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Report to the Chairman, Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, House of Representatives

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WATER POLLUTION

EPA Controls Over Ballast Water at Trans-Alaska Pipeline Marine Terminal

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General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

B-221467

June 18, 1987

The Honorable John D. Dingell
Chairman, Subcommittee on Oversight
and Investigations
Committee on Energy and Commerce
House of Representatives

Dear Mr. Chairman:

As requested by your letter of July 29, 1985, and as subsequently agreed to with your office, we obtained certain information on the Environmental Protection Agency's (EPA) controls over pollutants discharged into Valdez Bay by the Alyeska Pipeline Service Company (Alyeska) at its oil pipeline terminal at Valdez, Alaska. Alyeska operates a water treatment plant at the terminal to treat ballast water, oily sea water that is carried in oil tankers to provide stability, before it is discharged into the bay. The Clean Water Act requires plants like Alyeska's to have permits regulating the types and amounts of pollutants that can be discharged.

On October 22, 1986, we briefed your office on the information we obtained. As agreed, this report contains the information discussed at that briefing, information requested at the briefing by your office, and information on events that have occurred since that meeting. Specifically, we obtained information on (1) why EPA has not issued a new water discharge permit with updated pollution controls for Alyeska's ballast water treatment (BWT) plant and (2) whether EPA has effectively monitored and enforced the conditions of Alyeska's existing permit.

In summary, we found that EPA did not issue the new permit on time in 1983 because of higher priority work, staffing limitations, and the absence of funds to hire technical expertise. In 1985, however, EPA began devoting more resources to developing a new permit and expects to issue a draft permit for public comment during the summer of 1987. In the meantime, Alyeska has operated under an extension of its old permit whose conditions may be less stringent than the new permit will require. We also found that, prior to 1984, EPA monitored Alyeska's permit and identified instances of noncompliance with permit conditions, but its enforcement actions were limited to discussions and correspondence with Alyeska. In contrast, since 1984 EPA has begun taking enforcement actions as well as investigating allegations of other environmental problems. Although, in our opinion, it should have acted

sooner, EPA's actions since 1984 indicate that it is taking steps to resolve the environmental concerns raised about the Alyeska facility.

Background

To ensure that polluted wastewater is treated before it is discharged into the nation's waterways, the Congress enacted the Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1251, et seq.), known as the Clean Water Act. The act requires every facility discharging wastewater to obtain a permit, either from the state or from EPA, that limits the amounts and types of pollutants the facility may discharge. Permits can be issued for up to 5 years. Permit conditions and limits are set by the "permitting authority." EPA's Region X, in Seattle, Washington, is the authority responsible for issuing and enforcing Alyeska's permit.

The permitting authority also monitors the permittees to determine whether they are complying with their permit requirements. Permittees are required to analyze their wastewater discharges and report monthly to the permitting authority on the amount and type of discharges. The permitting authorities also inspect all major permittees at least once a year to determine the accuracy of the permittees' reports and to ensure that the facility is in compliance with its permit requirements. When a facility violates its permit, the permitting authority decides what enforcement action, if any, it should take by evaluating the data to determine the severity of the violation, the compliance history of the permittee, and relevant facts and legal provisions involved.

EPA's Resource Limitations Delay New Permit

As of April 21, 1987, EPA was almost 4 years late in completing action on Alyeska's application for a new permit. In the interim, Alyeska's 1980 permit was extended by EPA and still serves as the plant's discharge permit. EPA limited Alyeska's 1980 permit to a 3-year period because it planned to reissue the permit in time to meet the Clean Water Act's 1983 deadline for imposing pollutant limits based on more advanced treatment technologies. The new limits were expected to be more stringent than the 1980 limits. In order to reissue the permit, EPA needed various technological, economic, and water quality data to set permit conditions and limitations on the types and amounts of pollutants that could be discharged into Valdez Bay. EPA also needed a permit writer with the technical qualifications to analyze these data and develop the permit.

As required by its 1980 permit, Alyeska provided studies related to such data to EPA and the Alaska Department of Environmental Conservation

(ADEC) in 1982. However, EPA and ADEC were not satisfied that the data contained in these studies would enable them to set proper pollutant limits. Because of staffing problems and higher priorities, EPA officials told us they did not have a permit writer with the qualifications to follow up on the needed studies at the time, nor funds to hire an expert to help develop a specific permit for the Alyeska facility.

In 1985 EPA began devoting more resources to developing a new permit. EPA assigned a permit writer at that time, and since then data have been collected on technologies available for treating ballast water pollutants, costs and benefits of such technologies (including capital and operating costs), and the water quality in Valdez Bay. EPA is currently assessing the data developed from these studies and plans to issue a draft permit for the Alyeska facility in the summer of 1987. EPA anticipates that this permit may contain more stringent limits for pollutants now regulated by the permit and may set limits on additional pollutants not currently regulated by the permit.

EPA Has Begun to Actively Enforce Permit Conditions

Since the August 1977 inception of BWT operations by Alyeska through the end of calendar year 1983, EPA has monitored the BWT plant operations by reviewing Alyeska's discharge monitoring reports and conducting annual inspections. From its monitoring, EPA identified a number of instances of noncompliance with permit limits, as well as late submittal of several discharge monitoring reports. While some of these instances of noncompliance were considered by EPA to be minor, others, such as some of the BTX violations,[1] were considered to be significant.

In response to these instances of noncompliance, EPA obtained information on the facts and circumstances surrounding the noncompliance through discussions and correspondence with Alyeska. EPA took no formal enforcement action requiring Alyeska to achieve compliance during this period. EPA officials told us they did not take formal enforcement action because (1) not all of the violations warranted an enforcement action, (2) the region's limited resources were allocated to other priority areas, and (3) the region was following EPA's policy (in 1981 and 1982) of working with the violators to bring them into compliance rather than penalizing them.

[1]BTX are toxic or hazardous pollutants consisting of benzene, toluene, ethlybenzene, and xylene. The amount of BTX that can be discharged is limited by Alyeska's permit.

However, according to one EPA official responsible for the Alyeska permit in 1981 and 1982, EPA should have inspected the BWT facility, given the number of noncompliances with BTX limits. EPA can make inspections when it suspects a problem. EPA knew that (1) an April 15, 1981, EPA annual inspection identified a difference, though not considered significant, between EPA's and Alyeska's sample analyses of the amount of BTX discharged; (2) BTX monthly average or daily maximum permit limits were exceeded 25 times during the 7-month period—October 1981 through April 1982; and (3) Alyeska had investigated the excessive BTX discharges and could find no explanation for the problem. However, EPA officials said they did not have the resources for normal operations, let alone an additional inspection, at Alyeska at that time. Available resources in Alaska were assigned to higher priority work, particularly writing permits for pulp mills, mines, and seafood processors.

Beginning in calendar year 1984, EPA officials became increasingly concerned about Alyeska's continued noncompliance with BTX permit limits and other environmental issues that began to surface regarding the operations of the BWT facility. Since January 1985 EPA has taken a series of enforcement and other actions to bring the plant into compliance with permit requirements and initiated an investigation of allegations of environmental problems related to the operations of the plant made by a private citizen.

To date, EPA has taken two formal enforcement actions ordering Alyeska to stop recycling sludges through the plant. Alyeska has responded to these enforcement actions. In addition, in April 1986 EPA issued a warning letter requiring Alyeska to comply with its BTX permit limits. Subsequently, Alyeska informed EPA that it had made changes in its treatment process for BTX. Since April 1986 Alyeska has reported that it is in compliance with its BTX limits. EPA has also used the administrative authority provided under the Toxic Substances Control Act to pursue information related to the allegations made on the treatment plant's operations. EPA officials told us that they plan to assess the information provided by Alyeska and complete their investigation of the allegations before deciding whether to take further enforcement action.

Conclusions

EPA is nearly 4 years late in completing action on Alyeska's new permit. The actual environmental effects of this delay are uncertain. However, if the new permit has more stringent limits for pollutants currently regulated and/or new limits for pollutants not currently regulated, which is

possible according to EPA's permit writer, there may be two potential effects. First, the BWT facility may have discharged more pollutants over the past 4 years than would have been allowed by the new permit. The effects on marine life and water quality of such discharges are difficult to determine and are currently being assessed as part of the permit reissuance process. Second, Alyeska has not had to incur the capital expenditures necessary to enable it to implement more advanced technologies and associated operating costs.

