



# United States Department of the Interior

OFFICE OF THE SECRETARY  
WASHINGTON, D.C. 20240  
June 11, 1993

Honorable G. Edward Dickey  
Acting Assistant Secretary (Civil Works)  
Department of the Army  
Washington, D.C. 20310

Dear Dr. Dickey:

In accordance with provisions of the Clean Water Act section 404(q) Memorandum of Agreement (MOA) between the Department of Interior and the Department of the Army, as revised on December 21, 1992, I am requesting your review of the Corps of Engineers, Alaska District (District) decision to issue the modified section 404 permit described in Public Notice No. N-790232. This permit would authorize the applicant, the City of Valdez, to allow Petro Star Valdez Refinery, Inc. (Petro Star), to install a petroleum pipeline from a recently constructed tank farm to the Valdez Container Terminal (VCT), and construct a barge-loading facility on the southeast corner of the dock. Petro Star plans to load one barge every 12 days, with a barge capacity of 74,000 bbls (3,108,000 gallons). The proposed project would expose the adjacent Valdez Duck Flats, an important estuary and saltmarsh supporting abundant fish and wildlife, to chronic petroleum spills, and increase the potential for major impacts due to large spills.

On May 11, 1993, the District Engineer notified the U.S. Fish and Wildlife Service (Service) of his intent to proceed with permit issuance. After a thorough review of the background information on the project, I have determined that this case warrants elevation in accordance with the criteria found in Part IV (Elevation of Individual Permit Decisions) of the revised section 404(q) MOA. The Department of the Interior, acting through the Service, is vested with the authority and obligation to protect, conserve and enhance the Nation's fish and wildlife resources. These matters fall within our jurisdiction under the Fish and Wildlife Coordination Act, section 404(m) of the Clean Water Act, the Fish and Wildlife Act of 1956, and the Migratory Bird Treaty Act, as amended to implement international treaties regarding the conservation of migratory bird populations.

I am concerned that the District Engineer's proposed permit decision will result in substantial and unacceptable adverse impacts to the fish and

portion of Port Valdez, the Duck Flats form the largest saltmarsh complex in Port Valdez and one of the largest marshes in Prince William Sound. Duck Flats habitats, and the migratory birds, anadromous fish, and marine mammals they support, are clearly aquatic resources of national importance. The Duck Flats support the greatest diversity and abundance of wildlife in Port Valdez, including 85 species of fish, migratory birds, and marine mammals. These include five species of Pacific salmon, bald eagles, trumpeter swans, Canada geese, diving and dabbling ducks, shorebirds, terns, kittiwakes, sea otters, and harbor seals.

In 1980, to avoid the pollution and habitat degradation typically associated with marine terminals, the District conditioned their permit to construct the VCT to prohibit the transfer of fuel except as containerized cargo. At that time, all of the resource agencies had concluded that they would object to the proposed VCT if the permit failed to include this condition, due to the close proximity of the Duck Flats. In spite of these past concerns, and over the objections of the same agencies, the District authorized modification of the permit to delete this condition in January of this year. The modification now proposed would further reduce protection for the Duck Flats by greatly expanding petroleum handling operations.

My concerns regarding the likelihood of petroleum spills are more than theoretical, since statistics show that spills of petroleum hydrocarbons (PHC's) at the VCT will occur regardless of the precautions taken and the technology employed. In fact, chronic spillage of PHC's is a common occurrence at marine terminals in the United States. Furthermore, even though petroleum handling was prohibited prior to the January modification of the permit, two spills were reported from refueling operations at the VCT during the preceding year.

In addition to chronic spills, a major spill at the VCT would result in immediate and long-term impacts to fish and wildlife resources. Results of a "worst case" spill scenario (i.e., loss of a 74,000-barrel barge loaded with marine diesel 1, as indicated by application of the Department's "Type A" Resource Damage Assessment Model) show that PHC's would persist in the aquatic environment for up to 17 years. Projected losses would include an immediate kill of about 500 waterfowl, 1,000 seabirds, and 4,000 shorebirds with additional long-term effects on waterbirds, and anadromous and marine fish populations.

