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U.S. Department of the Interior
Exxon Valdez Oil Spill Trustee Council

Final Environmental Impact Statement

Proposed IMS Infrastructure Improvement Project

Seward, Alaska

September 1994

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U.S. Department of the Interior
Exxon Valdez Oil Spill Trustee Council

Final Environmental Impact Statement

Proposed IMS Infrastructure Improvement Project

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ENVIRONMENTAL IMPACT STATEMENT

Proposed IMS Infrastructure
Improvement Project
Seward, Alaska

Cover Sheet

( ) Draft (X) Final

1. Type of Action: Proposed Institute of Marine Science (IMS) Infrastructure Improvement Project.

(X) Administrative ( ) Legislative

2. Lead Federal Agency: U.S. Department of the Interior, on behalf of the *Exxon Valdez* Oil Spill (EVOS) Trustee Council.

3. Description of the Action: The EVOS Trustee Council is proposing to improve the existing infrastructure at the University of Alaska-Fairbanks, Institute of Marine Science (IMS) in Seward, Alaska, to enhance the EVOS Trustee Council's capabilities to study marine mammals, marine birds, and the ecosystem injured by the *Exxon Valdez* oil spill. The improvements are intended to help focus and carry out a long-term research and monitoring program for the EVOS area as part of an overall restoration plan. The project would be constructed adjacent to the existing campus of the IMS Seward Marine Center. The project would have two components: (1) a research and wildlife rehabilitation component; and (2) a public education and visitation component.

The research and wildlife rehabilitation component would consist of approximately 22,000 square feet of interior space made up of wet and dry laboratories, staff offices, and a library for studies and rehabilitation of marine mammals, marine birds, and other marine life. There would be approximately 46,000 square feet of exterior space containing outdoor research habitat, and tanks and pools for pinnipeds, sea otters, and marine bird species. The outdoor and indoor facilities would be supported by a life support system using seawater from Resurrection Bay. Freshwater sources include a spring located approximately 2,500 feet south on Lowell Point Road or one or more wells drilled on the IMS Seward Marine Center. A 50-space, 37,000 square foot, parking lot for staff vehicles would be constructed adjacent to the existing IMS/Rae Building parking lot. A research vessel and submersible may be acquired for research purposes.

The public education and visitation component would consist of approximately 20,000 square feet of additional interior space to promote public awareness of the marine environment. It would function in concert with, and in support of, the research and wildlife rehabilitation component. This component would include exhibits, interpretive displays, and public areas. A 166-space, 90,000 square foot visitor parking lot would be built adjacent to the public education and visitor component and 67,000 square feet of outdoor plaza space, sidewalks, and landscaping would complete the site. A stormwater drainage

system with an oil/water separator would be incorporated to handle the additional runoff. No joint EVOS restoration funds would be involved in the construction or maintenance of this component.

The two components would share approximately 27,000 square feet of interior building-support space, including the life support system and the facility's mechanical, administrative, and curatorial functions.

Funding for the project would come, in large part, from EVOS funds. Overall, the total project capital budget would be approximately $47.5 million, of which approximately $37.5 million would come from EVOS funds. In 1993, $12.5 million of state EVOS restitution funds were appropriated by the Alaska Legislature in 1993 to the City of Seward for the planning, design and construction of the proposed project. In addition, approximately $25 million of EVOS monies have been requested to fund the research and wildlife rehabilitation component of the proposed project. Lastly, approximately $10 million would be raised from private donors to fund the public education and visitation component of the proposed project. Revenue from public education and visitation would be used to offset the operational costs of all of the proposed improvements.

4. Environmental Effects of the Proposed Action: Issues of concern related to Alternative I of the proposed project relate primarily to the increase in visitor populations in Seward during peak summer months (July through mid-September). This includes potential effects on visitor circulation through Seward, affordable overnight accommodations, camp site availability, and the small town atmosphere enjoyed by many Seward residents and visitors.

Other concerns and effects relate to the lack of affordable housing for short-term construction workers, and long-term, full time employees of the facility during operation; the displacement of the Youth/Teen Center and possible relocation of the ferry service; water quality; the loss of lease revenues to the city; and the loss of campsites in Waterfront Park.

Several economic effects to the City of Seward would be beneficial. This would include the increase in employment opportunities, the additional payroll dollars to be spent in Seward, revenues to the city resulting from utility service to the proposed facility, and the enhancement of a very visible waterfront property. Seward would also benefit from improved research capabilities at the IMS and an educational opportunity for the community.

5. Alternatives to the Proposed Action:

a. Research and Wildlife Rehabilitation Component Only (Alternative II)

Alternative II would have only one component, research and wildlife rehabilitation. The structures and facilities would generally be the same as described above under Alternative I, with the public education and visitation components eliminated, including the 166-space visitor parking lot. The square footage of the indoor space with Alternative II would be reduced from Alternative I by 26,000 square feet to 49,000 square feet. The upper level of the building would be eliminated, resulting in a one-story structure.

The outdoor areas for research habitat and research tanks and pools would be the same as Alternative I, although the subsurface visitor walkway surrounding the tanks would accommodate researchers only. The parking requirement for the research component would be 50 vehicles for research staff and associated visitors. Parking would be made available in a newly constructed, 37,000 square foot lot adjacent to the north of the existing IMS Rae Building parking lot, as described for Alternative I. The visitor parking lot and associated stormwater drainage system would be eliminated. A research vessel and submersible also would be considered for this alternative.

The capital construction cost of Alternative II would be reduced from Alternative I by approximately $10 million as compared to Alternative I. This $10 million difference would not affect the EVOS funding, however, as funds for the public education component in Alterative I are intended to come entirely from private donations and fund raising efforts.

A notable difference of Alternative II is the elimination of those concerns and effects related to visitor population increases, particularly the potential adverse effect on the quality of life in Seward and the adverse effects on traffic circulation and transportation.

b. No Action Alternative (Alternative III)

The No Action Alternative would mean that none of the actions proposed with Alternatives I or II would occur. Environmental conditions at the proposed project site and in the project vicinity would remain as they currently exist.

6. Other Environmental Impact Statements, Reference Papers, and Technical Papers: This Environmental Impact Statement (EIS) refers to numerous reference and technical papers previously prepared for the project site and updated, as needed, for this proposed project. Applicable portions of these documents are referenced in the appropriate discussions throughout the EIS, and a bibliography of references is included as part of the EIS. Copies of referenced documents have been placed in libraries in Seward, Homer, Kodiak, Cordova, Valdez, and Anchorage (Oil Spill Public Information Center).

7. Public Comments: Public hearings on the Draft EIS for the proposed IMS Infrastructure Improvement Project will be held on July 26 and July 28, 1994, in Seward and Anchorage, Alaska, respectively. Written and verbal comments were accepted until August 8, 45 days after the Environmental Protection Agency's Notice of Availability regarding the Draft EIS appeared in the Federal Register. Verbal and written comments received during the public comment period were thoroughly considered and appropriate revisions were made to the Draft EIS. The revisions are reflected in this Final EIS.