The information available to EPA on noncompliance with BTX limits during 1981 and 1982 should have prompted EPA to take enforcement actions requiring Alyeska to comply with its BTX limits or to inquire further into this problem. At a minimum, EPA should have conducted an inspection to evaluate the quality and reliability of Alyeska's self-monitoring activities.

The enforcement and other actions EPA has taken since 1985 indicate that it is taking steps to bring the Alyeska facility into compliance with its permit requirements and to resolve the allegations raised about the facility. However, since enforcement actions have not been finalized and the investigation into the allegations is ongoing, it is too early to determine the appropriateness of EPA's enforcement actions.

EPA should have acted sooner to develop a new permit and take enforcement actions. Until the new permit is issued, the enforcement actions finalized, and the environmental allegations resolved, questions about appropriate permit limits and the protection of marine life and water quality in Valdez Bay will remain unanswered. Recently, EPA has devoted more resources to developing the permit, is currently assessing the information it obtained in response to enforcement actions, and is pursuing an investigation of the private citizen's allegations. While we are not making any recommendations at this time, we believe EPA needs to resolve the questions surrounding the Alyeska facility as soon as possible.

Scope and Methodology

We performed our work between September 1, 1985, and February 28, 1987. We interviewed officials and collected information at the following locations: EPA headquarters, EPA's Seattle Regional Office, EPA's Alaska office, the ADEC, and Alyeska's Anchorage office and its BWT facility in Valdez, Alaska.

To determine why EPA had not issued a new permit, we interviewed appropriate EPA and Alyeska officials and reviewed the documentation in the permit files. To determine whether EPA effectively monitored and enforced Alyeska's BWT permit, we reviewed the permit, Alyeska's discharge monitoring reports, EPA's inspection reports, correspondence between Alyeska and EPA, EPA enforcement actions, and relevant documents.

We have discussed the information we obtained with EPA headquarters and Seattle Regional Office officials and with Alyeska officials and have included their comments where appropriate. They generally agreed with the facts we presented. However, in accordance with your request, we did not obtain agency comments on a draft of this report. This review was conducted in accordance with generally accepted government auditing standards.

Unless you publicly release its contents earlier, we will make this report available 30 days after the date of this letter. At that time copies of the report will be sent to appropriate congressional committees; the Administrator, EPA; the Director, Office of Management and Budget; and other interested parties; and we will make copies available to others upon request.

If you have any questions about this report, please call me at (202) 275-5489. Other major contributors to this report are listed in appendix V.

Sincerely yours,

Hugh J. Wessinger

Hugh J. Wessinger
Senior Associate Director

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Abbreviations

ADEC	Alaska Department of Environmental Conservation
BAT	best available technology
BCT	best conventional technology
BTX	benzene, toluene, xylene, and ethlybenzene
BWT	ballast water treatment
DMR	discharge monitoring report
EPA	Environmental Protection Agency
NPDES	National Pollutant Discharge Elimination System
NOAA	National Oceanic and Atmospheric Administration
pH	A measurement of the acidity or alkalinity of a solution

Background

Ballast water treatment (BWT) facilities are located at ports where oil tankers take on oil for delivery to refineries. Oil tankers discharge wastewater, used as ballast enroute to the port, into the BWT facilities to be treated before it is returned to the sea. The BWT facility treats the wastewater by separating the oil and water that have become mixed in the tankers' holds where it was used as ballast. The separated oil is retained and loaded with other crude oil onto tankers. The remaining water is further treated to meet permit limits set by the Environmental Protection Agency (EPA) and the state before it is discharged into the sea.

The BWT facility at Valdez, Alaska, is one of the largest in the world. Valdez is both a marine port and the terminus for the Trans-Alaska pipeline, which delivers millions of barrels of oil a day from Alaska's North Slope oil fields. The Alyeska Pipeline Service Company (Alyeska), a consortium of eight oil companies that own and operate the Trans-Alaska pipeline and the marine shipping facilities at Port Valdez, is responsible for ensuring that the BWT facility meets its legal requirements.

To ensure that polluted wastewater is treated before it is discharged into the nation's waterways, the Congress enacted the Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1251, et seq.), known as the Clean Water Act. The act requires every facility discharging wastewater to obtain a permit, either from the state or from EPA, that limits the amounts and types of pollutants the facility may discharge. All permits are issued and enforced under the act's National Pollutant Discharge Elimination System (NPDES), which is administered by both EPA and the states. The NPDES system contains three essential operational elements—permitting, compliance monitoring, and enforcement.

Permit Needed to Discharge Wastewater

To discharge pollutants into the nation's waterways, facilities must have a permit that specifies

- who is allowed to discharge;
- the types and amounts of pollutants to be discharged;
- the conditions under which the discharge is to occur; and
- the discharge location, called an outfall.

Permit conditions and limits are set by the "permitting authority"—the states or EPA regional offices. EPA has delegated permitting authority to 37 of the 50 states. Because Alaska has not been delegated authority for

this program, EPA's Region X in Seattle, Washington, is the permitting authority responsible for issuing and enforcing Alyeska's permit.

A company's application to discharge wastewater must include information about the size, nature, and location of the discharge. Company officials are responsible for the accuracy of the information and are subject to fine and imprisonment for knowingly falsifying information on the application.

The permitting authority reviews the application and determines whether the facility has had a permit before and, if so, what if anything has changed since the last permit was issued. Permits can be issued for up to 5 years.

The permit is prepared by the permit writer who researches the previous permit, the permitting authority's files (for information accumulated over the life of the previous permit), the application, relevant national standards, and the receiving waters' water quality standards. From these sources, the permit writer prepares specific pollutant discharge limits.

National standards are set by EPA on the types and amounts of pollutants industries can discharge into the waterways. EPA has issued 27 standards since 1978. EPA bases its national standards on studies it makes to quantify the results achieved by actual industry practices in limiting the amount of pollutants in their discharge. EPA was required by the Clean Water Act to set best available technology (BAT) economically achievable standards for the toxic pollutants that industry discharges by 1984. The BAT standards were to be designed so that the average pollutant discharge within an industry represented the best of industry practice. EPA was also required to set best conventional technology (BCT) standards for conventional pollutants (e.g., oil and grease). The BCT standards are designed to ensure that before an industry is required to meet more stringent standards for conventional pollutants (industry was required to meet a lower standard, best practicable standard, by 1977), EPA must demonstrate that the costs of meeting such standards are "reasonable" in relation to the benefits derived. BAT standards are not required to meet this cost test.

Permit limits can be more stringent than national standards where it is necessary to deal with local water quality problems. Water quality standards, set by the states, are based on what individual bodies of water are used for. State standards are developed to ensure that water quality

and the growth and propagation of marine life are protected. For example, waters used for contact recreational purposes have to meet higher standards than waters used for non-contact recreational purposes in the state of Alaska.

EPA develops two types of discharge permits, individual and general. An individual permit is one developed for a particular facility. General permits are developed for more than one facility. Facilities can be included under a general permit if they (1) involve the same or substantially similar types of operations, (2) discharge the same types of waste, (3) require the same effluent limitation or operating conditions, (4) require the same or similar monitoring, and (5) are more appropriately controlled under a general permit in the opinion of the head of the permitting authority.

For some pollutants and industries, national standards have not been developed, receiving waters do not have water quality limitations, and no general permit exists. The act and EPA regulations provide that permit writers may consider the relevant facts about the facility and prepare limits in such cases on the basis of "best professional judgment."

Draft permits are released for public and agency comment. Before the final permit is issued, the permittee may petition for modification of the permit on the basis of the Clean Water Act, the regulations, or technical evidence that shows that the permitting authority erred in interpreting the facts. However, once the permit is issued, it represents a legal commitment on the part of the permittee to discharge within its limits.

Monitoring Compliance

The permitting authority is responsible for monitoring the permittees to determine whether they are complying with their permit requirements. The permitting authority also conducts annual inspections for all major permittees,[1] such as Alyeska, to review permittees' compliance activities.

[1]EPA defines major industrial permittees on the basis of a numerical rating each facility receives. The rating considers factors such as the facility's potential for discharging toxic pollutants, the volume and type of wastewater discharged, the amount of traditional pollutants in the discharge wastewater, and whether the water receiving the discharge is used for drinking water.

Permittees Report Discharge Data

The act requires permittees to monitor their wastewater discharges and report them in a manner dictated by the Administrator, EPA. Under EPA regulations, permittees must monitor their discharges, analyze what is being discharged, and report monthly to the permitting authority on the amount and types of discharges. To meet this self-monitoring requirement, facilities submit discharge monitoring reports (DMR) to the permitting authority. The DMR is a routine compliance report summarizing the quality and/or quantity of the daily and average monthly discharges; it is usually submitted on a monthly or quarterly basis.