Spill prevention measures that would become part of the issued permit, such as pipe segmentation, leak detection equipment, and double-wall pipeline can reduce the risk of spills, but spills likely to have adverse impacts on the Duck Flats will, nevertheless, occur over the life of the project. In addition, spill containment is not expected to be effective, since containment booms do not prevent loss due to splashing over or escaping under the boom. The probability of such losses increases on an incoming tide, with short-period waves, increasing current velocities, and increasing thickness of oil against the boom. Moreover, containment booms will not prevent dispersal of readily soluble lighter fractions, such as

marine diesel and jet-A, which are the products proposed for handling at this facility.

The District Engineer's estimate that 90 percent of a spill involving refined petroleum would be recovered from the waters around the VCT using state-of-the-art equipment ignores the fact that recovery of a significant portion of refined petroleum products such as marine diesel and jet-A by mechanical means is problematic with the equipment currently available. Mechanical recovery systems such as skimmers, pumps, and absorbent booms are principally designed for recovery of crude and other heavy oils, and are ineffective on refined products. Consequently, even under ideal conditions, with equipment available, trained personnel nearby, and good weather, recovery of more than 30 percent of PHC's from a major spill should not be expected, and 10 percent is a more realistic estimate.

Since containment and recovery would not be effective in preventing spilled, refined PHC's from entering the Duck Flats, the only effective mitigation measure would be to locate the loading facility at an alternative site. Practicable alternatives are available at the existing Tesoro Dock, Valdez City Dock, or the Alyeska Marine Terminal. These alternatives would allow considerably more time for spilled PHC's to evaporate or be diluted before entering the Duck Flats, and spills at any of these sites would have a lower probability of entering the Duck Flats than a spill originating at the VCT.

I am aware that the District Engineer has reviewed several of these alternatives and determined that they are not practicable. However, I am concerned that the District may have relied too heavily on an analysis by the applicant's consultant, rather than conduct its own thorough and objective analysis of the alternatives. Based on this information, the District Engineer rejected use of the Tesoro Dock, in part because this alternative would require trucking large volumes of petroleum through the City of Valdez, which might present a traffic hazard. Yet there was no analysis for transporting petroleum to the dock via pipeline. Moreover, the decision document contained no analysis of using the Valdez City Dock for loading, despite the fact that it has been used for dispensing fuel in the past. Lastly, even though Alyeska Marine Terminal owners indicated a willingness to consider use of one of their berths for loading petroleum, the District rejected the Alyeska alternative as not practicable because the proposal would be subject to further analysis and regulatory review.

In conclusion, I believe that permit issuance with the proposed modification will have substantial and unacceptable adverse impacts on aquatic resources of national importance, that the proposed mitigation measures will not be sufficient to prevent shoreline exposure to spilled PHC's, and that there are practicable alternatives which would have less adverse impacts on the aquatic ecosystem. I recommend that the District Engineer deny the request for a permit to construct a pipeline and petroleum loading facility at the VCT, and that the facility be sited at one of several available alternative locations.

Honorable G. Edward Dickey

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Enclosed is additional information addressing these and other issues relating to the proposed permit decision. I request your review of the District Engineer's decision to issue a permit to the City of Valdez based on information used and procedures followed in reaching that decision.

Sincerely,

/s/ Don Barry

**Acting** Assistant Secretary for Fish  
and Wildlife and Parks

Enclosure

ASSISTANT SECRETARY FOR FISH AND WILDLIFE AND PARKS  
EVALUATION AND REQUEST FOR REVIEW

PORT VALDEZ PROJECT

PROJECT DESCRIPTION

The City of Valdez (City) has applied for a modification of a Department of the Army permit to allow installation of a pipeline to carry refined petroleum products from the Petro Star Valdez Refinery, Inc. (Petro Star) tank farm, along the City's existing causeway, to the Valdez Container Terminal (VCT). The project would also include construction of a barge-loading facility on the southeast corner of the VCT causeway. The 4,000-foot long, 10-inch diameter pipeline would be buried in a trench from the tank farm on Mineral Creek Loop Road to the causeway approach, where it would be elevated out to the terminal. Petro Star plans to load a barge with 74,000 barrels of refined petroleum products every 12 days. The proposed permit modification would not preclude Petro Star from loading larger vessels, loading more frequently, or loading other products. The project applicant proposes to mitigate impacts to the aquatic environment by using state-of-the-art leak detection systems, double-walled pipe for above-ground sections, and booming around vessels during loading.