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PROPOSED IMS INFRASTRUCTURE IMPROVEMENT PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
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EXECUTIVE SUMMARY
ENVIRONMENTAL IMPACT STATEMENT

INSTITUTE OF MARINE SCIENCE
PROPOSED INFRASTRUCTURE IMPROVEMENT PROJECT
SEWARD, ALASKA

1.0 INTRODUCTION

This Environmental Impact Statement (EIS) examines a proposal for improvements at the existing University of Alaska, Fairbanks, Institute of Marine Science (IMS), Seward Marine Center. The *Exxon Valdez* Oil Spill (EVOS) Trustee Council is proposing to improve the existing research infrastructure to enhance the EVOS Trustee Council's capabilities to study and rehabilitate marine mammals, marine birds, and the ecosystem injured by the *Exxon Valdez* oil spill.

The Proposed Project, Alternative I, would include approximately 75,000 square feet of interior improvements and 240,000 square feet of exterior improvements to a 7 acre site on Resurrection Bay in Seward, Alaska. It would incorporate two components, a research and rehabilitation component, and an education and visitation component. Alternative II, Research and Wildlife Rehabilitation Only, would reduce the project design by eliminating the education and visitation component. The No Action Alternative, Alternative III, would mean that none of the activities described for Alternatives I or II would occur.

The analysis in this document focuses on the effects associated with construction and operation of the proposed project and its proposed alternatives. The EIS gives a detailed description of all major elements of the proposed project and its alternatives; identifies resources of major concern that were raised during the scoping process; describes the environmental background conditions of those resources; defines and analyzes the potential effects of the proposed project and its alternatives on these conditions; and identifies mitigating measures that are part of the project design as well as those proposed to minimize or reduce the adverse effects. Included in the EIS are written and oral comments received during the public comment period.

The project design assumptions used for the analysis of effects were provided by the applicant. Background information was mainly driven from existing studies that were completed for a previous project at the site. Changes to specifics of the project design could occur as development of the project progresses. Should changes be made that effect the analysis of this document, an amendment would be submitted.

This EIS is not intended, nor should it be used, as a local planning document by potentially affected communities. The assumptions in this document do not represent a Department of Interior recommendation, preference, or endorsement of any facility, site, or development plan. Local control

of events may be exercised through planning, zoning, land ownership, and applicable state and local laws and regulations.

2.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

The *Exxon Valdez* Oil Spill Draft Restoration Plan prepared by the EVOS Trustee Council in November 1993, identifies categories of natural resources that show little or no sign of recovery nearly five years after the *Exxon Valdez* oil spill. The Plan includes a restoration strategy for these resources that includes four parts: (1) conduct research to find out why these resources are not recovering; (2) initiate, sustain, or accelerate recovery; (3) monitor recovery; and (4) protect injured resources and their habitats.

The purpose of the proposed project is to provide the infrastructure for long-term research and monitoring of the ecosystem affected by the *Exxon Valdez* oil spill, with the goal of benefiting the long-term health and restoration of affected resources. The facility is intended to serve as a center for the coordination and integration of on-going and planned comprehensive research and monitoring of the EVOS area as part of an overall restoration plan.

Alaska waters host one of the largest marine mammal and seabird concentrations in the world. Yet Alaska, with 38 percent of all coastline in the United States, does not have adequate facilities to care for injured or sick marine animals or to study them under controlled conditions. The Alaska scientific research community is largely field based, and supporting laboratory capabilities are very limited. The majority of laboratory work is sent outside the EVOS area to the lower 48 states. The proposed project is intended to provide research and laboratory facilities in Alaska to study, among other things, fish genetics and marine bird and mammal food requirements, growth, reproduction, and medical problems associated with the recovery of wild populations.

3.0 ALTERNATIVE I, THE PROPOSED ACTION

The proposed project would be constructed adjacent to the existing IMS facility in Seward, Alaska, on the shore of Resurrection Bay. It would have two components: (1) a research and wildlife rehabilitation component; and (2) an education and visitation component.

Alternative I proposes improvements that would include: tanks and pens (temporary holding, long-term habitat, and quarantine); a life support system (running seawater and disinfection); a freshwater system; pathology and water quality laboratories; and x-ray, surgery, pharmacy, and necropsy facilities. The research and wildlife rehabilitation component of the project would consist of approximately 49,000 square feet of interior space made up of wet and dry laboratories, staff offices, and a library for the study and rehabilitation of marine mammals, marine birds, and other marine life. The remaining 27,000 square feet of building support area, share with the public education and visitation component, would consist of the life support system (LSS), mechanical, administration, maintenance, and curatorial functions. There would be approximately 46,000 square feet of exterior space containing an outdoor research habitat with tanks and pools for pinnipeds, sea otters, and marine bird species. A 37,000 square foot, 50 space parking lot for staff vehicles would be constructed adjacent to the IMS Rae Building parking lot.

This research habitat would provide for the long-term care of those marine mammals and birds involved in specific research programs. It would, to the extent possible, duplicate the natural environment for proper husbandry and behavioral studies. The habitat would consist of wet pools, dry haul out, and resting areas to accommodate up to four sea otters, 125 seabirds, 6 to 12 harbor seals, and 2 to 4 Steller sea lions. The marine bird habitat would allow for perching, nesting, and swimming as in the natural environment. The habitat would include separate areas for the different species groups and specific individual animals.

The LSS would supply seawater similar to natural conditions for the support of the live tanks, live pools, wet laboratories, and the research habitat. The system would be sized to circulate up to 5,000 gallons per minute (gpm) from Resurrection Bay. The LSS would be a partially closed system using a low pressure sand filtration process and ozonation for disinfection and water quality enhancement as required. The LSS includes: pumps; piping; valves and pipelines for intake, discharge and circulation; and filtration, ozone generation, and emergency circulation systems. A more detailed discussion of the LSS is provided in the EIS.

Approximately 150 gpm of freshwater would be needed for fish genetics studies. This is intended to come from a spring located approximately 2,500 feet south on Lowell Point Road, or from one or more wells drilled on the IMS Seward Marine Center property near the Rae Building.

This EIS analyzes the potential impacts of basing a research vessel and submersible in Seward. A decision on whether an EVOS dedicated research vessel and submersible would be purchased, leased, or chartered would reflect the specific requirements of the long-term research mission and the cost effectiveness of the various options. Such a decision would be made by the EVOS Trustee Council as part of its budget review process. Should a vessel be part of this project, it would use the existing IMS Seward Marine Center dock for loading and unloading the submersible, equipment, and supplies, and would moor at the dock when the R/V *Alpha Helix* is at sea.

The rehabilitation element of this component would have trained staff and resources to respond to routine incidents involving sick, injured, or deceased marine mammals and marine birds in the northern Gulf of Alaska. Examination of such injured marine mammals and birds could provide important data on the status of these species and their habitats. Rehabilitation activities at the proposed facility would aid in the recovery of marine mammal and bird populations that were injured as a result of the *Exxon Valdez* oil spill. Studies would be conducted on animals brought to the facility to determine diseases or injuries that may be affecting the recovery of wild populations. A repository of tissue and blood specimens would be maintained from all animals handled by the facility. Dead birds and mammals would be necropsied to determine, to the extent possible, the cause of mortality.