Reviewing DMRs

The permitting authority is responsible for ensuring that DMRs are received from each permittee within its jurisdiction and that they are complete. Failure to submit DMRs is a violation of the permit. The permitting authority may take an enforcement action against those permittees that do not submit DMRs or submit them late.

When the permitting authority identifies violations of permit limits, it records the information on a violation notification form, which is used to flag violations and as a control to insure timely decision making on permittee reports. In addition to a list of violations, this form also includes a description of any extenuating circumstances, previous or repeated violations, and recommendations for action to be taken.

Accurate as well as timely DMR data are critical. In 1980, EPA instituted the Discharge Monitoring Report Quality Assurance Program to enable both the permittee and EPA to determine whether the permittee's testing laboratory is correctly analyzing the discharge samples. Under this program, EPA annually provides major permittees with a sample of wastewater containing quantities of pollutants (already known to EPA), such as oil and grease, which are normally found in industrial and municipal wastewaters. The permittee's laboratory is required to analyze the samples, using the analytical methods it generally employs for its self-monitoring samples, and submit the results to EPA. The permittee is notified of the results, and if one or more of the reported values do not conform with EPA's analysis of the sample, the permittee is advised to take remedial actions and report those actions to EPA. EPA may follow up on the effectiveness of such actions.

Compliance Inspections

EPA guidance requires the permitting authorities to conduct compliance inspections for all major permittees at least once a year. These inspections are used to document the accuracy and completeness of permittee

self-monitoring and reporting activities and to provide documentation for enforcement actions. The permitting authority may also inspect permittee facilities to verify that permit requirements are being met.

Two routine types of inspections may be conducted: compliance evaluation and compliance sampling. In both types of inspections, trained EPA inspectors, state personnel, or both, gather information that can be used to determine compliance with permit conditions, applicable regulations, and other requirements. They may review all data relating to compliance with the permit: files, operating logs and records, treatment processes, controls, and facilities. In addition, a compliance sampling evaluation includes taking a sample of a permittee's effluent for analysis. Permitting authorities conduct either a compliance evaluation or compliance sampling inspection each year.

In addition to their routine inspections, permitting authorities may conduct a performance audit inspection. EPA policy is to use these inspections when it suspects problems with permittees' self-monitoring procedures, on the basis of either the DMR data or an earlier compliance inspection. This inspection provides a more accurate and reliable method for assuring adequate quality control by a permittee over its self-monitoring activities than a compliance evaluation or compliance sampling inspection. Unlike those inspections, the primary objectives of a performance audit inspection include evaluating the permittee's sampling techniques, analytical procedures, quality control procedures, and acceptability of DMR data.

Enforcing Compliance

Enforcement responses include all actions taken in response to an identified instance of noncompliance, including determining the appropriate response and following up to ensure that the permittee is back in compliance. When a facility violates its permit, the permitting authority decides what enforcement action, if any, it should take by evaluating the data to determine the severity of the violation, the compliance history of the permittee, and relevant facts and legal provisions involved.

Enforcement Options

There are three levels of enforcement responses: no action, informal, and formal. A decision not to take any enforcement action may be made after reviewing the facts and circumstances surrounding a violation. Informal responses include telephone calls and letters. The letter can be limited to a notification of the violation (acknowledge letter), or it can

require certain steps to be taken within specific time frames (warning letter).

A formal enforcement action requires the permittee to take action to achieve compliance. These actions include:

- Administrative Order. This document, authorized under section 309(a)(3) of the act, contains findings of fact determined through a unilateral, administrative process and demands that the permittee achieve compliance with the act or with conditions of a permit that implements one of the act's sections. The document contains an order to cease the violation immediately, or a specific timetable for compliance.
- Referral. If EPA does not want to use its administrative authority, or if the administrative procedures (warning letters or 309 order) do not produce a satisfactory resolution, EPA can refer the case to the U.S. Attorney's Office to consider bringing a lawsuit in federal district court.

EPA had no authority to administratively issue monetary fines for noncompliance until recently. Legislation reauthorizing the Clean Water Act, entitled the Water Quality Act of 1987 (Public Law 100-4), enacted by the Congress on February 4, 1987, included the authority to issue monetary fines.

Objectives, Scope, and Methodology

The Chairman, Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, requested in his letter of July 29, 1985, that we examine certain matters relating to the NPDES permit for the Alyeska oil pipeline marine terminal at Valdez, Alaska. We subsequently agreed with the Chairman's office to address these matters by focusing on

- why EPA has not issued a new water discharge permit for the treatment plant, and
- whether EPA has effectively monitored and enforced Alyeska's existing permit.

We performed our work between September 1, 1985, and February 28, 1987. We interviewed officials and collected information at the following locations: EPA headquarters, EPA's Seattle Regional Office (Region X), EPA's Alaska office, the Alaska Department of Environmental Conservation (ADEC), Alyeska's Anchorage office, and the BWT facility in Valdez.

To determine why EPA had not issued a new permit, we interviewed appropriate EPA and Alyeska officials and reviewed the documentation in the permit files. We also interviewed several consultants who assisted EPA in developing the permit. We also obtained studies from Alyeska officials conducted by their consultants on the operation of the BWT facility and the condition of Valdez Bay.

To determine whether EPA effectively monitored and enforced Alyeska's BWT permit, we reviewed EPA's criteria for monitoring and enforcing NPDES permits. We also reviewed Alyeska's permit, its DMRs, EPA's inspection reports, its DMR quality assurance program results, correspondence between Alyeska and EPA, EPA enforcement actions, and other relevant documents. To determine whether the permit had been violated, we reviewed EPA files for Alyeska letters notifying EPA of violations and compared the DMRs to the permit limits. We also interviewed EPA and Alyeska officials to discuss the violations.

The views of EPA and Alyeska officials directly responsible for these matters were sought during our review and are incorporated into the report where appropriate. However, in accordance with the requestor's wishes, we did not obtain formal agency comments on a draft of this report. This review was conducted in accordance with generally accepted auditing standards.

EPA's Resource Limitations Delay New Permit

As of April 21, 1987, EPA's Region X was almost 4 years late in completing action on Alyeska's application for a new permit that may establish more stringent controls over the types and amounts of pollutants discharged by the BWT facility. Region X did not issue Alyeska a new permit on time because the region had limited resources and higher priorities related to the NPDES program. However, region X has taken actions since 1985 to develop the permit. A draft permit is expected to be issued during the summer of 1987. The permit writer said the permit is expected to establish more stringent limits for pollutants now regulated by the permit and may regulate additional pollutants for the first time.

1980 Permit Limits Still Apply

In 1978 EPA adopted a policy of reissuing permits for short periods—2 or 3 years, rather than the usual 5-year period. This policy was intended to allow EPA to establish in these permits, as they were renewed, limits based on BAT and BCT guidelines for treating toxic and conventional pollutants as required by the Clean Water Act by July 1, 1983.[1]

Because of this policy, Alyeska's 1980 permit, effective September 10, 1980, covered about 33 months. It was to expire on June 1, 1983. The short period of the permit was intended to allow region X and ADEC to prepare a new permit that would take into consideration additional data on the water quality of Valdez Bay being developed by Alyeska and the anticipated new federal pollution requirements.

EPA regulations require a permittee to submit an application for reissuance of a discharge permit 180 days before its current permit expires. Alyeska submitted a new application in July 1982, which more than met the 180-day requirement. The 1980 permit was automatically extended by EPA regulations on the basis of the Administrative Procedure Act (5 U.S.C. 558(c)) and continues as the current permit until a new permit is issued.

Initial Efforts to Develop Permit Unsuccessful

Developing a NPDES permit, and the Alyeska permit in particular, requires substantial technical data and the expertise to analyze these data. Region X was not able to gather all of the technical data it needed, nor was it able to provide the expertise necessary to develop the new permit before Alyeska's 1980 permit expired in 1983. Regional officials

[1]The July 1, 1983, deadline for application of BAT and BCT guidelines was changed to July 1, 1984, by the Clean Water Act amendments in 1981.

said this was because they had limited resources and higher priorities in the NPDES program.