AQUATIC RESOURCES OF NATIONAL IMPORTANCE

Habitats

The proposed project is located adjacent to a salt marsh known as the Valdez Duck Flats, in the northeastern portion of Port Valdez. Salt marshes are relatively rare in Alaska. Although Alaska has approximately 40 percent of the Nation's coastline, the state has only seven percent of the Nation's salt marshes (J. Hall, USFWS, Anchorage, AK, pers. comm., 1992). The Duck Flats form the largest salt marsh in Port Valdez, and the third largest in Prince William Sound (J. Hall 1992). Alaskan salt marshes are particularly valuable to wildlife, because these wetlands are among the first suitable waterfowl habitat to become ice-free in spring.

The Valdez Duck Flats are a complex of intertidal mud flats and salt marsh covering approximately 1000 acres. Approximately 525 acres are classified as intertidal mud flats, which form a regularly flooded outer zone, and are vegetated in some areas with marine algae such as *Fucus distichus* and *Enteromorpha* sp. Another 270 acres are also regularly flooded by the tides, but this slightly higher zone is characterized by a mix of mud flats and areas dominated by herbaceous vegetation. The vegetation includes *Carex lyngbyei*, *Triglochin maritimum*, *Puccinellia nutkaensis*, *Cochlearia officinalis*, and *Spergularia canadensis*.

Inland of the regularly flooded zones, higher salt marsh areas occur that are flooded by the tides less often than daily. Approximately 175 acres consist of dense herbaceous marsh dominated by *Carex lyngbyei* mixed with other species such as *Potentilla anserina*, *Elymus arenarius*, and *Lathyrus japonicus*. The transition zone, which occurs as a narrow fringe along the

landward edge of the marsh complex, is dominated by low shrubs (*Myrica gale* and *Salix* spp.), and covers approximately 30 acres.

Seven freshwater streams flow into the mud flats. The channel immediately west of the VCT carries the greatest volume of water between the Duck Flats and the open waters of Port Valdez in the vicinity of the VCT (Arctic Slope Consulting Group Inc. 1992a, J. Isaacs, Jon Isaacs and Associates, Anchorage, AK, pers. comm., 1992). Since the early 1970's, the site has been regarded by Federal and State resource agencies and the scientific community as the most productive ecosystem in Port Valdez (Lees et al. 1979, EPA 1980, Dall et al. 1981, Isaacs 1991).

### Fishery Resources

The area provides spawning and rearing habitat for Dolly Varden, coho salmon, sockeye salmon, chum salmon, and pink salmon (EPA 1980, ADF&G 1985, Isaacs 1991, ADF&G 1993). In 1977, some 31,000 adult pink salmon and 1,400 adult chum salmon returned to streams entering the Duck Flats to spawn (EPA 1980). An estimated 7.6 million pink fry and 600,000 chum fry were produced by these streams in 1978 (ADF&G 1993). Sixty-two percent of the native pink salmon fry and 46 percent of the native chum salmon fry are produced from streams entering or adjacent to the Duck Flats. Siwash Creek on the eastern half of the Duck Flats, is the most important pink salmon producer in Port Valdez (Morsell 1979, Isaacs 1991). Between 1971 and 1978, twice the number of adult pink salmon returned to Siwash Creek (173,000) than to the nearby Lowe River system (87,000). Duck Flats streams provide about 12 percent of the pink salmon taken in the Valdez Arm commercial fishery during odd-year runs. In 1973 and 1975, Siwash Creek had the largest escapement of any stream in the eastern management district of Port Valdez. The Duck Flats also contribute about one percent of the chum salmon to this fishery.