The goal of wildlife rehabilitation services at the proposed facility is to restore the health of such wildlife in order that they can be released back to the environment. In coordination with the other response facilities in the Prince William Sound area, the proposed facility would provide long-term and critical care functions not currently available in the EVOS area. Wildlife which cannot survive in the wild, or which

present a health risk to wild populations, would be kept at the proposed facility in long-term care for research and public education purposes, transferred to other appropriate facilities, or, as a last resort, euthanized.

The public education and visitation component of the proposed project would function in concert with, and in support of, the research component. It would be funded through private donations; no EVOS joint restoration funds would be involved in its construction or maintenance. These funds, approximately $10 million, are to be raised from private sources by SAAMS. The public education and visitation component would, via admission fees, parking fees, and sales of educational materials, provide financial support for the operations of the facility.

The mission of the public education and visitation component is to offer the message of environmental responsibility of Alaska's marine resources through educational programs. Visitors to the center would observe interpretive displays of a cross-section of Alaska's marine habitats. They would have the opportunity to meet members of the science and research staff, and gain exposure to an array of scientific investigations. The proposed facility would complement marine programs in educational institutions across the state.

4.0 ALTERNATIVE II - RESEARCH AND WILDLIFE REHABILITATION ONLY

Alternative II would have only one component, research and wildlife rehabilitation. The structures and facilities would generally be the same as described above under Alternative I, with the education and visitation components eliminated, including the 166-vehicle parking lot and public plaza area.

The square footage of the indoor space with Alternative II would be approximately 54,000 square feet. The elimination of visitor related indoor space for this alternative, such as the auditorium, retail shop, and lobby, would result in a reduction of the building footprint and massing. The upper level of the building would be eliminated, resulting in a one-story structure at approximately 17 feet above grade.

The outdoor areas for research habitat and research tanks and pools would be the same as for Alternative I, although the subsurface visitor walkway surrounding the tanks would be altered to accommodate researchers only. The proposed walkway would be a partially covered trench that allows researchers to view the animals and have access for haul out areas.

The parking requirement for Alternative II would be 50 vehicles for research staff and associated visitors. Parking would be made available in a newly constructed paved lot adjacent to the north of the existing IMS Rae Building parking lot, as described for Alternative I. A stormwater drainage system would be installed to connect with the city's existing line in Third Avenue. The visitor parking lot, plaza area, and its associated stormwater drainage system would be eliminated (Figure 2-20). The 90,000 square foot visitor parking lot and 67,000 square foot plaza area would be graded and landscaped and would be available for future expansion.

The capital construction cost of Alternative II would be reduced from Alternative I by approximately $10 million. This $10 million difference would not effect the EVOS funding, however, as funds for the education component are intended to come from private donations and fund raising efforts.

5.0 ALTERNATIVE III - NO ACTION

In addition to the two action alternatives, a No Action Alternative is evaluated in the EIS. The No Action Alternative required for consideration under NEPA regulations is interpreted in this EIS to mean no new research/wildlife rehabilitation and public education/visitor facilities would be constructed on the IMS Seward Marine Center site at this time.

Under the No Action Alternative, the project sponsors would continue to use the limited laboratory facilities which exist in the state, and send other laboratory studies out of state. There would not be a facility primarily dedicated to the research needed to support the recovery of species injured as a result of the *Exxon Valdez* oil spill. The EVOS Trustee Council's capabilities to study marine mammals, marine birds, and the ecosystem injured by the *Exxon Valdez* oil spill would continue as currently exists.

6.0 CONCLUSION

The EIS presents an objective and fair analysis of the potential effects of the proposed project and alternatives; it is not an endorsement of the project. Section 2.6 of the EIS summarizes the effects of the proposed action and alternatives. Table 2-4 provides the definitions assumed in assessing these potential effects, and Table 2-5 is a summary of those effects by resource category. Overall, the effects of Alternative I and Alternative II are similar in many respects, both beneficial and adverse. Alternative II addresses the social, recreational, transportation, and quality of life concerns that exist with Alternative I by eliminating the public education and visitation component of the proposed project.

1.0 PURPOSE AND NEED FOR ACTION

CHAPTER 1.0

PURPOSE AND NEED FOR ACTION

1.1 PROJECT BACKGROUND

The *Exxon Valdez* Oil Spill (EVOS) Trustee Council is proposing to improve the existing research infrastructure at the University of Alaska, Fairbanks (UAF) Institute of Marine Science (IMS) in Seward, Alaska, to enhance the EVOS Trustee Council's capabilities to study and rehabilitate marine mammals, marine birds, and the ecosystem injured by the *Exxon Valdez* oil spill.

The EVOS Trustee Council is comprised of the designees of the Administrator for the National Oceanic and Atmospheric Administration (NOAA), the Secretary of the U.S. Department of Agriculture (USDA), the Secretary of the U.S. Department of the Interior (DOI), the Commissioner of the Alaska Department of Fish and Game (ADF&G), the Commissioner of the Alaska Department of Environmental Conservation (ADEC), and the Alaska Attorney General. The EVOS Trustee Council is responsible for decisions relating to the assessment of injuries, uses of the joint restoration funds, and all restoration activities relating to the proposed project.

Funding for the project would come, in large part, from EVOS funds. Overall, the total project capital budget would be approximately $47.5 million, of which approximately $37.5 million would come from EVOS funds. In 1993, the Alaska Legislature appropriated $12.5 million of state EVOS restitution funds to the City of Seward for the planning, design, and construction of the proposed project. In addition, approximately $25 million of EVOS monies have been requested to fund the research and wildlife rehabilitation component of the proposed project. Lastly, approximately $10 million would be raised from private donors to fund the public education and visitation component of the proposed project. Revenue from public education and visitation would be used to offset the operational costs of the proposed improvements.

The proposed IMS Infrastructure Improvement Project has evolved from an earlier project, generally referred to as the Alaska SeaLife Center, which was originally proposed by the Seward Association for the Advancement of Marine Science (SAAMS). The concepts for the Alaska SeaLife Center emphasized public education and visitation. Preliminary plans called for some 84,500 square feet of interior space and 56,000 feet of exterior space devoted to public education and visitation, wildlife rehabilitation, and research, of which a large proportion of the space was allocated to public education exhibits and related facilities. This facility was conceptually designed around a large permanent exhibit of Steller sea lions, with plans also to accommodate other pinnipeds, sea otters, seabirds, and small cetaceans, as well as fish and marine invertebrates.

The EVOS Trustee Council has received scientific advice that long-term research and monitoring programs will still be required after the last scheduled payment from Exxon is to be received in 2001. As a result, the Council has taken the initial steps to set aside a portion of the current Exxon payments

to fund such future research and monitoring activities. The proposed IMS Infrastructure Improvement Project presented to the EVOS Trustee Council for funding consideration in January 1994 is intended to provide facilities to support many of these long-term research and monitoring requirements.

