep water site as well.

<u>Environmental Consequences</u>. The evaporation of stickwater and the drying of the resulting solubles into the meal requires that additional heat be generated for the process. Trident Seafoods quantified the air and water discharges that would result from the evaporation processes for their proposed facility in Akutan Harbor using diesel generators. For every ton of water-soluble protein (solids in stickwater) not discharged into the harbor, an additional 1.1 ton (1 MT) of carbon dioxide and 19 pounds (8.7 kilograms) of sulfur dioxide will be produced and discharged into the atmosphere (Bundrant pers. comm.).

Recycling stickwater is expected to have little effect on reducing the growth of the size of the waste pile, since solids in the stickwater compose a small fraction of the total waste solids.

Recycling stickwater, or disposing of residual solids through an alternative market, or barging and dumping the solids would significantly reduce the amount of BOD loading to the Captains Bay. The BOD_5 of the stickwater comprises 68 percent of the total loading under Westward Seafoods' proposed operations.

<u>Economic Consequences</u>. Trident Seafoods also performed a detailed analysis of the costs to recycle stickwater produced by their proposed fish meal plant (Bundrant pers. comm.). The following assumptions were used in their analysis:

- A salt content of 1.52 percent, determined from chemical analysis of stickwater produced at Unisea's Dutch Harbor plant, was used for stickwater generated by Trident Seafoods' fish meal plant.

- The market price for cake meal (i.e., meal with less than 50 percent of the water-soluble proteins added back into the product) is $600 per metric ton.

- The market price for whole meal (i.e., meal with more than 50 percent of the water-soluble proteins added back into the product) with 3 percent or less salt is also $600 per metric ton.

- Although there is probably not a market for meal with over 7 percent salt, meal with 7.4 percent was assumed to have a market value of $200 per metric ton.

- The maximum production rate at Trident Seafoods' proposed facility would be 440 tons (400 metric tons) of raw pollock per day.

The following four production scenarios were used in the economic analysis performed by Trident Seafoods:

- Discharge all stickwater produced by the plant.

- Recycle all stickwater produced by the plant.

- Recycle 17 percent of the stickwater to yield fish meal with 3 percent salt.

- Reduce the salt content of the stickwater to a level permitting evaporation of the entire product into the meal and remain under 3 percent salt content.

According to the results of the economic analysis, the recycling of all stickwater produced by Trident Seafoods' fish meal plant would result in a net loss of income of approximately $2,200 per day. The results also indicate that discharging of all stickwater would save Trident Seafoods $15,905 per day. However, according to the analysis, it would be more profitable economically to recycle 17 percent of the stickwater, which would produce a savings of $17,132 per day.

From this it can be inferred that it would be in Westward Seafoods' economic interest to recycle some percentage of the stickwater. Optimally, the seafood industry needs to develop the technology to reduce the salt content of the stickwater and evaporate as much water-soluble protein back into the meal without exceeding 3 percent salt content; this could result in daily income of $21,377 per day. However, this technology does not currently exist. The seafood industry hopes to eventually develop the technology to evaporate the entire production of water-soluble proteins back into the meal.

<u>Barging of Crab Wastes for Ocean Disposal</u>

Barging and ocean disposal of crab waste was considered in this alternative. This alternative would prevent crab waste accumulation and attendant impacts to the benthic community at the location of the proposed outfall. In some instances seafood waste has been barged north of Hog Island, approximately 4 miles (7 kilometers) from the proposed location of the site; however, screening and barging the solids for ocean disposal by an individual processor results in significant costs. At times, storm conditions in the area make barging of wastes to an adequate dump site either dangerous or unpredictable in frequency.

The disposal of seafood processing wastes by barging and ocean dumping requires solids separation, conveyance to the barge, and barge transportation and dumping. At Trident Seafoods' proposed facility on Akutan Island, solids separation via screening was estimated to require a capital expenditure of approximately $370,000 (Riley pers. comm.)