Upon release from the Solomon Gulch fish hatchery across the bay from the Duck Flats, millions of juvenile pink, chum, and coho salmon are carried toward the Duck Flats by counter-clockwise currents in Port Valdez. Annually, 200 million fry are released from the hatchery, although the precise number of juveniles that utilize the Flats as a nursery is unknown (R. Pellissier, Manager, Solomon Gulch Fish Hatchery, pers. comm.). Studies indicate the fry tend to be found in greater numbers near the VCT and Duck Flats than other mud flats in the area (Morsell 1979). During spring, millions of out-migrating salmon fry from Siwash Creek, Sewage Lagoon Creek and the Loop Road Creek System forage on insect larvae over the mud flats (EPA 1980). Out-migrating pink, chum, coho, and sockeye salmon fry also feed on benthic and planktonic crustaceans in the Duck Flats' subtidal waters. The combined juvenile salmon production from streams in the Duck Flats, Dayville Flats and Lowe River Delta (eastern Port Valdez) has been estimated at 11.5 million pink, nearly 1 million chum, and 2.5 million coho salmon for 1978 (ADF&G 1993).

### Migratory Birds

The Duck Flats provide feeding, nesting, molting, and staging habitat for marine birds (52 species, including seaducks), other waterfowl (8 species), shorebirds (18 species), passerines (23 species), and raptors (3 species). In spring, migrating waterfowl and shorebirds rest and feed on the mud flats and surrounding marsh. The salt marsh at the Duck Flats is the primary staging and feeding area for Canada Geese in eastern Port Valdez (Hemming 1979, EPA 1980). Other migrating waterfowl include black brant, northern pintail, gadwall, American wigeon, green-winged teal, northern shoveler, mallard, canvasback, and greater scaup. Occasional use of the Duck Flats by tundra and trumpeter swans and white-fronted geese is also likely during their migration. At least 16 species of shorebirds use the Duck Flats during migration, including Hudsonian godwits, once thought to be extirpated from Alaska (Gabrielson and Lincoln 1959). Sharp-shinned hawks and American peregrine falcons visit the area to feed on ducks and shorebirds.

Northern pintail, American wigeon, and green-winged teal raise broods on the Duck Flats, while mallard are the dominant waterfowl species nesting in and near the site (Sangster 1978, EPA 1980, Hogan *et al.* 1980). Nine species of shorebirds probably breed at the Duck Flats, at least occasionally (EPA 1980, M. North, USFWS, Anchorage, AK, pers. comm. 1992). Arctic terns nest on the outer islands immediately west of the VCT, and a black-legged kittiwake colony is found on the south side of Dock Point (Sowls *et al.* 1978, Isaacs 1991). Bald eagles nest on an island in the Duck Flats, as well as near the tank farm and refinery (North 1993). In addition, twenty-three species of passerines utilize the project area.

The Duck Flats support the northernmost resident wintering population of Canada geese in North America, and one of the seven highest documented winter concentrations of gadwalls in Alaska (North 1993). Areas offshore of the VCT, Old Valdez, and Solomon Gulch are considered the best available habitat for wintering diving ducks in eastern Port Valdez. Eleven species of diving ducks utilize these areas, with goldeneye and bufflehead being the most abundant (Hemming 1979, EPA 1980, Isaacs 1991, North 1993). Of the shorebirds, rock sandpiper winter in Port Valdez and black oystercatcher are permanent residents.

### Marine Mammals

Harbor seals and sea otters use the Duck Flats and their barrier islands extensively (Dall *et al.* 1981). Service biologists noted large numbers of sea otters near the VCT during surveys and site visits in February and March 1993. Sea otters were also observed in the area from Dayville Flats to the Alyeska Marine Terminal (North 1993). Sea otters were observed feeding immediately adjacent to the VCT and the site of the proposed loading arm on the floating dock. Typically, they forage in the lower intertidal areas for mussels and clams.