As a result, this project differs importantly from the original proposals for this site, in that its primary purpose would be to supply laboratory and supporting facilities in which to carry out ecosystem-based research and monitoring activities that would be required to implement the restoration program. Looking to future restoration needs, a Scientific Work Group, comprised of representatives of the State and Federal Trustee Agencies and the University of Alaska, has developed a programmatic conceptual design for research and wildlife rehabilitation to be conducted at this facility. Accordingly, a larger proportion of the space in the conceptual design of the proposed IMS improvements is allocated to research needs than was previously planned, such as wet and dry labs, and office space for marine mammal, marine bird, and fish genetics studies. To accommodate the increased research emphasis of the facility, the space allocated to the public education and visitation component has been proportionately reduced and is not to be funded with joint Federal-State settlement moneys. Reductions also have occurred proportionally to the wildlife rehabilitation and administrative areas.

SAAMS has received authorization from the City of Seward and the Alaska Department of Administration to expend a portion of the 1993 State legislative appropriation to conduct planning and design for the proposed project, now referred to as the IMS Infrastructure Improvement Project or proposed project. The remaining 1993 legislative appropriation would be made available when all capital funding is in place to construct the project.

The EVOS Trustee Council has approved financial support for the proposed project at Seward, Alaska, contingent upon:

1) Ensuring the project complies with the National Environmental Policy Act (NEPA);

2) Consultation with appropriate entities, including the University of Alaska, the City of Seward, SAAMS, and appropriate Trustee Agencies to review the assumptions relating to the proposed improvements, and capital and operating budgets;

3) Development of an integrated funding approach which assures that the use of trust funds are appropriate and legally permissible under the terms of the Memorandum of Agreement and Consent Decree (related to the *Exxon Valdez* oil spill settlement); and

4) Preparation of a recommendation of the appropriate level of funding for consideration by the Trustee Council that would be legally permissible under terms of the Memorandum of Agreement and Consent Decree.

The proposed site in Seward has important aspects that make it suitable for the proposed project:

- Located in the EVOS area;

- Existing marine research program and infrastructure (marine labs, seawater system);
- Suitable land availability (coastal land with room for expansion);
- Availability of high quality seawater for maintaining marine animals;
- Road accessibility to researchers and the public;
- Proximity to research vessel and dock;
- Availability of adequate water, sewer, and electric utilities; and
- Available opportunities for revenue.

The existing IMS Seward Marine Center has been operated by the UAF IMS since 1970. The existing program consists of marine biological and medical research conducted through the UAF research and graduate student training programs. The areas of study include oceanography, marine biology, physiology, and ecology. The existing laboratory has the only running seawater system in the northern Gulf of Alaska region.

1.2 PURPOSE AND NEED

The purpose of the proposed project is to provide the infrastructure for long-term research and monitoring of the ecosystem affected by the *Exxon Valdez* oil spill, with the goal of benefiting the long-term health and restoration of affected resources. The facility is intended to serve as a center for the coordination and integration of on-going and planned comprehensive research and monitoring of the EVOS area as part of an overall restoration plan.

It is expected that the facility's EVOS research program would be integrated with EVOS funded research at other coastal facilities, including the Auke Bay Laboratory and Prince William Sound Science Center. This would occur through the EVOS annual work plan process, collaboration on projects among researchers at the various coastal facilities, and electronic data links.

The *Exxon Valdez* Oil Spill Draft Restoration Plan prepared by the EVOS Trustee Council in November 1993, identifies 11 categories of natural resources that show little or no sign of recovery nearly five years after the *Exxon Valdez* oil spill. These resources include: common murres, harbor seals, harlequin ducks, marbled murrelets, pigeon guillemots, sea otters, intertidal and subtidal ecosystems, pink salmon, sockeye salmon (Kenai River), and Pacific herring. The Draft Restoration Plan includes a restoration strategy for these resources. This strategy has four parts:

- Conduct research to find out why these resources are not recovering;
- Initiate, sustain, or accelerate recovery;
- Monitor recovery; and
- Protect injured resources and their habitats.

This proposed facility and its anticipated research programs attempt to address real and urgent problems with restoring resources injured by the EVOS. These include helping to develop an understanding of factors affecting the recovery of harbor seals, sea otters, sea lions, pink salmon, herring, and murres, among other injured species.

The monitoring and research program is intended to provide important information to help guide restoration activities. A lack of long-term research into ecosystem relationships and problems may result in less effective restoration, injuries lasting longer than they otherwise might, or, possibly, continued injury. Inadequate information may require land and resource managers to unduly restrict human use of the resources, which could compound the injury to services dependent upon natural resources such as commercial fishing and subsistence activities. Inadequate information may also lead to management actions that inadvertently reduce the productivity and health of a resource, inappropriate restoration actions, or restoration opportunities missed for lack of knowledge.

The ecological monitoring and research program is intended to provide information about key relationships in the ecosystem that affect the recovery of injured resources and resulting services. For example, understanding problems with food sources, habitat requirements, and other ecosystem relationships of an injured resource will provide information that promotes both more effective restoration and management of the resource. The research will provide information to help determine why certain species are not recovering, and provide baseline data for early identification of future problems that could also impact restoration of the EVOS injured resources. The research also may provide information about previously unknown spill injuries or change the understanding about known injuries. In many cases, research is needed to achieve restoration or, in the interim, improve management decisions to protect a resource and the services it provides.

Since the mid-1970's, a variety of marine mammals and seabirds that feed in pelagic offshore areas have been declining in the northern Gulf of Alaska and Prince William Sound. These include harbor seals, marbled murrelets, and pigeon guillemots, as well as sea lions and kittiwakes. In contrast, resources using nearshore areas, such as sea otters and sea ducks, appear to have been stable or increasing during the same time period (except for mortality attributed to the EVOS). This has led biologists to think that differences inherent in the food webs of the declining species may be responsible for differing trends. However, the mechanisms of the declines are unknown. In the case of seals, it may be poor juvenile survival. In the case of seabirds, it may be poor survival of chicks.

In order to restore EVOS-injured species, more specific information is needed about the composition of the diet of marine mammals and seabirds; seasonal and annual variability in diet; age-specific differences in diet; and the energetic values of different prey (effects of diet composition on factors such as reproductive success, juvenile or chick survival, and adult condition).

Additionally, there is evidence that exposure to oil from the EVOS caused genetic damage in pink salmon and, possibly, Pacific herring (EVOS Trustee Council, 1994b). Genetic damage may occur not only to the year class that spawned or were exposed during the intense 1989 oiling, but also can be passed down (inherited) to the offspring. The genetic damage may be causing reduced size or affecting reproductive success. While the initial damage is not unexpected, that it may be passed down through generations is an unexpected research finding. This is a critical area of research for pink salmon and Pacific herring.

Genetic research must be conducted under controlled laboratory conditions, preferably with adequate supplies of uncontaminated seawater and freshwater. Currently, fish genetics research related to restoration of injured resources and services in the EVOS area is hampered by the lack of adequate laboratory facilities in Alaska. The proposed project would address this deficiency by providing the required wet and dry laboratory space, and fish rearing tanks with adequate freshwater and seawater supplies to carry out the needed fish genetics research program.