The estimated cost for disposal of the crab wastes generated by Westward Seafoods via barging and dumping to the ocean was estimated by Foss Maritime Company, using the following assumptions (McElroy pers. comm.):

- Equipment and crews are supplied by Foss Maritime.
- Contract duration is approximately 250 days (crab processing during October through May).
- A dump barge is used.
- A 2,000 to 2,200 hp tugboat suitable for winter use in Unalaska Bay is used.
- A trip out to sea to dump wastes is required every day.
- Distance from the plant to the dump site is approximately 5 miles.
- There is safe and free moorage for the tug and barge available.

Based on these assumptions, the total annual cost for a single facility to dispose of crab wastes via barging is approximately 1.5 million dollars. This cost estimate includes barge rental, fuel, maintenance, labor, insurance, and all other associated expenses (McElroy pers. comm.).

__Disposal of Crab Wastes at a Landfill__

The disposal of crab wastes by landfill burial would require solids separation, collection, transport, and landfill operation and maintenance. Wastes could be transported via barge, vessel, truck, or possibly pipeline. In addition, vehicles for moving and covering the wastes would be required at the landfill. The disadvantages of this alternative are the lack of land for landfills, the potential for ground and surface water contamination, odor, aesthetic degradation, and attraction of vermin. The advantage is the cessation of the discharge of crab wastes to Captains Bay.

A detailed cost estimate was not prepared for this alternative because of the disadvantages. This alternative would likely have relatively high costs due to the following factors:

- capital expenditures for screens, holding tanks, and conveyance systems;
- transport costs;
- siting and land acquisition;
- landfill design; and
- construction, control and monitoring of the landfill.

In addition, landfilling of seafood waste is not generally encouraged by the Alaska Department of Environmental Conservation (Brown and Caldwell 1983).

__Incineration of Crab Wastes__

This alternative would require that the crab wastes are screened and centrifuged prior to combustion in a furnace. Incineration is not viewed as a viable disposal alternative for seafood wastes because of their high moisture content and low BTU content

(Environmental Associates 1974). Disadvantages of this alternative include high energy consumption, potential air pollution, and odor problems.

A detailed cost estimate was not prepared for this alternative. EPA (1984) estimates for annual fuel costs alone to incinerate wastes generated at Akutan seafood processing facilities was approximately $240,000. Additional costs would be incurred for purchase of the centrifuge, screening system, incineration facility, skilled labor and ash transport and disposal. These costs have probably risen significantly since 1984.

<u>Processing of Crab Wastes to Produce Chitin and Chitosan</u>

Several years ago EPA explored a range of processes to reduce the volume of the crab processing waste. The production of chitin and the chitosan derivative from crab and shrimp shell was intensively evaluated as these products had immediate commercial application in medicine, food processing and waste processing. Within the last four years Protan Inc., has been producing chitin and chitosan from Dungeness crab and pink shrimp waste from facilities based in Redmond and Raymond, Washington. This company has seen a steadily increasing market for their product but has a limited supply of raw crab and shrimp waste in the southwest Washington area. It prefers crab waste, finding that it produces much higher yields than shrimp waste, with king and Tanner crabs producing the highest quality chitosan. The Protan plant manager indicated that a high-volume source for these species, such as Westward Seafoods, would be a valuable and highly desirable resource (Sargent pers. comm.).

The existing Protan facility can handle in a batch process about 10 tons of shell per batch or up to 15 tons per day, and requires 27,000 gallons of freshwater per batch. The waste from the six process waste streams has a BOD_5 concentration ranging from about 100 to 4,000 mg/l, and averaging 2,190 mg/l or 742 pounds per day. Suspended solids range from 200 to 11,800 mg/l, and average 5.144 mg/l or 1,744 pounds per day. There is no large settleable fraction remaining in this process; however, a portion of the suspended solids are collected as a sludge from settling tanks and trucked to nearby farm fields.

<u>Environmental Consequences</u>. Development of a processing facility at the project site similar in scale to the Protan facility in Washington, would require an additional 1 to 2 acres of land for plant construction. This facility is capable of markedly reducing the volume and BOD_5 content of crab waste and eliminating the potential impact of the crab waste pile.