## SUBSTANTIAL AND UNACCEPTABLE IMPACTS

### General Concerns

Approval of the proposed modification would result in petroleum spills having substantial and unacceptable adverse impacts on nationally important fish and wildlife resources within the Duck Flats and eastern Port Valdez. Chronic petroleum spills are a virtual certainty at marine terminals. Such spills are a routine occurrence at marine terminals in the U.S. due to actions such as overfilling of tanks, disconnecting hoses without adequate drainage, line and hose failure, and storage tank ruptures (National Research Council 1985). Expected impacts to fish and wildlife resources utilizing shallow waters of the Duck Flats would be both immediate and long-term. Petroleum hydrocarbon (PHC) spills would result in immediate mortalities of aquatic invertebrates such as barnacles, crabs, mussels and other bivalves, and echinoderms (sea stars and sea urchins); nearly all shore life would be seriously affected (Carthy *et al.* 1968). Mussels and other bivalves also accumulate PHC's; thus, harlequin ducks, sea otters, and other species that feed on bivalves would be exposed to these contaminants for several years. Loss of vegetation would disrupt important stages of fish and wildlife development, and impair their continued use of this habitat.

Not only does chronic pollution from long-term release of low concentrations of refined PHC's typically occur in association with petroleum related activities, but estuaries like the Duck Flats are particularly susceptible to degradation from such discharges. Studies of the chronic effects of refinery effluent on a salt marsh show considerable damage to marsh biota from repeated light oiling of the vegetation, which caused the eventual loss of marsh grass cover and resulted in the creation of largely bare mud flats (Baker, 1970, 1971). Other investigations on the effects of chronic oiling within the Ekofisk oil field in the North Sea (Dicks 1975, Addy *et al.* 1978) found that the abundance and diversity of species of benthic fauna decreased as hydrocarbon contamination of sediments increased.

Refined petroleum products such as those proposed for loading at the VCT are highly toxic to fish. A spill near the Duck Flats could kill millions of native and hatchery-reared salmon that use the Duck Flats as a nursery during their out-migration, and expose all life stages of anadromous fish to the effects of chronic exposure to refined PHC's. Such spills would kill salmon eggs, and lessen growth and survival rates of salmon and Dolly Varden. Impacts to salmon stocks could in turn adversely affect sport and commercial fisheries throughout Port Valdez and eastern Prince William Sound.

The protective plumage of shorebirds and waterfowl absorbs petroleum products, impairing insulation and resulting in hypothermia (Williams *et al.* 1978). Furthermore, when birds preen, they are poisoned by oil (Carthy *et al.* 1968). In 1989 and 1990, about 40 percent of the harlequin ducks



sampled in areas oiled by the Exxon Valdez spill had tissues contaminated with PHC's, and 33 percent had poor body condition and reduced body fat (University of Alaska 1992). Seabirds exposed to oil suffer a variety of problems, including aspiration pneumonia, starvation, cloacal impaction, oil toxicity, dehydration, impairment of liver and kidney functions, enteritis, and an increase in parasite numbers because of stress created by exposure to oil (Williams et al. 1978). Such conditions often lead to death.

Sea otters are especially vulnerable to the direct and indirect effects of oil spills, since they also feed on invertebrates and mussels. It is estimated that 3,500 to 5,000 sea otters died from acute exposure to oil during the Exxon Valdez spill (University of Alaska 1992, Bayha et al. 1990).

#### Potential Impacts of a Large Spill from the VCT

The Fish and Wildlife Service (Service) ran a Department of the Interior Comprehensive Environmental Response Compensation and Liability Act "Type A" damage assessment model for eastern Port Valdez coastal and marine environments. This was done to determine potential damages and injuries to fish and wildlife resources from spills of products proposed to be loaded at the VCT. We also considered spills of different sizes (pipeline vs. barge loss) in applying this model. The "Type A" model is a general approach to assessing natural resource damages, and relies on published scientific literature. Consequently, in areas of high resource value requiring site-specific data, the results tend to understate the degree of injury and damages.

Potential injuries to fish and wildlife resources were computed in the model by evaluating: (1) direct, lethal effects on larvae, juveniles, and adult fish and shellfish, waterfowl, shorebirds, seabirds, harbor seals and lower trophic biota; (2) indirect and long-term effects on fish and shellfish, and losses of birds as a result of lost broods; and (3) direct effects resulting from impacts to lower trophic organisms.