The Alaska scientific research community is largely field based, and supporting laboratory capabilities are very limited. The majority of laboratory work is sent outside the EVOS area to the lower 48 states. The proposed project is intended to provide research and laboratory facilities in Alaska to study, among other things, fish genetics and marine bird and mammal food requirements, growth, reproduction, and medical problems associated with the recovery of wild populations. Researchers from the University of Alaska, ADF&G, and National Biological Survey (NBS) have expressed an interest in conducting and collaborating with research at the proposed facility. Additionally, researchers from academic institutions outside of Alaska, both nationally and internationally, have expressed an interest in conducting research at the proposed facility.

The proposed facility would also promote the recovery of marine mammal and bird species that were injured by the EVOS through treatment and rehabilitation of such species as they are found in the wild. These species include common murre, harbor seal, harlequin duck, marbled murrelet, pigeon guillimot, and sea otter. Although individual marine mammals and birds specifically injured by the oil spill may not be found by the project's 1997 start-up date, individual animals of these species are regularly found sick, injured, or dead in the EVOS area.

Facilities in Alaska for rehabilitating injured marine mammals are very limited and consist of several veterinary clinics, the Alaska Zoo, and a private center for orphaned seals and sea otters near Homer. Facilities for rehabilitating injured marine birds are also limited and consist of the Bird Treatment and Learning Center in Anchorage, the Raptor Rehabilitation Center in Sitka, and industry supported spill response centers in Anchorage and Homer.

A goal of wildlife rehabilitation services at the proposed facility is to restore the health of individual animals in order that they can be released to the wild. Another goal is to establish and maintain a database on animal health issues based on studies of wildlife at the facility. Wildlife which can no longer survive in the wild, or which present a health risk to wild populations, would be kept at the proposed facility in long-term care for research and public education purposes, transferred to other appropriate facilities, or, as a last resort, euthanized. It is expected that an adequate number of animals for research and display would be available from unreleaseable animals, and animals obtained through transfers from other facilities.

While there is an ongoing scientific debate about the efficiency and cost of wildlife rehabilitation, current spill contingency regulations and agency policies dictate that industry must have the capability to treat and rehabilitate injured wildlife. Most of that capability presently exists in mobile response units. These units, however, cannot provide some critical and long-term care functions for mammals and birds that

a fixed facility can provide. The availability of high quality seawater and waste treatment systems, quarantine and intensive care facilities, clinical laboratories, surgical and necropsy facilities, and a highly trained staff would make the proposed facility useful for spill response and animal rehabilitation in concert with other response capabilities developed by industry.

Because a facility of this type was not available during EVOS, it is plausible that problems concerning early disease detection and potential transmission to wild populations, as well as improving the survival rates of released animals would have been better understood had such a facility existed in 1989. During the EVOS, the unreleaseable otters were sent to facilities outside of Alaska, and the opportunity to study the long-term effects of their exposure to oiling has been diminished.

Alaska waters host one of the largest marine mammal and seabird concentrations in the world. Yet Alaska, with 38 percent of all coastline in the United States, does not have adequate facilities to care for injured or sick marine animals or to study them under controlled conditions. The proposed facility would rectify this.

1.3 THE NEPA PROCESS

The NEPA is a national charter for the protection of the environment. It applies to all federal projects or projects that require federal involvement. The purpose of NEPA is to help public officials make decisions that are based on an objective understanding of environmental consequences, and take actions that protect, restore, and enhance the environment. The NEPA is a procedural law which outlines a structured decision-making process for federal agencies. The Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations (CFR) 1500-1508) are the primary implementing regulations for NEPA. To ensure compliance with NEPA, a specified process for the proposed project must be followed. The steps in this process are presented below.

1.3.1 Scoping

Scoping is designed to be an open, public activity for identifying the scope of significant environmental issues related to the proposed project. It can be accomplished through written communications, statements at public scoping meetings, and/or formal and informal consultation with agency officials, interested individuals, and groups. If significant environmental issues are identified (significant as defined in the CEQ regulation 40 CFR 1508.27), an Environmental Assessment (EA) is prepared to determine if significant impacts would result from the proposed project. If no significant impacts are identified in the EA, then a Finding of No Significant Impact (FONSI) is prepared. If significant impacts are perceived likely, an Environmental Impact Statement (EIS) is prepared. If significant environmental issues are identified early in the scoping process, or if there exists sufficient public interest/concern, a decision may be made to proceed directly with preparation of an EIS, without first preparing an EA. The scoping process for this proposed project was initiated in March 1994; and public scoping meetings were held in Seward and Anchorage. The results of the scoping process are contained in Section 1.5 of this EIS.

1.3.2 Draft EIS

Sufficient public interest/concern existed to warrant preparation of an EIS for the proposed project, and a *Notice of Intent* to prepare an EIS was published in the Federal Register on March 9, 1994, by the lead federal agency, DOI, on behalf of the EVOS Trustee Council. An EIS is a written document which evaluates all the important environmental and social/economic impacts which may result from the proposed project. It focuses on cause and effect relationships, providing sufficient evidence and analysis for determining the magnitude of impacts and ways to minimize harm to the environment. An EIS should include a full and fair discussion of significant environmental impacts and inform decision-makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts, or which would enhance the quality of the human environment.

1.3.3 Public Comment and Final EIS

Following publication of the Draft EIS, a public comment period ensued, and public hearings were conducted. Verbal and written comments received were considered and the Draft EIS was revised, as appropriate. All public comments on the Draft EIS are addressed in this Final EIS. Public hearings on the Draft EIS were held on July 26, 1994, in Seward and July 28, 1994, in Anchorage. Written comments were accepted until August 8, 1994, 45 days after the Environmental Protection Agency's (EPA) Notice Of Availability regarding the Draft EIS appeared in the Federal Register.

1.3.4 Record of Decision

Upon publication of the Final EIS, a Recond of Decision (ROD) is prepared. The ROD will include: (1) a statement of what the decision is regarding the proposed project; (2) an identification of alternatives considered in reaching the decision, specifying the alternative(s) considered environmentally preferable; and (3) a statement about whether all practicable means to avoid or minimize environmental harm from the selected alternative have been adopted, and if not, why they were not. The ROD is anticipated in late October 1994, 30 days after issuance of the Final EIS. Following issuance of the ROD, the EVOS Trustee Council will make its final decision regarding commitment of EVOS funds for this proposed project.

As separately discussed in this chapter, the EVOS Trustee Council has proposed to fund only the research and rehabilitation component of this project. The NEPA requires, however, an examination of the environmental impacts associated with the construction and operation of the entire facility, and not merely those impacts associated with federal funding or federal decision-making. As a result, a substantial portion of the analyses in this Draft EIS is directed to the impacts associated with the public education and visitation component of the proposed facility, even though no joint federal-state settlement funds are to be expended for that purpose.

1.4 OTHER LEGAL MANDATES AND REGULATORY REQUIREMENTS

Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA), which deals with subsistence and land use decisions, does not apply to the proposed action because the proposed project does not involve federal public lands.