<u>Economic Consequences</u>. A detailed economic analysis for this alternative was not conducted as part of this assessment. Such a facility would, however, require a significant capital investment by Westward Seafoods.

REFERENCES

Literature Cited

Alaska Department of Environmental Conservation. 1989. Water quality standards (18 AAC).

Alaska Department of Fish and Game. 1978. Alaska's wildlife and habitat. Juneau, AK.

Alaska Writers Group. 1987. Surimi - it's American now. Prepared for Alaska Fisheries Development Foundation, Inc.

Aleutians West Coastal Resource Service. 1989. Resource Inventory.

Ambrose, R. E., R. J. Ritchie, C. M. White, P. F. Schempf, T. Swem, and R. Dittrick. 1988. Changes in the status of peregrine falcon populations in Alaska. Peregrine Falcon Populations, Their Management and Recovery. The Peregrine Fund. Boise, ID. 10 pp.

Brickell, David C. and John J. Goering. 1971. The influence of decomposing salmon on water chemistry. University of Alaska, Institute of Water Resources, Report #IWR-12, College, AK.

Brown and Caldwell. 1983. Seafood waste management study - Unalaska/Dutch Harbor, Alaska. Pacific Seafood Processors Association. 110 pp. (not seen).

Brown and Caldwell. 1979. Investigation of crab waste disposal alternatives - Dutch Harbor, Alaska. Pacific Seafood Processors Association.

Colonell, J. S. and W. S. Reeburgh. 1978. An investigation of certain aspects of marine disposal of crab processing wastes: Dutch Harbor, Alaska. Sea Grant Report 78-6, University of Alaska.

Dames and Moore. 1990. New source National Pollutant Discharge Elimination System (NPDES) seafood processor environmental assessment questionnaire (Westward Seafoods, Inc.).

Feder, H. M. and D. C. Burrell. 1982. Impact of seafood cannery waste on the benthic biota and adjacent water at Dutch Harbor, Alaska. Technical Report R82-1, Institute of Marine Science, University of Alaska.

Marine Mammal Commission. 1988. Selected marine mammals of Alaska. Washington, DC. 275 pp.

Motyka, R. J., M. A. Moorman, and S. A. Liss. 1981. Assessment of thermal spring sites, Aleutian Arc, Atka Island to Becharof Lake -- preliminary results and evaluation. In: Aleutians West Coastal Resource Service, Resource Inventory (1989).

Murray, D. F. and R. Lipkin. 1987. Candidate threatened and endangered plants of Alaska. University of Alaska Museum. Fairbanks, AK.

Pollution Prevention Requirements of Annex V of Marpol, 33 Federal Register, April 28, 1989.

Smith, Brad. 1989. Report of field observations - Dutch Harbor, Alaska. National Marine Fisheries Service, Anchorage.

Straty, R. S. 1969. The migration pattern of adult sockeye salmon (Oncorhynchus nerka) in Bristol Bay as related to the distribution of their home-river waters. PHD thesis Oregon State University, Corvallis, OR. 243 pp.

Trident Seafoods Corporation. 1990. Authorization to discharge under the National Pollutant Discharge Elimination System (Draft Permit #AK-003730-3).

U. S. Army Corps of Engineers (COE). 1986. Department of the Army permit to Hal Dreyer and Associates, Application No. 071-040-2-850553 (Captains Bay 14).

U. S. Environmental Protection Agency (EPA). 1989. Environmental assessement for Trident Seafoods Corporation, NPDES permit application #AK-003730-3 (final report).

U. S. Environmental Protection Agency (EPA). 1984. Fact sheet for Trident Seafoods Corporation NPDES permit dated June 8, 1984 for Trident Seafoods Corporation fish processing plant at Akutan, Alaska.

U. S. Environmental Protection Agency (EPA). 1979. Underwater outfall survey; Dutch Harbor, Alaska. EPA #380-03-218/26A.

U. S. Environmental Protection Agency (EPA). 1977. Water quality investigation related to seafood processing wastewater discharges at Dutch Harbor, Alaska. EPA 910/8-77-100.