The results of our "worst case" scenario, assuming a total loss of 74,000 bbls of marine diesel 1 from a barge accident (the planning standard required by the U.S. Coast Guard), included:

- immediate and long-term kills of approximately 4,000 shorebirds, 1,000 seabirds, and 500 waterfowl;
- long-term impacts in the form of chronic weight loss affecting about 10,000 shorebirds, and resulting in an increased susceptibility to disease and predation and decreased breeding success and survival;
- petroleum persistence in the environment for 9 years; and

- impacts on anadromous fish for 4 years, with plankton feeders (herring) and demersal species (halibut) affected for 17 years.

In addition, modelling for a much smaller spill (532 bbls) resulting from a loss of petroleum from the pipeline between the tank farm and the VCT indicated that would persist in the environment for seven years.

As stated above, the model tends to understate the degree of injury and damage to fish and wildlife resources. The model was not designed to account for long-term injuries to waterfowl in the Duck Flats, although nesting areas would be subject to the same adverse effects experienced by shorebirds. There is also one important caveat: The worst case scenario assumes no increase in the amount, type, or frequency of fuel loaded at the VCT. The proposed permit modification includes no restrictions to prevent such increased use.

#### ADEQUACY OF PROPOSED MITIGATION

The District has concluded that the potential for catastrophic and chronic spills is minimal due to mitigation measures proposed by the applicant, which include "state-of-the-art" techniques for prevention, containment, and recovery of spilled petroleum. The District further states "[i]n the event a spill does occur, the risk of a spill of major concern is practically nil." Available data do not support this conclusion. Our review of the proposed mitigation and oil spill response literature, coupled with information provided by the Coast Guard and other federal and state experts, have led us to conclude that prevention is far from absolute, and currently utilized containment and recovery methods are generally ineffective on spills of refined petroleum products. The close proximity of the Duck Flats increases the probability that this sensitive area will be exposed to any spill reaching the water from the VCT.

Although measures can be implemented to reduce the probability and impacts of chronic and catastrophic spills, prevention is difficult, if not impossible to achieve. Chronic petroleum spills are a common problem at marine facilities throughout the United States in spite of the mitigation measures taken, training, and use of state-of-the-art equipment. Although the total quantity of petroleum products spilled annually has decreased from 24.6 million gallons in 1988 to 5.9 million gallons in 1992, the number of smaller spills less than 10,000 gallons has increased since 1983 (Cutter Info. Corp. 1992b). Moreover, pipeline failure is one of the most common causes of oil spills in the U.S. (Cutter Info. Corp. 1992b). Evidence of the potential for such spills is found in the leak detection system proposed by Petro Star to mitigate the adverse impacts of a potential pipeline spill. In the event of a problem, an immediate response by Petro Star employees is expected to activate a remote control switch designed to shut off the product flow within 15 to 60 seconds. However, even after a minimum delay of 15 seconds, a 700-gallon discharge would result, while a 2800-gallon discharge would occur after 60 seconds.

We also disagree with the District Engineer's statement that many technical improvements for handling petroleum products have been made since issuance of the original permit in 1980. Oil spill containment and recovery have only marginally improved over the past two decades, and mechanical spill response technologies such as booms and recovery devices are not capable of effectively containing or retrieving lighter refined petroleum products (Office of Technology Assessment 1990). Furthermore, a higher fraction of the spilled refined product will dissolve in the water column where it cannot be retrieved.

Proposed mitigation to contain spills includes booming of vessels, and restrictions on loading during extreme weather conditions. However, the new technology does not prevent spilled products from splashing over or escaping under the boom. Booming does not protect coastal areas except under ideal weather conditions. Snow, fog, heavy rain, and low temperatures all limit deployment and operation of equipment (Office of Technology Assessment 1990), and the probability of loss increases on an incoming tide. Compounding these potential problems is the fact that prevailing winds are onshore nearly continuously during the summer season, when fish and wildlife are in greatest abundance.