Necessary Data Not Gathered

In order to develop the Alyeska BWT plant discharge permit, region X needed three kinds of data: technological, economic, and water quality. The technological and economic data were needed to determine the BAT and BCT levels for treating toxic and conventional pollutants. The water quality data were needed to ensure that the discharge limits would meet Alaska State Water Quality Standards.

EPA has national guidelines, providing minimum technology-based discharge standards, to help develop individual permits. However, there are no national guidelines for BWT facilities. Therefore, region X had to rely on the permit writer's analysis of the technological and economic, as well as water quality data to determine the specific pollutant limits in Alyeska's permit.

Alyeska's 1980 discharge permit required it to submit studies on all three types of data—technological, economic, and water quality. A region X permit writer told us that these studies were needed to help the region determine the appropriate effluent limits for the 1983 permit.

Technological and Economic Data

Alyeska's 1980 permit required it to study toxic and conventional waste disposal to evaluate the operation of the BWT facility; advances in wastewater treatment, technology, and equipment; and the feasibility of improving the BWT facility's performance. Emphasis was placed on studying the reduction of toxic pollutants, the attainment of BCT for conventional pollutants, and the reduction of aromatic hydrocarbons (BTX).[2] It consisted of three phases:

[2]Treated ballast water that is discharged contains hydrocarbons. The most toxic hydrocarbons are the aromatic hydrocarbons. This report focuses on aromatic hydrocarbons, which can be divided into two groups, BTX and other aromatic hydrocarbons. BTX, which accounts for over 80 percent of the aromatic hydrocarbons in the discharge, are the more water-soluble toxic or hazardous pollutants that are regulated in the 1980 permit. BTX consists of benzene, toluene, ethlybenzene, and xylene. Less water-soluble aromatic hydrocarbons, e.g., phenanthrene, are present in lower concentrations in the effluent. They tend to associate with particulate matter in the effluent and receiving waters, and therefore settle and accumulate in sediments at the bottom of bodies of water. In this report, BTX refers to the more water-soluble hydrocarbons limited in the permit and hydrocarbons refers to the remaining hydrocarbons that tend to accumulate in the sediment. While the discharge of these remaining hydrocarbons is not limited by the permit, Alaska has a state water quality standard for concentrations of hydrocarbons in the sediment, as discussed in appendix III.

- Phase I. Alyeska was to thoroughly search the literature and investigate any new processes proposed or in use that might improve the BWT plant.
- Phase II. Alyeska was to provide a more detailed engineering development analysis of processes or procedures that, in the joint opinion of region X and ADEC and in consultation with Alyeska, have technological and economic advantages for reducing significant toxic pollutants and/or BTX.
- Phase III. If a process or alternative identified in the first two phases appeared to be economically and technologically effective, Alyeska was either to build a pilot plant or to modify its existing plant to test a proposed alternative process. Region X and ADEC, after consultation with Alyeska, would decide whether this phase should be required.

After conducting phases I and II of the study, Alyeska informed region X, in a January 8, 1982, letter, that all of the identified processes had high capital and operating costs and that additional treatment of ballast water would provide no equitable benefit to the environment of Valdez Bay. Therefore, Alyeska concluded that it already had the best available control technology for ballast water and phase III was unnecessary.

Region X and ADEC did not agree with Alyeska's conclusion. Both agencies concluded the study did not discuss removal of all of the toxic pollutants nor provide enough cost data. On March 9, 1982, ADEC wrote to Alyeska outlining the deficiencies in the Alyeska studies of the BWT facility. ADEC requested Alyeska to provide, among other things, information on optimizing the BWT's conventional pollutant removal and the basis for determining that the current treatment system represents BAT. On April 7, 1982, EPA notified Alyeska that it shared ADEC's concerns and asked Alyeska to provide additional information on the removal of both toxic and conventional pollutants and additional technical and cost data on the four alternative treatment processes that Alyeska had identified in its study. Alyeska provided additional information in letters dated May 14, 24, and 26, 1982, outlining its position and concluding that it had met the permit requirements.

Region X did not pursue the matter further in 1982. Region X officials told us that they did not have the staff available for followup in 1982 because the reorganization of their Alaska Operations Office (responsible for various aspects of region X's work in Alaska) left that office with only one full-time staff member to do NPDES-related work.

Water Quality Data

The 1980 permit required Alyeska to conduct a diffuser verification study and environmental studies of Valdez Bay (the first year progress report, 1980-81). The diffuser verification study was to provide information about BTX concentrations along the boundaries of the mixing zone.[3] The first year progress report was to provide information on biological studies of Valdez Bay and hydrocarbon accumulations in the Bay's sediments. According to a region X permit writer, the purpose of these studies was to provide water quality data so that the region could determine effluent limits and ADEC could certify that the effluent limits would meet the state's water quality standards.

Alyeska provided these studies on January 8, 1982. Region X and ADEC found the diffuser verification study inadequate because Alyeska did not document the sampling techniques used and the locations of the samples. Region X and ADEC also found that the first year progress report, while providing a strong basis for detecting changes in chemical and biological indices over subsequent years of monitoring, needed additional information for several of its biological studies. Region X and ADEC requested additional information in March and April 1982, and Alyeska complied on May 24, 1982. A region X official told us in 1986 that Alyeska's response was unsatisfactory. However, he said region X did not follow up in 1982 because of the shortage of staff.

Expertise Not Available to Write New Permit

Region X needed a technically qualified expert to develop Alyeska's permit. Because of staffing problems and the priority placed on monitoring other wastewater dischargers, region X was not able to assign a qualified permit writer to develop the Alyeska permit in the 1982-83 time frame.

In-House Staff Not Available

According to region X officials, with the 1982 reorganization of the Alaska Operations Office, only one person was available for inspecting, monitoring, and developing NPDES permits as they came due. This official said her caseload included 35 to 40 major and about 1,000 minor NPDES permits. She also said she told region X management that she believed she was not qualified to develop the Alyeska permit without expert assistance because she did not have the technical expertise needed to evaluate treatment technologies for toxic pollutants. Region X officials

[3]The diffuser is the portion of the discharge pipe that releases the wastewater into the bay. The mixing zone is a defined area around the diffuser where the effluent from the BWT plant enters the receiving waters in the bay. Alaska's water quality standards must be met at the boundary of the mixing zone.

told us there was one other person in the region technically qualified to develop the Alyeska permit, but that individual was also the region's expert for the Alaska pulp mills. He was busy with appeals and hearings involving the pulp mill permits and was unavailable for the Alyeska permit.

The director of the Alaska Operations Office in 1983 said that, in addition to staffing problems, the Alyeska permit was of lower priority because region X faced considerable pressure to monitor other facilities producing polluted discharges. The official identified these higher priorities as follows:

- Alaska pulp mills. There was pressure from Alaska's congressional delegation to address the problems with these permits. Although the permits were issued in 1980, EPA continued to devote resources to this area until 1985 because of appeals for variances from national effluent limitation guidelines.
- Placer miners. Lawsuits were pending concerning the issuance of these permits, which had to be issued prior to June 1983 because of Alaska's short mining season.
- Seafood processors. Statutory deadlines were pending for these permits.
- Other permitting priorities. In addition, permitting resources were used to develop other permits. For example, the region concentrated on offshore oil and gas permits for which national effluent guidelines had not been established.

According to region X officials, the pressures to concentrate their efforts on these permits made it very difficult to assign resources to the Alyeska permit.

Funds Not Available to Hire Expert to Develop Permit

Since it did not have a qualified permit writer available, region X decided that it needed outside technical assistance to develop an individual permit for the Alyeska facility. The region asked EPA headquarters in February 1983 to contract for expert assistance to develop the permit. Region X's proposed work assignment required the contractor to review and analyze existing permit and compliance files, review the studies supplied by Alyeska, visit the facility, submit a draft report with permit limits and conditions, and after EPA review of the draft report, submit a final report to include a draft permit.

An EPA headquarters official told us that funds were not available for technical studies for individual facilities at that time. However, funds

were available to develop general permits, and to assist region X, headquarters agreed to develop a model general permit for BWT facilities. At that time, according to the headquarters official, EPA was attempting to expand the use of general permits to reduce the backlog of unissued or expired permits. On June 9, 1983, a work assignment amendment (estimated by EPA at $39,500) was processed to develop permit terms and conditions for a general permit to cover BWT facilities. The work assignment required the contractor to apply the general permit model to Alyeska as a test case.