U. S. Environmental Protection Agency (EPA). 1975. Development document for effluent limitations guidelines and new source performance standards for the fish meal, salmon, bottom fish, clam, oyster, sardine, scallop, herring and abalone segment of the canned and preserved fish and seafood processing industry point source category. EPA 440/1-75/041a.

Personal Communications

Alden, Marcus. Chief Engineer. Westward Seafoods, Inc., Seattle, WA. March 15, 1990 - telephone conversation.

Baker, Greg. Vice President and General Manager. Westward Seafoods, Inc., Seattle, WA. April 19, 1990 - meeting with U. S. Environmental Protection Agency, Region X.

Bundrant, C. President. Trident Seafoods Corporation, Seattle, WA. May 30, 1989 - letter to Harold E. Geren, U. S. Environmental Protection Agency Region X, concerning supplementary information on costs to recycle stickwater.

Crapo, C. Assistant Professor. Fisheries Industrial Technology Center, Kodiak, AK. May 30, 1989 - letter to Richard Oestman, Jones and Stokes Associates, Bellevue, WA.

Garret, R. Endangered Species Coordinator. U. S. Fish and Wildlife Service, Anchorage, AK. March 20, 1990 - phone conversation.

Klinger, Steven L. Archaeologist. Alaska Division of Parks and Outdoor Recreation, Anchorage, AK. March 23, 1990 - letter to Richard Oestman concerning cultural resources in vicinity of proposed site for Westward Seafood Processing facility.

Kuramoto, Inoa. Taiyo Fisheries, Toyoko, Japan. April 30, 1990 - phone conversation.

McElroy, D. Director of Ocean Sales. Foss Maritime Company, Seattle, WA. April 1990 - telephone conversation.

Reed, G. Assistant City Manager. City of Unalaska, AK. March 30 1989 - telephone conversation.

Riley, C. Plant Manager. Trident Seafoods Corporation, Seattle, WA. Multiple contacts.

Sargent, Gordon. Plant Manager. Protan, Inc., Redmond, WA. April 1990 - phone conversation.

See, Marianne. Biologist. Alaska Department of Fish and Game, Anchorage, AK. April 16, 1990 - telephone conversation.

Ward, Mike. Biologist. Alaska Department of Fish and Game, Dutch Harbor, AK. March 20, 1990 - telephone conversation.

FACT SHEET

United States Environmental Protection Agency
Region 10
Park Place Building, 13th Floor
1200 Sixth Avenue, WD-134
Seattle, Washington 98101
(206) 553-1214

Date: January 18, 1991

Permit No.: AK-004978-6

PROPOSED ISSUANCE OF A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE POLLUTANTS PURSUANT TO THE PROVISIONS OF THE CLEAN WATER ACT

WESTWARD SEAFOODS, INC.

has applied for issuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge pollutants pursuant to the provisions of the Clean Water Act. This fact sheet includes (a) the tentative determination of the Environmental Protection Agency (EPA) to issue the permit, (b) information on public comment, public hearing and appeal procedures, (c) the description of the current discharge, (d) a listing of tentative effluent limitations, schedules of compliance and other conditions, and (e) a sketch or detailed description of the discharge location. We call your special attention to the technical material presented in the latter part of this document.

Persons wishing to comment on the tentative determinations contained in the proposed permit issuance may do so by the expiration date of the Public Notice. All written comments should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the expiration date of the Public Notice, the Director, Water Division, will make final determinations with respect to the permit issuance. The tentative determinations contained in the draft permit will become final conditions if no substantive comments are received during the Public Notice period.

The permit will become effective 30 days after the final determinations are made, unless a request for an evidentiary hearing is submitted within 30 days after receipt of the final determinations.