In addition, as short-period wind-waves build to 2 to 3 feet or greater, most booms suffer significant losses due to entrainment and/or splash-over (Allen 1988, Office of Technology Assessment 1990, Britton 1993). As an oil slick increases in thickness against the boom, the oil extends deeper into the water. Only 10 percent rises above the waterline. With increasing current velocities (tidal influx) more oil is driven against the barrier and escapes underneath (Allen 1988, Britton 1993). Containment booms will not prevent dispersal of petroleum products into the aquatic environment, because lighter fractions such as marine diesel and jet-A are readily soluble. Therefore, chronic and cumulative impacts would not be avoided through containment.

The District's estimate that 90 percent of a spill involving refined petroleum would be recovered from the Duck Flats using state-of-the-art equipment ignores the fact that high recovery of refined petroleum products such as marine diesel and jet-A by mechanical means is unlikely with currently available equipment. Mechanical recovery through use of skimmers, pumps, and absorbent booms is designed for crude and other heavy oils, and is ineffective for refined products (Cutter Info. Corp. 1992a, National Research Council 1985). Consequently, even with optimum conditions, where equipment and trained personnel are nearby and there is good weather, it is unlikely that more than 30 percent of the oil from a major spill would be recovered. Ten percent is a more realistic estimate (National Research Council 1985, Cutter Info. Corp. 1992a).

In their oil spill contingency plan, the applicant documented their inability to rapidly and effectively respond to a spill at the VCT or tank farm. Although VRCA Environmental, a professional spill response team, would be contracted to Petro Star to respond to a major spill, they do not

plan to be on scene with sufficient equipment and personnel for at least 8-10 hours (Arctic Slope Consulting Group Inc. 1992b, L. Johnson, VRCA Environmental Services, pers. comm., 1992). It is also important to note that, after a recent courtesy review of the applicant's oil spill contingency plan, the Coast Guard found the plan to be deficient (Cmdr. G. Jones, Marine Safety Office, Valdez, pers. comm., 1993).

Of immediate concern to the Service is the close proximity of the Duck Flats to the proposed barge loading and pipeline facility. During summer when fish and wildlife are abundant in the area, tidal exchange and prevailing surface winds could transport a spill from the VCT into the adjacent Duck Flats in 15 minutes. A spill reaching the Flats would contaminate salt marsh vegetation, while tidal flushing would re-oil additional wildlife and habitat and promote accumulation of petroleum in the environment (tidal flushing does not prevent accumulation). Under a worst case scenario, 81 percent of a spill could still be present in the water column five days after an accident (National Oceanic and Atmospheric Administration 1993).

Under the scenarios evaluated, the District Engineer found that fish and wildlife resources will be at risk only six percent of the time. However, the permit does not limit the frequency of loading or size of vessels to which fuel can be transferred, and it is expected that Petro Star will significantly increase barge loading operations at the VCT as they continue to expand their markets. A potential new market is the refueling of cruise ships (Arctic Slope Consulting Group Inc. 1991).

At best, proposed mitigation measures would only provide minimal protection for fish and wildlife resources in the short term, and they would not protect the Duck Flats from chronic and cumulative effects of spills occurring over the life of the project. Thus, the only effective measure would be to locate the transfer facility in a less environmentally sensitive area, away from the Duck Flats.

#### ALTERNATIVES TO THE PROPOSED PROJECT

The Service maintains there are less damaging offsite alternatives to using the Terminal for transferring refined petroleum products. According to the District's decision document, no other existing city-owned facility meets codes for an activity of this nature. However, as stated in section 230.10(a)(2) of the Clean Water Act 404(b)(1) Guidelines, alternatives need not be owned by the project sponsor, and it is our opinion that practicable alternatives under other ownership are available.

As previously described, the primary environmental impact would occur from oil spills associated with the proposed project, and measures for effective containment and recovery of any spilled fuels to avoid environmental degradation do not currently exist. Consequently, the availability of alternative project locations is of primary concern to the Service. Based on our review of Petro Star's alternatives analysis, spills at alternative

project sites in Port Valdez would affect much smaller proportions of the area's waterbirds, fish, and marine mammals. Moreover, an alternative location would significantly reduce the potential of a concentrated spill reaching the Duck Flats.