Region X received the draft general permit report in October 1984. EPA headquarters staff said the report was sent to all permitting authorities for their use in developing BWT facility permits. In October 1984, a work assignment amendment was approved to allow the contractor time to complete the task of using the Alyeska facility to test the model general permit. Region X officials and the contractor met in November 1984 to discuss the specific application of the general permit to the Alyeska BWT facility. After discussing the general permit's applicability to the Alyeska facility, regional officials concluded that the general permit was not suitable because of the facility's size and because Alaska's water quality standards would require more stringent limits. The regional officials requested the contractor to provide additional information on the cost and feasibility of the technologies available to reduce BTX at the Alyeska facility.

The final report, submitted in December 1984, presented comparative costs for treatment technologies. It concluded that a detailed cost analysis of the available, viable treatment processes should be made, which would require specific information about the site and wastewater. While EPA headquarters' attempt to assist region X did produce a general permit for BWT facilities, the general permit did not provide the specific data the region needed to set effluent limits for the Alyeska facility.

Region X's Current Permit Development Efforts

The permit-writing process was restarted with the assignment of a new permit writer in July 1985. In March 1986, EPA entered into a contract to obtain the expert assistance the permit writer needed to set BAT and BCT permit limits. The water quality data needed to ensure Alaska water quality standards are being met have been collected through EPA and Alyeska studies done in 1985 and 1986.

Technical Data Being Collected

Technical data have been developed by both EPA and Alyeska. Region X needed to contract for expert assistance to determine the technological feasibility and cost of various technologies because the permit writer needed a more thorough evaluation of the treatment options than the general permit provided. The EPA contractor's final report on technical assistance was provided on December 22, 1986, according to region X's permit writer. The permit writer said the contractor evaluated 10 treatment technologies to identify the BAT that are technologically feasible for the Alyeska BWT facility. The report recommended four technologies for further consideration as the BAT. The report further developed construction or capital costs and annual operating costs for three of the four technologies. Costs and final conclusions on technological feasibility were not developed for the other technology because Alyeska is currently experimenting with this technology and is providing data on the costs and treatment performance to the region.

According to the permit writer, the EPA contractor's study shows that if further treatment is required by the Alyeska permit, capital costs could range from $8.8 million to $53.7 million. In addition, there may be annual operating costs ranging from $1.9 million to $6.3 million. She said that Alyeska's consultant estimated the capital and operating costs for six treatment technologies (which included the uncosted technology noted above). The consultant's estimated capital costs ranged from $5.9 million to $88.5 million, whereas first-year operating costs ranged from $1.1 million to $7.4 million.

Water Quality Data Collected

Concerns about the quality of the water in Valdez Bay were still pending as work started on the new permit in July 1985. In September 1983, scientists; government officials, including EPA, ADEC, and National Oceanic and Atmospheric Administration (NOAA); and industry and other officials met because of interest in and concerns about environmental impacts in Valdez Bay. The problem of repeated high BTX readings in the effluent, as discussed in appendix III, was also discussed at the meeting. ADEC began making plans in October 1983 to secure funding for a new mixing zone study because of concerns about water quality.

ADEC had not been able to obtain funding for the mixing zone study in 1983 or 1984. In 1985 an ADEC official said the agency believed a mixing zone study, in addition to Alyeska's 1982 study, still needed to be done. Consequently, region X conducted this study in September 1985. In addition, Alyeska officials said they conducted two mixing zone studies—in October 1985 and March 1986. According to the permit

writer, the region received these studies from Alyeska and is analyzing them as part of developing the permit.

The permit writer told us that when she was planning the permit's development, region X and ADEC had concerns about hydrocarbon levels in the bay sediments, and ADEC was planning a sediment study. Region X and ADEC learned, however, that Alyeska was planning to study the sediment, and Alyeska agreed to do most of the work that region X and ADEC wanted as part of its study. The University of Alaska conducted the study for Alyeska, which was released in June 1986. Region X and ADEC are evaluating that study as part of developing the permit.

The University of Alaska was requested "to design additional environmental measurements to determine whether the marine environment of Valdez Bay had changed since the last previous measurements were made in 1982." According to the executive summary, the report addresses the question of change since 1982, to the extent possible. However, it notes that the report cannot be considered a direct extension of the previous monitoring programs and that while the study was designed to be interpreted with the results of the previous monitoring programs, the gap of 3 years between data sets and absence of seasonal data in the present study limit some aspects of interpretation.

Nevertheless, the report concludes that it "contains important information which indicates that Port Valdez has not undergone environmental deterioration between 1982 and 1985." The report points out that the data indicate that the environmental parameters, including hydrocarbon concentrations in sediments, are fluctuating within previously observed ranges at 11 locations sampled. It points out that the hydrocarbon concentrations were significantly higher at only two locations. Its general conclusion is that the levels of hydrocarbons in sediments have not markedly increased in the last 3 to 5 years.

A NOAA monograph, an overall review of the environmental status of Valdez Bay, provides some information on hydrocarbon concentrations. At a meeting in 1984, government officials from NOAA, EPA, and ADEC, scientists from the University of Alaska, and representatives of the petroleum industry discussed the environmental status of Valdez Bay and the issuance of the Alyeska permit. The participants agreed that more data were needed, including samples of the mixing zone and bottom sediments. A work plan and cost estimates for performing the necessary work were prepared. While EPA and ADEC could not obtain funds for that work plan, NOAA officials obtained about $100,000 for an

overall review of the environmental status of Valdez Bay. A NOAA official said the results of this study, a 16-chapter monograph, is expected to be issued in the summer of 1987.

As part of the NOAA review, a National Marine Fisheries Service scientist reported in October 1986 that, on the basis of total hydrocarbon values found in sediments and water in Valdez Bay, it appears that concentrations near the diffuser are sufficiently high to cause sublethal (adverse) effects on organisms occupying the habitat. The report compared Valdez Bay hydrocarbon data to similar data from other studies. It pointed out that the hydrocarbon values at Valdez are within the range of hydrocarbon concentrations correlated with liver lesions and other disorders in fish from Puget Sound, Washington. However, since certain hydrocarbons are more toxic than others, it is important to know their composition to assess their potential impact. The report also noted that the Puget Sound sites generally showed higher amounts of the more toxic and carcinogenic hydrocarbon compounds.

The draft summary chapter of the NOAA study states, "there does appear to be consensus that [Valdez Bay] has not undergone marked environmental degradation in the last decade." The draft report points out that while some laboratory studies predict adverse effects from petroleum (e.g., the National Marine Fisheries Service scientist's study)[4] at concentrations encountered in some locations in Valdez Bay, field studies indicate that biological changes in the presence of oil are generally no greater than natural variability (e.g., the University of Alaska study). However, the authors of the summary chapter said that, because of the sampling design and the analytical procedures used, the ability of previous field studies to detect pollutant-induced environmental changes is severely limited. The permit writer said she would be considering the results of the NOAA and University of Alaska studies as she develops the new permit.

Setting BWT Permit Limits Is a Complex Task

There are no national standards for BWT facilities and, according to region X's permit writer, the Alyeska facility is sufficiently different, in its size and characteristics, from the facilities used to develop the general permit for BWT facilities. Therefore, the permit writer must develop the permit limits on the basis of her best professional judgment. She is currently completing her assessment of the technological, economic, and

[4]BTX and other hydrocarbons as defined earlier are derived from petroleum.

water quality data. She said the new permit limits will be based primarily on which technologies (1) are determined to be BAT and BCT and (2) meet state water quality standards.

The first step, according to the permit writer, is to evaluate the technologies that may be used to determine the BAT and BCT limits. Region X is currently evaluating the results of the EPA contractor's assessment of these technologies and the information Alyeska is supplying on its full-scale experiment with one of the treatment technologies under consideration. Limits will be derived on the basis of the technology that is chosen as BAT and BCT. After these limits are established, the permit writer has to determine whether these limits will meet the state water quality standards.

The permit writer, in consultation with ADEC, will evaluate the data collected on water quality and marine life to determine how stringent the limits must be to meet the state water quality standards. There are two key state standards for hydrocarbons: (1) total aromatic hydrocarbons concentrations in the water (predominately BTX compounds in this case) beyond the mixing zone are limited to 10 parts per billion and (2) the concentration of hydrocarbons in the sediment (predominately other hydrocarbons) shall not cause deleterious (harmful) effects to aquatic life. She will analyze the water quality data and the mixing zone studies to determine if the BAT-derived limits for BTX and other hydrocarbons meet the standards. If the BAT-derived limits do not assure that the state standards are met, region X and ADEC must impose more stringent limits to meet the standards.