The proposed NPDES permit and other related documents are on file and may be inspected at the above address any time between 8:30 a.m. and 4:00 p.m., Monday through Friday. Copies and other information may be requested by writing to EPA at the above address to the attention of the Water Permits Section, or by calling (206) 553-1214. This material is also available from the EPA Alaska Operations Office, Room 537, Federal Bldg., 222 W. 7th Avenue, #19, Anchorage, Alaska 99513.

Technical Information

I. Applicant

Westward Seafoods, Inc.

Mailing Address:
1111 Third Avenue, Suite 1210
Seattle, Washington 98101

Plant Location:
Captain's Bay Road
Dutch Harbor/Unalaska, Alaska

NPDES Permit No.: AK-004978-6

Facility Contact: Gregory Baker, General Manager

II. Activity

Westward Seafoods, Inc. plans to operate a seafood processing facility in Dutch Harbor/Unalaska, Alaska. Pollock will be processed year-round with a maximum production of 880 tons per day of raw seafood. Crab will be processed seasonally at a maximum rate of 88 raw tons per day. The expected maximum production of each species to be processed is as follows:

Species	Maximum Daily Production (pounds)
Pollock	1,760,000
Cod and Other Bottomfish	176,000
Crab	176,000

The company also plans to operate a surimi plant and a fish meal plant. All seafood wastes except for crab wastes will be recovered in the meal plant. Crab wastes will be ground to 0.5 inch prior to discharge.

Sanitary wastes generated at the site will be discharged to the city of Unalaska treatment works.

Process water (both fresh water and sea water) will be chlorinated by gas injection prior to use in seafood processing operations.

III. Receiving Water

A. Captain's Bay, Alaska

B. Captain's Bay is classified by the Alaska State Water Quality Standards as classes (2)(A)(i)(ii)(iii), (B)(i)(ii), (C), and (D) for use in aquaculture, seafood processing, and industrial water supply, contact and secondary recreation, growth and propagation of fish, shellfish, other aquatic life, and wildlife, and harvesting for consumption of raw aquatic life.

C. Water quality parameters which could be affected by the discharge include dissolved gas, pH, turbidity, color, oil and grease, residual chlorine, total suspended solids (TSS), and settleable solids.

D. Captain's Bay is characterized by two shallow sills (each approximately 5 fathoms in depth) at the outlets connecting the bay to Unalaska Bay and Iliuliuk Harbor. The sills tend to reduce dispersion from the deep currents of Unalaska Bay and trap settleable solids and nutrients introduced to the bay. These effects have been verified in several investigations in which dissolved oxygen was shown to decrease with depth in the bay. Dissolved oxygen concentrations below the state standard have been observed in the late summer months.

E. A map of the facility location is included in Attachment 4 of the permit.

IV. Background

Westward Seafoods, Inc., is a new source facility subject to an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA). The company submitted an application to EPA on July 15, 1989. EPA has completed an EA to determine the impacts of the proposed project on the environment. Based on this assessment and the proposed permit conditions described herein, EPA has determined that this project will not result in significant adverse impacts and is submitting for comment a Finding of No Significant Impact (FNSI) with the proposed permit. Like the permit, the FNSI is subject to a 30-day comment period.

V. Basis for Limitations

A. Finfish Processing

As described previously, Westward Seafoods, Inc. is completing construction of a fish meal plant to reduce finfish wastes to a marketable product. In their application, Westward has proposed to screen the finfish processing wastewater and utilize the solids for fish meal production. Therefore, the permit includes limitations prohibiting the discharge of finfish wastes.

The numeric effluent limitations (expressed in lbs. pollutant per thousand lbs. of raw product processed) that are included in the permit reflect the pollutant concentrations in screened process wastewater. Salmon, halibut, and herring processing limitations are based on the Alaskan "non-remote" guidelines (40 CFR 408). Since the Alaskan bottomfish guidelines do not apply to the mechanized process currently employed in Alaska, the East Coast Mechanized Bottomfish Processing guideline (also based on screening technology) is applied to this facility based on best professional judgment (BPJ).