The major federal, state, and local permits, and other approvals required for development of the proposed project, are summarized in Table 1-1. How each of these is addressed in this EIS is briefly discussed below. These descriptions are meant to provide a general idea of how the EIS process complements the various individual permitting processes.

Because it is separate from the NEPA review, the submitting process involving federal, state, and local permits and authorizations has been initiated during the review of the Draft EIS. Information from the Draft EIS was incorporated into the permit applications, and the applications will be updated to reflect information in this Final EIS. Permitting is expected to be near completion by the end of 1994.

1.4.1 Federal Permits and/or Approvals

National Pollutant Discharge Elimination System (NPDES) Permit - U.S. EPA: The EIS describes the existing water quality and quantity requirements for the proposed project; the expected pollutants, concentrations, quality, and locations of wastewater treatment facilities and discharges; and the expected impacts resulting from discharges. It identifies the type and location of the various project components, and describes the process by which they were sited. The EIS discusses the need for monitoring water quality during operation of the proposed project and generally describes the type of monitoring program that might be implemented.

Spill Prevention, Containment, and Countermeasure (SPCC) Plan - EPA: The EPA requires an SPCC Plan to be developed by owners and operators of any onshore facility storing in excess of 1,320 gallons of fuel in above ground tanks. The SPCC Plan will describe the exact location of the fuel storage tank and methods of spill prevention to be implemented at the proposed facility. The EIS describes the possible components of the SPCC to be developed for the proposed project.

Section 404/10 Permits - U.S. Army Corps of Engineers (COE): The COE issues a permit that combines its authorities under Section 404 of the Clean Water Act (discharge of dredged or fill material into the waters of the U.S.) and Section 10 of the Rivers and Harbors Act of 1899 (construction within navigable waters). The area between mean high water and extreme high water is considered waters of the U.S. and is subject to the provisions of Section 404.

The EIS identifies the existing waterways and wetlands within the vicinity of the proposed project.

To address the Section 10 requirements, the EIS describes the existing navigable waters within the project area and how the project components (intake and outfall structures) would affect them. It discusses the types of facilities, the process by which they were sited, and how they would be constructed and

operated. The EIS describes the various alternatives and compares them with respect to impacts upon the integrity of the coastline and sediment movements past the facilities. It also discusses mitigating measures to minimize impacts.

Section 404(b)(1) Permit Review - COE: The same information provided in the EIS which is needed by the COE in its Clean Water Act Section 404 permitting process (discussed above) is used by the EPA for its Section 404(b)(1) review of COE Section 404 Permit applications.

Endangered Species Act Section 7 Consultations - National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (FWS): To assure conformance with the requirements of Section 7(a)(2) of the Endangered Species Act of 1973, as amended, DOI requested information from NMFS and FWS regarding any threatened or endangered species in the area of the proposed project (letters dated 4/18/94). In its letter dated May 6, 1994, NMFS identified the Steller sea lion, a threatened species, as one which occurs near the offshore border of the proposed project site. However, NMFS concluded that, because this species does not frequently enter the shoreline waters or haul out on terrestrial portions of the project area, it is unlikely that the species would be affected by the proposed project.

In its letter dated May 13, 1994, FWS also concluded in its consultation that no threatened or endangered species under its jurisdiction occur in the project area. Several "candidate species" do occur in the project area, however, and FWS encouraged agencies with information about these species to provide it to FWS.

Consultation will need to be reinitiated should proposed project plans change or new information becomes available that alters the basis of the conclusions of the two agencies. Copies of correspondence between DOI and NMFS and FWS can be found in Appendix A of this EIS.

National Historic Preservation Act (NHPA) Section 106 Consultation: Section 106 of the NHPA requires the lead federal agency for a federally assisted, permitted, or licensed undertaking to take into account the effects of the undertaking on properties included in or eligible for the National Register of Historic Places. Further, Section 106 requires consultation with the State Historic Preservation Officer (SHPO) and provides for the Advisory Council on Historic Preservation to comment. Consultation with the SHPO is underway; a Memorandum of Agreement (MOA) is being developed to ensure any possible adverse effects to archaeological resources and historic properties are minimized. The Section 106 review is being conducted in parallel with preparation of this EIS, and it will be completed prior to issuance of the ROD on the proposed action. The Section 106 compliance process is described more fully in Section 3.8 of this EIS. Information obtained through the Section 106 process is reflected in appropriate sections of this EIS. Correspondence between DOI, the lead federal agency, and the SHPO can be found in Appendix A. Results of an archaeological survey and historic properties inventory and evaluation in the area potentially affected by the proposed project can be found in Appendix B.

Floodplain Management Considerations - all federal agencies: The EIS identifies existing floodplains within the project area, locates the various project options as being within or outside those floodplains, and describes the potential impacts of facilities located within floodplains. This information is used by all federal agencies for their floodplain management considerations as required by Executive Order 11988.

Wetland Protection Considerations - all federal agencies: The same information which is needed by the COE in its Section 404 permitting process (discussed above) is also used by other federal agencies for their wetlands protection considerations as required by Executive Order 11990.

Scientific Research and Enhancement Permit and Public Display Permit - NMFS: The NMFS has responsibility for oceanic species under the Marine Mammal Protection Act (MMPA) of 1972, the Endangered Species Act of 1973, and the Fur Seal Act of 1966. Under these statutes and implementing regulations, NMFS may issue permits for the taking and importing of marine mammals for scientific research, public display, or to enhance the survival or recovery of a species or stock. The Scientific Research and Enhancement Permit application requires descriptions of the number and species of animal(s) to be taken, the method of taking, and detailed research objectives and proposed scientific methodologies. Animals incapable of surviving release back into the wild, or which may pose a health risk upon their return, will be retained at the proposed facility. A Public Display Permit would be required for animals not returned to the wild that were no longer being used for research.

Animal and Plant Health Inspection Service (APHIS) License or Registration - USDA: The USDA has responsibility, under the Animal Welfare Act (AWA), for captive marine mammals and has established regulations and standards, "Specifications for the Humane Handling, Care, Treatment, and Transportation of Marine Mammals," for their well being. Most U.S. facilities maintaining marine mammals are required to be licensed by, or registered with, APHIS. For a new facility, an APHIS inspection and approval is required before NMFS can authorize the placing of marine mammals into the facility.

1.4.2 State Approvals

Certificate of Reasonable Assurance - ADEC: This certificate is issued in conjunction with the COE Section 404 permit. The EIS provides an analysis of hydrology and water quality baseline conditions and predicts the hydrology and water quality of receiving waters during construction and operation. (Water quality monitoring would continue through the life of the project to verify the water quality projections made in the EIS. Please refer to the NPDES description for additional details.)

The same information which is needed by the COE for its Sections 404 and 10 permitting processes (discussed above) is also used by ADEC in its consideration of issuance of a Certificate of Reasonable Assurance (Section 401 Permit).