After this analysis, region X will issue the draft permit for comment. The permit writer is planning to release the draft final permit for the Alyeska BWT facility for a 30 to 60 day public comment period during the summer of 1987. Before the final permit is issued, ADEC must certify that the permit limits will meet the state water quality standards.

Effects of Delayed Permit Issuance Uncertain

While region X was unable to reissue the permit by 1983 and is still developing the permit, it is difficult to determine the actual effects of this delay. If the new permit has more stringent limits for pollutants now being regulated and/or new limits for pollutants not previously regulated, as is anticipated by the permit writer, there are two potential effects. First, the BWT facility may have discharged more pollutants for the past 4 years than would have been allowed. While these discharges' effects on aquatic life and water quality are unknown, their impact is

being reviewed as part of the reissuance process. Second, Alyeska has not had to make the capital expenditures necessary to implement the BAT and BCT technology or pay the associated operating costs. Capital expenditures are currently estimated to range from $5.9 million to $88.5 million. The operating costs, which would have been incurred from 1983 until the permit is issued, are currently estimated to range from $1.1 million to $7.4 million per year.

EPA Has Begun to Actively Enforce Alyeska's Permit Requirements

In the last few years, EPA's Region X has changed its enforcement stance toward Alyeska, shifting from discussions and correspondence on permit noncompliance to requiring Alyeska to take actions to achieve compliance with permit requirements. Between August 1977 and December 1983, region X monitored Alyeska's activities and identified instances of noncompliance, but it did not take enforcement actions when it found the facility was not in compliance with permit requirements. Region X officials said they did not take any enforcement actions because (1) not all of the violations warranted enforcement action, (2) the region's limited resources were allocated to other priority areas, and (3) the region was following EPA's policy (in 1981 and 1982) of working with the noncompliers to bring them into compliance rather than penalizing them. Since January 1984, however, region X has taken formal enforcement and other actions to bring the facility into compliance with its permit requirements.

Monitoring and Enforcement, 1977-83

The essential elements in operating the NPDES system are the permits, compliance monitoring, and enforcement of noncompliance.

Alyeska's Permit Limits

Alyeska's first permit became effective January 30, 1975, although the plant did not begin discharging wastewater until August 1977. The permit was reissued on August 11, 1980. Although EPA did not reissue the 1980 permit in 1983 as it had planned, Alyeska's application for a new permit automatically extended the 1980 permit, as discussed in appendix II. The 1980 permit is the valid permit until a new one is issued.

Alyeska's permit limits and monitoring requirements are listed in table III.1. The BTX limits went into effect when the permit was reissued in 1980. Alyeska is also required to monitor and report discharges of 18 other substances, such as total suspended solids and nickel, but discharges of these substances are not limited by the permit.

Table III.1: Alyeska's Permit Limits

Substance	Discharge Limitations (monthly av.)	Discharge Limitations (daily max.)	Monitoring frequency
Oil and grease	8 milligrams per liter per day	10 milligrams per liter	Daily
BTX	6 milligrams per liter per day	9 milligrams per liter	Twice weekly
pH	Not less than 6 standard units and not greater than 9 standard units		Continuous
Flow	27.0 million gallons per day	33.6 million gallons per day	Continuous

Region X Monitored Alyeska's Permit

Region X monitored Alyeska's permit during the period from August 1977 to December 1983. It reviewed the DMRs submitted by Alyeska and inspected the facility annually.

Our review of region X's files showed that it was aware of instances of noncompliance with permit requirements by Alyeska during this period. The files contained letters from Alyeska describing the violations and what actions it was taking in response to the violations. The files also contained records of phone calls both from and to Alyeska discussing these violations. And, as discussed in the enforcement section below, region X documents showed that it had identified the instances of noncompliance.

Since August 1977, region X had conducted either compliance sampling or compliance evaluation inspections at Alyeska's BWT plant each fiscal year. (See table III.2.) Region X's inspection reports from 1977 to 1983 reported that Alyeska was generally in compliance with its permit.

Table III.2: Compliance Inspections for Alyeska BWT Plant

Type of inspection	Date	Conducted by
Compliance sampling	8-2-77	EPA
Compliance sampling	4-10-78	EPA
Compliance sampling	4-27-79	EPA/state
Compliance sampling	12-5-79	EPA/state
Compliance sampling	4-15-81	EPA
Compliance sampling	9-2-82	EPA/state
Compliance evaluation	9-28-83	EPA/state

However, region X noted discrepancies between EPA and Alyeska's contract laboratory analyses on duplicate samples taken during the inspections in 1981 and 1982. The EPA data generally tended to show higher values than those of the contract laboratory. The region X inspector who performed the inspections said she contacted the EPA laboratory to determine if the differences were significant, was told they were not, and did not pursue the discrepancy further. An EPA chemist told us he performed the analyses in 1981 and 1982 and that the differences between EPA and Alyeska's sample results were not significant enough to warrant any further EPA actions.

Alyeska has also participated in the DMR quality assurance program since 1981. Region X's program coordinator told us that Alyeska's lab results were within acceptable ranges.

Region X Did Not Take Formal Enforcement Action

Alyeska reported that it was in noncompliance with its permit limits 100 times during the period August 1977 through December 1983. Table III.3 summarizes the type and frequency of noncompliance.

Table III.3: Summary of Violations Reported on DMRs, 1977-83

Type of violation	Number
Oil and grease daily max.	16
BTX daily max.	29
BTX monthly average	12
pH limits (daily)	43
Total	**100**

We asked region X officials how we could identify whether any of the violations were significant. They explained that while the definition of significant noncompliance has changed over the years, any significant violations would appear on the quarterly noncompliance report that the region sends to headquarters. The noncompliance report provides information on major NPDES permittees' noncompliance, including significant noncompliance.

Alyeska appeared on the noncompliance report six times from August 1979 through December 1983.[1] Alyeska was listed once for violating its pH limit, twice for submitting its DMRs late, twice for violating its BTX limits, and once for violating both its BTX and pH limits.

[1] A region X official said the region did not have noncompliance reports before August 1979.

pH Violations

The third quarter 1980 and the second quarter 1982 noncompliance reports reported that Alyeska violated its pH limit in July 1980 and June 1982, respectively. The third quarter report described the pH violation as being minor with no action taken. A region X official said no enforcement action was taken because the pH violations were considered minor. The official was not sure why the pH violations were listed on the noncompliance report, but noted that the noncompliance report provides more information than just significant noncompliance.

Late DMRs

Alyeska appeared on the noncompliance report for the second quarter in 1981 for not submitting its April, May, and June 1981 DMRs. The noncompliance report noted that a phone call (informal enforcement action) had been made about the missing DMRs. The report said that Alyeska was unable to obtain laboratory results on time because its contract lab had recently moved and had had trouble calibrating its equipment. The report also noted that Alyeska was pressuring the lab for results and would submit its results as soon as possible. A no action decision was listed as being made on August 21, 1981.

Alyeska appeared on the third quarter 1981 noncompliance report for submitting its September DMR late. The report noted that a phone call had been made about the late DMR. It also noted that EPA had received the April, May, and June DMRs on August 30 and the September DMR on November 16, 1981. A region X official said that Alyeska's submission of the DMRs resolved the violations.

BTX Violations

During the period from October 1981 to April 1982, Alyeska exceeded its monthly average BTX limit each month and its daily maximum BTX limit 18 times. Although Alyeska appeared on the noncompliance report three times for some of these violations, region X did not take any formal enforcement action. Region X did consider taking enforcement action three times during this period. Region X officials provided a number of reasons why no enforcement action was taken, including that they were working with Alyeska to bring them into compliance, which was in accordance with EPA's overall enforcement policy at that time.

Alyeska began reporting noncompliance with its BTX limits in September 1981. Alyeska reported to region X on September 18, 1981, that it had exceeded its daily maximum BTX limit on August 17 and 19, 1981. Alyeska said that it had no explanation for why it occurred and that it would not be able to prevent a recurrence. Alyeska reported virtually

the same situation again in October and twice in November. On November 23, 1981, Alyeska reported that it had begun investigating the possible cause by sending duplicate discharge samples to its contract laboratory and another laboratory to determine whether or not the high values were due to analytical errors. Alyeska continued to report BTX violations in December, January, and February.

On February 8, 1982, a region X official completed a violation notification form for the monthly average BTX violations in October, November, and December 1981. (Region X had not received the January 1982 data at this time.) The source of the report of violations was identified on the form as Alyeska's letters, review of DMRs, and the region's noncompliance tracking system. The form noted that Alyeska was working on the problem and recommended that no action be taken.