When more than one species is processed on the sampling day, the effluent limitation for that day is based on the proportion of each species processed. Variable monthly limits are also based on the proportion of each species processed. EPA has determined that this method of determining a variable limit is appropriate, since EPA guidelines (40 CFR 408) are expressed in terms of pounds of pollutant per 1000 pounds of raw product processed. The method to determine the variable limitations and an example calculation are included in Attachments 1 and 2 of the permit.

C. Crab Processing

Effluent limitations for crab processing are based on the effluent guidelines for remote facilities in Alaska (40 CFR 408).

D. Fish Meal Processing

There are no effluent guidelines for fish meal processing in Alaska. EPA has promulgated guidelines for fish meal plants in the Gulf States and Atlantic Coast, and these limitations have been applied to some Alaskan plants in recent years. The guidelines are based on the use of technology to recycle the "stickwater" generated in the production of meal. Stickwater is the liquid fraction of the fish waste that is pressed from the waste prior to entering the dryer. The stickwater contains most of the pollutants (BOD, TSS, oil and grease) generated by the fish meal process. The guidelines described above are based on the use of evaporators to reduce the stickwater to "solubles," which are then recycled into the meal.

The fish meal industry has questioned the proposed application of these guidelines to meal plants in Alaska. Information submitted to EPA indicates that while recycling of some solubles results in an improved meal, recycling of all solubles will result in an elevated salt content in the meal. This will result in a lower quality meal. Since it is economically advantageous for companies to recycle solubles, most facilities are now designed to utilize fresh water in the butchering operation and dry conveyance of wastes to reduce contact with salt water. It is expected that these measures will reduce the salt content in the meal and allow for more solubles recycling. However, it is not expected that all of the solubles generated can be recycled. The Alaskan fish meal plants have consequently proposed to discharge the excess stickwater.

EPA has evaluated several options for treatment, disposal and marketing of solubles in order to establish the Best Conventional Pollutant Control Technology (BCT) for the fish meal plant. Special attention has been devoted to the stickwater waste stream, because this wastewater constitutes about 50% of the Biochemical Oxygen Demand (BOD) to be discharged from the typical facility.

Treatment of stickwater prior to discharge is not considered feasible due to sludge disposal problems and the lack of available land for the construction of stickwater storage and treatment facilities.

Landfilling of solubles is also considered a poor alternative due to the lack of available land and the expected nuisance conditions at such a landfill. ADEC discourages landfilling of seafood wastes.

Incineration of solubles, though potentially feasible, is also expected to result in significant costs. Capital expenditures, ash disposal issues, and air emissions make this alternative less attractive than barging and/or marketing of solubles.

Barging of solubles or stickwater would relocate the discharge in deeper waters having greater currents for dispersion. Barging of wastes is considered when relocation of the discharge is necessary to meet receiving water standards. In this case, however, it is expected that state water quality standards will be met with the discharge of stickwater. It is therefore determined unreasonable to require a significant capital investment for barge and handling facilities to relocate the stickwater discharge.

Marketing of solubles as a separate product appears to be infeasible at this time. Although solubles are marketed as a feed additive in the contiguous United States, the solubles from Alaskan facilities are expected to have an unacceptably high concentration (12.5%) of salt for this market. The elevated salt content in Alaskan solubles is primarily due to the fact that finfish caught by Alaskan fishing trawlers are held in refrigerated sea water. The raw product absorbs salt prior to reaching the facility, and most of this salt is concentrated in the solubles.

In conclusion, it appears that no reasonable option exists at this time for treatment and/or disposal of stickwater from Alaskan facilities. Based on the geographic, logistical, and economic considerations described above and the conclusions in the environmental assessment, EPA has determined that BCT for these facilities is the employment of in-plant processes (such as use of fresh water and/or dry conveyance to transport wastes) to reduce the salt content in the stickwater. In order to insure that the permittee pursues all feasible alternatives to reduce salt content and hence stickwater discharges, the permit includes a requirement to prepare and implement a Stickwater Recovery Plan.