Certificate of Reasonable Assurance (Section 401 Permit) - ADEC: A NPDES permit with the required state Certificate of Reasonable Assurance, when issued, serves as the state wastewater disposal permit for the project. Estimates are provided for the type and concentrations of all significant water quality parameters. A complete water balance for the intake and outfall is provided as the basis for these projections.

Wastewater Disposal Permit - ADEC: The ADEC must authorize the discharge of wastewater into or upon all waters or land surfaces of the state. This includes review and approval of treatment plans for facility wastewater discharges. The EIS provides an analysis of hydrology and water quality baseline conditions and predicts the hydrology and water quality of receiving waters during operations.

Coastal Zone Management Consistency Determination - Division of Governmental Coordination (DGC): The EIS provides a sufficient description of the location, type, and operation of the proposed project facilities to allow DGC's multi-agency and the Kenai Peninsula Borough to review the applicant's certification of consistency with the approved Kenai Peninsula Borough Coastal Management Program.

Material Sale Permit - Department of Natural Resources (DNR): The EIS identifies the need to construct a wave barrier to protect portions of the proposed project against potential wave damage. The wave barrier will be constructed from approximately 5,000 cubic yards of rock rip-rap material obtained from one of five potential sites. A Material Sale Permit will be required from DNR prior to the removal of rip-rap and other borrow materials from the quarry. An application has been submitted for use of material from an existing state quarry adjacent to Lowell Point Road in Seward.

Water Rights - DNR: The DNR must issue a water use permit prior to appropriating freshwater from a well, spring, or stream. Water from potential wells on the project property or from a spring southwest of the facility are being considered as sources for the freshwater needs of the facility.

Fish Transport and Scientific and Educational Collecting Permits - ADF&G: The EIS provides biological information upon which permit decisions relating to fish transport and the taking of fish, shellfish, game, and aquatic plant species are made.

1.4.3 Local Approvals

Conditional Use Permit (CUP), Variance and Zoning: The EIS describes the extent of the project site and the types of project facilities proposed for the site. It also describes potential environmental effects which may be of specific concern to the City of Seward. This would include, but is not limited to, local building ordinances and compliance with the Seward Comprehensive Plan (SCP).

The EIS reflects the current status of local approvals which include:

- A building height variance authorized by the Planning and Zoning (P&Z) Commission.

- A recommendation from P&Z to City Council for a Land Use Plan and Zoning change for Tracts 2 through 6 to Institutional (I).

- A City Council action to introduce an ordinance for a public hearing to change the Land Use Plan and Zoning for the proposed project site to Central Business District (CBD).

- A P&Z resolution adopted authorizing issuance of a CUP for the proposed project with conditions.

- An appeal filed by SAAMS on two of the conditions stipulated in the CUP.

Building Permit: The facility is required to be designed in accordance with the City of Seward's ordinances and the pertinent sections of the Uniform Building Code. The EIS describes the facility's design and construction methods.

TABLE 1-1 ENVIRONMENTAL PERMITS AND APPROVALS FOR PROJECT DEVELOPMENT			
Regulated Activity (Required Permit/Approval)	**Regulatory Agency**	**Authority**	**Description**
Federal Authority			
Wastewater discharge into a waterway (National Pollution Discharge Elimination System [NPDES] Permit)	EPA	Section 402, Federal Water Pollution Control Act of 1972, as amended in 1977 (Clean Water Act) (33 USC 1251)	EPA must authorize any activity or wastewater system which would discharge waste from one or more points into a waterway.
Wastewater discharges to waterways via storm water, NPDES Permit for Stormwater Discharges	EPA	Section 402 Clean Water Act (40 CFR 122.26)	EPA requires stormwater discharges to comply with Stormwater Pollution Prevention Plans that would be developed for both the construction and operation of the facility.
Discharge of dredged or fill material into U.S. waters, including wetlands (Review of COE Section 404 Permit)	EPA	Section 404, Federal Water Pollution Control Act of 1972, as amended in 1977 (Clean Water Act) (33 USC 1344)	EPA reviews COE Section 404 Permit under its Section 404(b)(1) "Guidelines for Specifications of Disposal Sites for Dredged or Fill Material."
Storage of over 660 gallons of fuel in a single container or over 1,320 gallons in aggregate in tanks above ground (Spill Prevention Containment and Countermeasure [SPCC] Plan)	EPA	Section 311, Federal Water Pollution Control Act Amendments of 1972 (40 CFR 112)	EPA requires SPCC Plans to be developed by owners and operators of any onshore facility storing in excess of 1,320 gallons of fuel in above ground tanks or over 660 gallons per tank.
Discharge of dredged or fill material and proposed mechanized land cleaning and excavation into U.S. waters, including wetlands (COE Permit)	COE	Section 404, Federal Water Pollution Control Act of 1972, as amended in 1977 (Clean Water Act) (33 USC 1344)	The COE must authorize the discharge of dredged or fill material and proposed mechanized land cleaning and excavation in U.S. waters, including wetlands. Includes siting of facilities, roads, etc. COE determines compliance with the Section 404(b)(1) guidelines.
Construction of structures or work in or affecting navigable waters of the U.S. (COE Permit)	COE	Section 10, Rivers and Harbors Act of 1899 (33 USC 403)	The COE must authorize the construction of any structure in or over navigable waters of the U.S.; the excavation of material on same; or any other work affecting the course, location, condition, or capacity of such waters.

TABLE 1-1
ENVIRONMENTAL PERMITS AND APPROVALS FOR PROJECT DEVELOPMENT

Regulated Activity (Required Permit/Approval)	Regulatory Agency	Authority	Description
Development possibly affecting threatened or endangered terrestrial plant species or animal species including birds and freshwater fish (Section 7 Consultation)	U.S. FWS	Section 7, Endangered Species Act of 1973, as amended (16 USC 1531)	FWS has determined that no threatened or endangered species are present in the project area. Should project plans change, or new information become available that alters this conclusion, a Section 7 Consultation will be reinitiated with FWS.
Development possibly affecting threatened or endangered animal species, including marine mammals and anadromous fish (Section 7 Consultation)	NMFS	Section 7, Endangered Species Act of 1973, as amended (16 USC 1531)	NMFS has identified that the Steller sea lion, a threatened species, occurs in Resurrection Bay. It was determined unlikely that the species would be affected by the proposed action. Should project plans change, or new information become available that alters this conclusion, a Section 7 Consultation will be reinitiated with NMFS.
Scientific Research and Enhancement Permit	NMFS	Marine Mammal Act of 1972, Endangered Species Act of 1973, Fur Seal Act of 1966	NMFS may issue permits for the taking and importing of marine mammals for scientific research, public display, or to enhance the survival or recovery of a species.
APHIS license or registration	USDA	AWA "Specifications for the Humane Handling, Care, Treatment, and Transportation of Marine Animals. (9 CFR Part 3)	The USDA has the responsibility to license or register most facilities maintaining marine mammals. For new facilities, an APHIS inspection and approval is required before the NMFS can authorize the placing of marine mammals into the facility.
Development possibly affecting historical or archaeological sites (Review and Comment)	Advisory Council on Historic Preservation (ACHP)	National Historic Preservation Act of 1966, as amended (16 USC 470)	ACHP must be given a reasonable opportunity to review and comment on the adequacy of the management plan for historic or archaeological sites potentially impacted by any federally permitted or licensed project.
Occupancy and modification of floodplains (Floodplain Management Considerations)	All federal agencies	Executive Order 11988 (Floodplain Management) May 24, 1977	All federal agencies must avoid, to the extent possible, adverse impacts associated with occupancy and modifications of floodplains, including direct or indirect support of floodplain development, whenever there is a practicable alternative.