The District appears to have adopted the applicant's alternatives analyses (Arctic Slope Consulting Group Inc 1992a,c) without critical evaluation, and full consideration of available alternatives in light of their potential impacts to biological resources. Our review of this information indicates that there are three less environmentally damaging alternatives to the proposed project:

- **Alyeska Marine Terminal.** Already in use for transfer of crude oil to tankers, this alternative site is located in the vicinity of less sensitive habitats than the VCT. The consolidation of facilities that would occur on this site would also allow improved oil spill response and containment. The only restriction would be that its use would necessitate that Petro Star petition the Commissioner of the Alaska Department of Natural Resources to amend Alyeska's lease agreement. The Coast Guard strongly supports this alternative (Cmdr. W. Hutmucker, Marine Safety Office, Valdez, pers. comm., 1993) and the Terminal owners have indicated their willingness to consider the use of one of their berths for petroleum loading.
- **Tesoro Fuel Dock.** This wood dock is currently being used by Petro Star for loading 74,000 bbl capacity barges. It was rejected by the District because over the long term, Tesoro and Petro Star would be competitors, and because of potential adverse impacts to the City of Valdez and the Duck Flats from an accident involving a truck carrying the fuel to this dock. Construction of a pipeline from the tank farm to the dock could eliminate potential truck accidents. The Coast Guard also supports this alternative.
- **Valdez City Dock.** This wood dock is currently being used by Petro Star for loading petroleum products to meet a Department of Defense contract. Addition of a cement overlay and/or fire suppression system would alleviate District concerns regarding fire hazards.

#### ADEQUACY OF THE ENVIRONMENTAL REVIEW PROCESS

The Service is concerned that the environmental review process for the Petro Star complex has occurred in piecemeal fashion in a situation where the Corps of Engineers clearly has sufficient control and responsibility to warrant a more comprehensive review thereof.

The proposed petroleum transfer facility at the VCT is one component of a larger project also involving a refinery, tank farm, and interconnecting pipelines originally presented to the District and other resource agencies in 1991. Although the consulting agencies stated at that time they felt the larger project warranted full National Environmental Policy Act review

and a Environmental Impact Statement, the applicant proceeded to divide the project into components which the District subsequently determined could "stand alone". The refinery was constructed in 1992, and authorized in part through Nationwide Permit 26. The tank farm, also completed in 1992, did not require Corps of Engineers authorization. However, the proposed pipeline joining these two facilities will ultimately require such authorization.

The permit now proposed for modification was first issued to the City of Valdez in January 1980, and authorized construction of the causeway and terminal on 21 acres of fill. However, in recognition of the high resource values of the Duck Flats, and to avoid the pollution and habitat degradation typically associated with marine terminals, the District conditioned their permit (special condition "f") to construct the VCT to prohibit the transfer of fuel except as containerized cargo. Nevertheless, in January of this year, and concurrent with their review of the Petro Star proposal, the District authorized modification of the City's permit to delete this condition. This modification was in effect an after-the-fact authorization, since the City had been utilizing tanker trucks to refuel vessels at the VCT, in violation of special condition "f", for a number of years. In fact, two spills have occurred at the VCT during the past year.

The Service believes that the environmental review and permitting process described above has resulted in an inappropriately limited analysis of environmental impacts and alternatives to the proposed project. We are particularly concerned with the manner in which the permit for the VCT has been modified over the last year, given the fact that the original permit authorized fill in a high value area only on the condition that petroleum transfer activities would not occur.

#### CONCLUSIONS AND RECOMMENDATIONS

Permit issuance will result in petroleum spills having substantial and unacceptable adverse impacts on aquatic resources of national importance within the Valdez Duck Flats. Spills of petroleum hydrocarbons at the VCT will occur, and proposed mitigation measures will not be effective in preventing, containing, or recovering spills of refined petroleum products. Since truly effective measures are not available, avoidance becomes the only appropriate mitigation measure. Therefore, the Service recommends evaluation and selection of alternatives further removed from the high resource values of the Duck Flats. Selection of one of these alternatives would also provide for consolidation of similar industrial activities. Alternative sites would include, in order of preference, existing transfer facilities at the Tesoro dock, Valdez city dock, or the Alyeska Marine Terminal.

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