The stickwater flow is limited in the permit, based on a minimum recovery of 17% of the stickwater generated by the meal plant. Although the amount of recovery obtainable with the use of salt-reduction measures is unknown, EPA's information indicates that 17% recovery can currently be maintained without degrading the product.

The limitations on the non-stickwater discharges from the meal plants are based on BPJ. They are applied to all components of the fish meal effluent except stickwater. The limitations are based on the guideline described above for discharges from meal plants in the contiguous United States (40 CFR 408.150). Since the plants are newly constructed, the new source performance standards under this guideline are applied in this case.

E. Surimi Processing

There are no EPA-promulgated guidelines for surimi processing. Based upon the technologies used to recover solids (screens, decanters), a size limit on solids of 1 mm. is included based on Best Professional Judgment.

F. Alaska State Water Quality Standards

Limitations on pH, environmental effects, receiving water accumulations and shoreline accumulations (Part I.E.1.) are based on Alaska State Water Quality Standards. Westward Seafoods has requested a zone of deposit 2 acres in size for crab wastes.

G. Storage Tank Containment

The permit requires the permittee to maintain containment berms around the fuel storage area, and requires the use of positive action valves for drainage of the area. The permit also requires daily inspection of the containment system. These are Best Management Practices (BMPs) required pursuant to 40 CFR 122.44(K). They are necessary to insure that fuel spills are contained, preventing any discharges into Captain's Bay.

H. Fish Transfer Water (Bailwater)

The permit authorizes the discharge of fish transfer water but specifies that these discharges occur through the process wastewater outfall (001). Because of the poor flushing in Captain's Bay and high volumes of fish transfer water to be discharged, this requirement is necessary to eliminate the generation of foam and floating solids associated with above-surface discharges of this kind. According to the environmental assessment, this requirement can be met without significant costs.

I. Scrubber Water and Evaporator Condensate

State water quality standards require that pH be maintained between 6.5 and 8.5 standard units. However, it is expected that evaporator condensate and scrubber water discharges will exceed this limitation (8.6 - 9.5 standard units). An assessment of this discharge (worst case pH of 9.5 used) indicates that the pH within the initial zone of dilution is expected to be within the standard of 8.5 standard units.

VI. Basis of Monitoring

A. Effluent Monitoring

Effluent monitoring is required pursuant to 40 CFR 122.44(i) and is necessary for determining compliance with permit effluent limitations and to evaluate potential water quality impacts resulting from the discharge. Monitoring frequencies are based on the Agency's determination of the minimum sampling required to adequately monitor facility performance. Monitoring results will be reported in monthly Discharge Monitoring Reports.

B. Residual Chlorine

Total Residual Chlorine monitoring of process wastewater is required in the permit. Process water is chlorinated prior to use in processing operations for disinfection purposes. Monitoring of residual chlorine in the effluent is required to assess the impacts of this pollutant in the receiving environment.

C. Dive Survey

Dive surveys are considered the only accurate means of assessing (1) the impacts of the discharge on marine biota and sediments, (2) the condition of the outfall line, and (3) compliance with particle size limitations in the permit. Rough estimates of the areal coverage of waste piles can also be obtained from dive surveys. Dive surveys have been included in order to monitor the parameters discussed above on an annual schedule. Dives are scheduled for the month of June.

D. Side Scan Sonar Monitoring

Annual monitoring of the waste pile accumulation using side scan sonar is required in the permit in order to determine compliance with the 2 acre zone of deposit. This requirement is based on the limited success of dive surveys to produce accurate estimates of the areal coverage of waste piles; side scan sonar is considered the most accurate method of monitoring this parameter. The monitoring shall be conducted in the month of June.

E. Dissolved Oxygen Monitoring

Based on concerns about possible impacts of this discharge on dissolved oxygen concentrations in Captain's Bay, semi-annual monitoring of ambient dissolved oxygen is required in the permit.