On February 28, 1982, Alyeska appeared on the fourth quarter noncompliance report (1981) for the BTX violations in October, November, and December. The report noted that a no action decision was made on February 26, 1982, and that Alyeska was evaluating the problem and would be issuing a report.

Alyeska reported BTX violations in March and April. On May 5, 1982, Alyeska reported that it thought laboratory error by its contract laboratory was the reason for high BTX values and that it was sending replicate samples to an expert for analysis. Alyeska initiated an investigation of the analytical techniques used by its contract laboratory when the replicate sample results showed differences between the Alyeska contract laboratory's analyses and the expert's. Alyeska officials told region X that the investigation was to include (1) a review of the written procedures used by the contractor to determine BTX concentrations, (2) an audit by an expert chemist of the procedures used by the contractor, and (3) a set of preanalyzed ballast water samples to be analyzed by the contractor.

Alyeska appeared on the first quarter 1982 noncompliance report. The report listed monthly average BTX violations in February and March 1982 and relisted the 1981 BTX violations. The report again noted that Alyeska was evaluating the problem and would issue a report.

On May 27, 1982, region X completed a violation notification form for the BTX violations in February and March. The form noted that Alyeska was working to resolve the problem but still did not know the answer. The form recommended no action be taken.

On July 20, 1982, Alyeska reported that it was unable to determine why there were differences between results from Alyeska's contract laboratory and the expert's. However, it had implemented certain quality control changes to provide better data on BTX. Alyeska reported that its expert found that

"We will probably never have a definite explanation for the high results earlier this year. However, the stronger QC [quality control] program will enable us to identify future analytical problems before results are reported to ADEC."

Region X conducted another pre-enforcement evaluation on August 30, 1982. The violation notification form noted the monthly average BTX limit was exceeded in April, but not in May and June. The form noted that the problem looked to be under control and recommended no action. The Water Compliance Section Chief concurred with the no action decision on September 2, 1982, bringing the matter to a close.

Alyeska appeared on the second quarter 1982 noncompliance report. The report listed a monthly average BTX violation in April. The February and March BTX violations were also noted on the report, as was the fact that Alyeska complied with its monthly average BTX limits in May and June. The report continued to note that Alyeska was evaluating the problem. It also noted a no action decision was made in August 1982.

However, on September 2, 1982, region X's inspector performed the annual inspection at the Alyeska BWT plant. The inspection report, dated November 22, 1982, noted that the daily maximum BTX limit was violated on the day of the inspection.

According to the regional officials responsible for monitoring or overseeing Alyeska's permit in 1981 and 1982, the number of violations warranted EPA enforcement action against Alyeska. Although they cannot remember why no action was taken, they cited three factors that had to be considered. First, the BTX limits for the monthly average and daily maximum were not based on national guidelines. The BTX limits were based on an EPA permit writer's expertise, ADEC personnel's judgment, and the facility's estimated capability to remove BTX. Second, the analytical sampling method was only a proposed method still in the development stage. Third, the region's limited resources were allocated to other priority areas.

Another regional official said he believed no enforcement action was taken against Alyeska because it was cooperating with EPA to correct the

problem. Because of resource constraints, he said, region X was taking enforcement actions at that time against violators, such as placer miners in Alaska, that were not cooperating with EPA in addressing environmental issues. Both regional and headquarters officials said that EPA's overall enforcement policy during this period was one of trying to work with the noncompliers and bring them back into compliance rather than penalizing them for noncompliance.

Monitoring and Enforcement, 1984 to October 1986

Region X has taken two formal enforcement actions since January 1984 to order the recycling of sludges back into the facility to cease. Concerns about how the BWT facility was being operated and its BTX violations had come from several sources in addition to region X officials. Federal and state officials who had met in July 1984 to discuss reviewing Alyeska's permit were concerned about the operation of the Alyeska facility, its BTX violations, and water quality problems. In addition, an EPA consultant and a private citizen expressed concerns about the BWT facility's operations. To address these concerns, in 1985 region X issued Alyeska a request for information, an administrative order to retain all records, and two administrative orders on the operation of the facility. In April 1986, region X also issued Alyeska a warning letter for BTX discharge violations. In addition, region X issued an administrative subpoena, under the Toxic Substances Control Act, to gather information related to concerns about the BWT facility's operation.

Region X Actively Monitors Alyeska

From January 1984 through July 1986, region X carried out its oversight of Alyeska's permit by evaluating the DMRs, inspecting Alyeska's facility three times, and conducting its DMR quality assurance program. While region X officials had been monitoring Alyeska's activities since 1977, it was not until mid-1984 that concerns began to be raised that led to region X's enforcement actions.

Between January 1984 and July 1986, Alyeska submitted all its monthly DMRs. During this time, Alyeska reported 13 violations for exceeding the BTX effluent discharge limit for the monthly average or daily maximum and 1 violation of its pH limit. It did not comply with the BTX monthly average limit for 7 consecutive months--October 1985 through April 1986. Alyeska explained that the monthly BTX violations were due to a change in sample preservation techniques. According to an Alyeska official, there were no apparent operational problems at the facility that would have caused the high values.

Alyeska participated in the DMR quality assurance program during 1985 and 1986. A region X official stated that Alyeska's laboratory results were within the acceptable range of the results of the EPA samples. He added that Alyeska did not receive its sample of wastewater in 1984, although the reason is unknown. By the time EPA found out that the sample had not arrived, it was late in the testing year, and EPA decided to wait until the following year before sending Alyeska another sample.

Concerns Raised About Alyeska Operations

In July 1984, federal and state officials met to discuss the current operational process at the Alyeska BWT plant before reissuing the permit. Officials were concerned with validating the plant's suspected problem areas so that new requirements could be included in the plant's permit, which was then scheduled to be issued by September 1985. An EPA consultant, for example, questioned whether the plant's mode and scale of operation had been reduced without necessary verification studies to determine that a reduced operating mode would in fact achieve permit compliance. Many were concerned about discrepancies in the data between Alyeska reports and EPA consultant studies on BTX accumulations. The participants generally concluded that the central problems in Valdez Bay involved excessive concentrations of BTX, and they outlined a plan for research and monitoring that would help them understand what was happening to water quality.

Compliance Monitoring Leads EPA Inspector to Recommend Enforcement Action

In November 1984, region X's inspector responsible for the Alyeska plant suggested that the region issue a request for information order because her most recent inspections in September 1983 and August 1984 turned up discrepancies between what she observed and what Alyeska's permit required. For example, the August 1984 inspection found that the Alyeska BTX testing was not done as required in the permit. The inspector reported that, according to region X's files, Alyeska had not requested, nor had the region approved, the method change. The inspector also found that changes had been made to the facility without notification to the region. On the basis of her recommendation, region X issued a 308 request for information order in January 1985.

Allegations Made Against Alyeska

In December 1984, a region X official said he received a telephone call from a citizen who alleged that Alyeska was violating its permit limits. In early 1985, that citizen notified EPA he intended to file a "citizen's suit" to enforce the terms of the Alyeska permit. The citizen urged EPA to take immediate action to audit operations at the Valdez facility, to

enjoin further violations, and to seek penalties against Alyeska for past violations. EPA began an investigation as discussed on page 37.

1985 Inspection Reveals More Concerns

During the July 1985 inspection, region X officials, ADEC officials, and an EPA consultant visited the plant to initiate a study. EPA asked the consultant to compare the plans for the physical plant as approved in Alyeska's permit with the actual plant and examine the condition of the operating units. The consultant's final report, dated September 23, 1985, noted that

- the physical plant did not contain a waste disposal facility or monitoring instrumentation as originally proposed and designed;
- a number of constructed facilities, originally intended to be used in the treatment process, were not being used;
- some individual unit processes were modified;
- pollutants not limited by the permit were entering Valdez Bay in uncontrolled quantities; and
- the present mode of effluent monitoring did not have sufficient safeguards to effectively protect the quality of the receiving waters of Valdez Bay.

An EPA official said that the report's results are being considered, along with other information, as it decides whether to take further enforcement action.

EPA Takes Enforcement Actions

As a result of the concerns raised about the BWT plant's operations, region X launched a series of actions to bring Alyeska into compliance with its permit. Table III.4 lists the actions taken as of February 1987.