VII. Other Conditions

A. This permit shall expire five years from the effective date.

United States Environmental Protection Agency
Region 10
Park Place Building, 13th Floor
1200 Sixth Avenue, WD-134
Seattle, Washington 98101
(206) 553-1214

NOTICE OF PROPOSED ISSUANCE OF A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES, NOTICE OF FINDING OF NO SIGNIFICANT IMPACT, NOTICE OF STATE CERTIFICATION, and NOTICE OF STATE DETERMINATION OF CONSISTENCY WITH THE ALASKA COASTAL MANAGEMENT PROGRAM

Public Notice No. AK-004978-6

Public Notice Issuance Date: January 18, 1991
Public Notice Expiration Date: February 19, 1991

1. Applicant

Westward Seafoods, Inc.
1111 Third Avenue, Suite 1210
Seattle, Washington 98101

NPDES Permit No.: AK-004978-6
Facility Contact: Gregory Baker, General Manager

Westward Seafoods, Inc. plans to operate a seafood processing facility in Dutch Harbor/Unalaska, Alaska. Pollock will be processed year-round with a maximum production of 880 tons per day of raw seafood. Crab will be processed seasonally at a maximum rate of 88 raw tons per day. The company plans to operate a newly constructed surimi plant and fish meal plant as well. All seafood wastes except for crab wastes will be recovered in the meal plant. Crab wastes will be ground to 0.5 inch prior to discharge to Captain's Bay.

Captain's Bay is classified by the Alaska State Water Quality Standards as classes (2)(A)(i)(ii)(iii),(B)(i)(ii),(C), and (D) for use in aquaculture, seafood processing, and industrial water supply, contact and secondary recreation, growth and propagation of fish, shellfish, other aquatic life and wildlife, and harvesting for consumption of raw mollusks or other raw aquatic life.

A Fact Sheet is available.

2. Tentative Determination

The Region 10 Office of the Environmental Protection Agency (EPA) has tentatively determined to issue a discharge permit to the above listed applicant.

3. State Certification

This Notice will also serve as Public Notice of the intent of the State of Alaska, Department of Environmental Conservation to consider certifying that the subject discharge will comply with the applicable provisions of Sections 208(e), 301, 302, 303, 306 and 307 of the Clean Water Act. The NPDES permit will not be issued until the certification requirements of Section 401 have been met.

4. State Consistency Determination

This Notice will also serve as Public Notice of the intent of the State of Alaska, Office of Management and Budget, Division of Governmental Coordination, to review this action for consistency with the approved Alaska Coastal Management Program.

5. Public Comments

Persons wishing to comment on the tentative determinations contained in the proposed permit or wishing to request that a public hearing be held, may do so in writing, within 30 days of the date of this public notice. A request for a public hearing shall state the nature of the issues to be raised as well as the requester's name, address and telephone number. Comments must be received within this 30 day period to be considered in the formulation of final determinations regarding the application. All comments should include the name, address and telephone number of the commenter and a concise statement of the exact basis of any comment and the relevant facts upon which it is based. All written comments and requests should be submitted to EPA at the above address to the attention of the Director, Water Division.

Persons wishing to comment on State Certification should submit written comments within this 30 day period to the State of Alaska, Southcentral Regional Office, Alaska Department of Environmental Conservation (ADEC), 3601 'C' Street, Suite 1334, Anchorage, Alaska 99503.

Persons wishing to comment on the State Determination of Consistency with the Alaska Coastal Management Program should submit written comments within this 30 day period, to the State of Alaska, Southcentral Regional Office, Office of Management and Budget, Division of Governmental Coordination, 3601 'C' Street, Suite 370, Anchorage, Alaska 99503. Comments should be addressed to the attention of Alaska Coastal Management Program Consistency Review.

6. Administrative Record

The proposed NPDES permit and other related documents are on file and may be inspected at the above address any time between 8:30 a.m. and 4:00 p.m., Monday through Friday. Copies and other information may be requested by writing to the EPA at the above address to the attention of the Water Permits Section, or by calling (206) 553-1214. This material is also available from the EPA Alaska Operations Office, Room 537, Federal Bldg., 222 W. 7th Avenue, #19, Anchorage, Alaska 99513.