Table III.4: Actions Taken by Region X

Date	Action
1/28/85	Section 308 request for information
4/5/85	Section 308/309 order requiring retention of records pertaining to the operation of the BWT facility
7/12/85	Section 309 administrative order requiring Alyeska to stop recycling sludges[a]
11/6/85	Amendment to section 309 administrative order requiring Alyeska to take a series of actions (see appendix IV)[a]
4/9/86	Warning letter concerning BTX violations
9/11/86	Administrative subpoena to Alyeska representatives

[a]This is a formal enforcement action.

As a result of the region's concerns and the citizen's allegations, EPA began investigating the operations of the Alyeska facility and related environmental concerns. This investigation was ongoing as of April 21, 1987. Region X officials said they do not know when it will be completed. As part of this investigation, on September 11, 1986, region X issued an administrative subpoena, under the Toxic Substances Control Act, which called for the appearance of an Alyeska representative and presentation of documents on October 7, 1986. EPA and Alyeska have engaged in a series of legal proceedings to determine the validity of the subpoena. A region X official said the subpoena was ruled to be valid in February 1987, and they enforced the subpoena by interviewing Alyeska officials in March.

Request for information. On January 28, 1985, region X issued a request for information to Alyeska, giving it 20 days to respond. The request asked for, among other things, information about modifications to the facility and how it was currently operating. This request was based on the concerns raised by region X's inspector in November and December 1984. Alyeska provided the information to region X on February 25, 1985.

Order to retain records. On April 5, 1985, region X issued an order requiring Alyeska to retain all records pertaining to the operation of the BWT facility. The order stated that the region had recently received notice of a citizen's intent to commence a legal action against Alyeska for alleged permit violations. It also said the region had become aware of statements by some past Alyeska employees, which gave the region reason to believe some terms of the permit may have been violated.

Order on BWT operations. On July 12, 1985, EPA issued Alyeska an administrative order requiring it to stop recycling sludges back into the BWT plant. It also required Alyeska to submit a plan describing its procedures for removing and disposing of all sludges. Alyeska responded to the order on September 6, 1985, with its plan describing the procedures it would follow to comply with the order.

Amended order issued. On November 6, 1985, region X issued an amendment to the administrative order because it determined that Alyeska's response to the July 1985 order essentially continued its existing practices and therefore would not resolve the sludge disposal issue. The amended order specified activities that Alyeska needed to complete and time frames for completing them through May 6, 1986. Alyeska completed all of the required activities on or before their due dates. (See

app. IV.) A region X official said that, as of February 1987, the region was evaluating Alyeska's response to the amended order.

In February 1986, region X conducted its annual compliance inspection. The report noted that Alyeska had begun making modifications to the plant in response to the amended order.

BTX Problems Intensify

Alyeska reported to region X in a letter dated October 18, 1985, that it had not been following the prescribed procedure for preservation of effluent samples to be analyzed for BTX. Alyeska noted that an amendment to 40 C.F.R. Part 136 was published in the Federal Register on October 26, 1984, effective January 25, 1985, requiring that samples be preserved with acid. Alyeska stated that acid had not been added to BTX samples and it had taken steps to ensure that it would be done in the future. A region X official said Alyeska has been using the proper procedure since October 1985.

Alyeska stated in a January 24, 1986, letter to region X that it had done a study to determine the impact of acid preservation on BTX samples. The results indicated a degradation of BTX with time in samples that were not preserved with acid. Alyeska concluded that, depending on the length of time between sampling and testing, many samples taken before late September 1985 were biased because the BTX concentrations had degraded before analysis. Thus, Alyeska's test results, according to a region X official, indicated that BTX results reported on the DMRs prior to September 1985 may have understated the actual amounts in the discharge.

Alyeska reported noncompliance with its permit limits 14 times between January 1984 and July 1986, 13 of which were for BTX discharges. Alyeska did not comply with its monthly average BTX limit for 7 consecutive months—October 1985 to April 1986. Alyeska appeared on the noncompliance report twice during this period.

Region X sent Alyeska a warning letter (an informal enforcement action) on April 9, 1986, after reviewing the circumstances surrounding six consecutive monthly BTX violations. This letter informed Alyeska that it was responsible for implementing any alterations in the treatment process in order to achieve its effluent limits. The letter also required Alyeska to outline the steps it would take to eliminate the BTX violations, and it required Alyeska's response within 20 days.

In its response on April 21, 1986, Alyeska stated that immediate steps were being taken to lower BTX concentrations. First, it had initiated a BWT process experimentation program to achieve optimum BTX removal within the capabilities of the present treatment system (i.e., it made several adjustments to current operating procedures). Second, in connection with the renewal of its permit, it was evaluating the possibility of enhanced biological degradation of BTX by aeration during the last stage of treatment. Alyeska reported in June 1986 that initial results showed that marginal BTX reduction had occurred from the process experimentation program and that the biological tests were encouraging. Alyeska reported additional results in September 1986 indicating that biological treatment was potentially an effective process for BTX reduction.

The first quarter 1986 noncompliance report, dated June 7, 1986, noted that Alyeska had not complied with its monthly average BTX limit from October 1985 to March 1986. The report noted that a warning letter had been sent on April 9, 1986, and that the company responded that it would correct the problem.

Alyeska was also listed on the second quarter 1986 noncompliance report. The second quarter report noted that Alyeska had violated its BTX limits in April but was in compliance in May, June, and July. The third quarter report listed the violations as being resolved and noted that Alyeska was in compliance through September.

In February 1987, Region X officials told us that Alyeska had complied with its monthly average BTX effluent discharge limits since April 1986 as a result of its efforts to reduce BTX. According to these officials, no decision has been made regarding additional enforcement actions for past BTX violations. The officials said a final decision will not be made until the investigation into the allegations about the BWT facility's operations is complete.

Status of Actions Required of Alyeska Under Compliance Orders as of February 28, 1987

Task	Due Date	Status
309 Order (7/12/85)		
1. Cease reintroduction of sludge to treatment system.	Immediately	See below.
2. Submit sludge handling plan.	9/15/86	Plan submitted on time. EPA's evaluation resulted in issuance of amended order.
Amended 309 Order (11/6/85)a		
1. Submit plan for transfer of wastewater from crude oil storage tanks to 90 tanks. Implement upon approval.	11/20/85	Plan submitted on time and implemented by Alyeska. Approved 3/19/86.
2. Order equipment for continuous flow-weighted effluent sampling.	11/20/85	Completed on time.
3. Submit study of DAF (dissolved air flotation) flow velocity and plan for correcting any operational problems. Implement plan upon approval.	1/6/86	Plan submitted on time. Company notified that submittal was inadequate. Company replied 4/11/86.
4. Submit plan for treatment and disposal of DAF and impound basin "float." Implement upon approval.	1/6/86	Plan submitted on time. Under EPA/ADEC review.
5. Reinstall and operate originally designed equipment in DAF.	3/6/86	
OR		
Submit plan for equivalent or better removal of sludges. Implement plan upon approval.	1/6/86	Plan submitted on time. Company notified that submittal was inadequate. Company replied 4/11/86.
6. Submit analytical quality assurance plan. Implement upon approval.	1/6/86	Plan submitted on time. Approved by EPA 2/21/86.
7. Submit evaluation of placement and design of effluent sampling system and plan to install most effective system for collecting a representative sample. Implement upon approval.	2/6/86	Plan submitted and implemented by Alyeska.
8. Install composite effluent sampler and commence operation.	2/6/86	Installed 11/27/85. In operation 2/1/86.
9. Submit operating plan for transferring only clarified wastewater from 80 to 90 tanks. Implement upon approval.	3/6/86	Plan submitted on time. Under EPA/ADEC review.
10. Submit study of settling characteristics of 90 tanks; determine settling time required for wastewater separation.	3/6/86	Plan submitted on time. Under EPA/ADEC review.
11. Submit plan to ensure only clarified wastewater is moved from 90 tanks to DAF unit. Implement upon approval.	3/6/86	Plan submitted on time. Under EPA/ADEC review.

Task	Due Date	Status
12. Submit plan for routine removal of sludge from bottoms of 90 and 80 tanks. Implement upon approval.	5/6/86	Plan submitted on time. Under EPA/ADEC review.
13. Submit plan for treatment and/or disposal of system-generated sludge. Implement upon approval.	5/6/86	Plan submitted on time. Under EPA/ADEC review.

[a]Consistent with the due dates for the amended order, cease and desist reintroduction, resuspension, or re-entrainment of sludges into treatment plant.

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