TABLE 1-1 ENVIRONMENTAL PERMITS AND APPROVALS FOR PROJECT DEVELOPMENT			
Regulated Activity (Required Permit/Approval)	**Regulatory Agency**	**Authority**	**Description**
Destruction or modification of wetlands (Wetlands Protection Considerations)	All federal agencies	Executive Order 11990 (Protection of Wetlands) May 24, 1977	All federal agencies must avoid, to the extent possible, adverse impacts associated with destruction and modification of wetlands, including direct or indirect support of new construction in wetlands, wherever there is a practicable alternative.
State of Alaska Authority			
Discharge into navigable waters (Certificate of Reasonable Assurance)	(ADEC)	Section 401, Federal Water Pollution Control Act of 1972, as amended in 1977 (Clean Water Act) (33 USC 1341); AS 46.03.020; 11 AAC 15; 18 AAC 70; 18 AAC 72	ADEC must issue a certificate stating that the proposed activity would comply with the requirements of the Federal Water Pollution Control Act. Completion of all federal permits, including NPDES, and Section 404, would depend upon ADEC's granting of a Certificate of Reasonable Assurance.
Wastewater discharge into all waters of the state (Wastewater Disposal Permit)	ADEC	AS 46.03.020, .100, .110, .120, & .710; 18 AAC 15, 70, & 72.010	ADEC must authorize the discharge of wastewater into or upon all waters or land surfaces of the state. This includes review and approval of treatment plans for facility wastewater discharges.
Development possibly affecting historic or archaeological sites (Cultural Resources Concurrence)	Office of History and Archaeology/State Historic Preservation Office (SHPO)	National Historic Preservation Act of 1966, as amended (16 USC 470); AS 41.35.010 to .240, Alaska Historic Preservation Act	For any federally permitted, licensed, or funded project, the SHPO must concur that cultural resources would not be adversely impacted, or that proper methods would be used to minimize or mitigate impacts which would take place. Concurrence must be received before federal permits can be granted.
Development within the coastal zone (Coastal Zone Consistency Determination)	Governor's Office of Management and Budget, DGC	Coastal Zone Management Act of 1972, as amended in 1976 (16 USC 1451); AS 46.40 Alaska Coastal Management Program Act of 1977; 6 AAC 50	DGC must issue a Coastal Zone Consistency Determination that, to the extent practicable, a development project would be consistent with the approved Alaska Coastal Management Plan.
Purchase of materials from State of Alaska (Material Sale)	DNR - Division of Lands	AS 38.05; 11 AAC 71.070 through .075	DNR must issue a Material Sale Permit prior to the removal of borrow material from a state operated quarry site.

TABLE 1-1

ENVIRONMENTAL PERMITS AND APPROVALS FOR PROJECT DEVELOPMENT

Regulated Activity (Required Permit/Approval)	Regulatory Agency	Authority	Description
Water Rights (Water Use Permit)	DNR - Division of Water	AS 46.15; 11 AAC 93	DNR must issue Water Rights prior to any appropriation of freshwater from a well, spring, or stream.
Life and Fire Safety Check	Department of Public Safety, Division of Fire Prevention, State Fire Marshall	AS 18.70.080 13 AAC 50.027	Review ensures compliance with state fire safety regulations to protect the public from personal injury and property loss.
Fish Transport Permit	ADF&G	AS 16.05.251	Governs transportation, possession, or release of live fish transported or cultivated for human consumption or sport fishing purposes.
Scientific and Educational Permit	ADF&G	AS 16.05.020 and 16.05.930	For collection, possession, importation, and exportation of all species of game, fish, and aquatic plants.
Local Authority			
(Coastal Zone Consistency Determination)	Kenai Peninsula Borough	Coastal Zone Management Act of 1972, as amended in 1976 (16 USC 1451) AS 46.40 Alaska Coastal Management Program, 1977; Borough Ordinance 90-39 (6/19/90)	Coastal District (Borough) must make a recommendation to the state that the applicant's Coastal Zone Consistency Certification, to the maximum extent practicable, as a development project would be consistent with the Borough's approved Coastal Management Plan.
Development in a Floodplain (Floodplain Development Permit for Zone A & V3)	Kenai Peninsula Borough	AS 29.06	Construction within floodplain areas requires certain construction standards be met.
CUP/Rezoning	City of Seward	Local Ordinance	City review for conformance with Comprehensive Use/Land Use Planning and Zoning.
Building Construction (Building Permit)	City of Seward	Local Ordinance	City reviews projects for conformance with local ordinances (eg., setbacks, heights, etc.) and the Uniform Building Code.

1.5 RESULTS OF THE SCOPING PROCESS

To begin the public notification and scoping process, a *Notice of Intent* was published in the Federal Register on March 9, 1994, that announced the anticipated preparation of an EIS for the proposed project and the opportunity for public input.

Newsletters were mailed to approximately 5,000 people and/or organizations in communities throughout Alaska, and to interested parties in the lower 48 states; public meetings were announced; and written and verbal comments were invited.

Public meetings were held on March 22 and 24, 1994 in Seward and Anchorage, respectively. In addition, a scoping meeting for federal and state agency representatives was held on March 29, 1994. Advertisement of the meetings was placed in seven newspapers throughout the state, primarily in those with coverage of potentially affected communities. The newspapers were the *Seward Phoenix Log*, *Anchorage Daily News*, *Cordova Times*, *Valdez Vanguard*, *Homer Times*, *Peninsula Clarion*, and *Kodiak Daily Mirror*. Public announcements were scheduled on radio stations, and notices were posted in public places.

A follow-up newsletter was mailed to the public summarizing the information gathered during scoping and identifying the issues and alternatives to be analyzed in the EIS.

1.5.1 Public Comments

Nearly 100 people attended scoping meetings in Seward and Anchorage. In addition, over 300 written comments were received during the scoping period. The following summarizes the verbal and written comments received.

Program Elements:

- A facility to experiment on marine mammals would be worthwhile because no such facility exists elsewhere in Alaska. However, there is no need for a new coastal institute with new researchers. This would duplicate other efforts around the state. There is a sufficient number of qualified researchers in existence in Alaska now at IMS Fairbanks; other units of the School of Fisheries and Ocean Science (SFOS) in Juneau, Kodiak, Anchorage, etc; ADF&G; FWS; NBS; and NMFS.

- Recommendations for programs to be available at the facility include ecosystem studies, marine environment studies, fisheries technology, marine food technology, boat operations (skill, maintenance, safety), marketing and quality control, oil spill technology, and aquaculture and fish farming. These could be provided through seminars, workshops, credit classes, lectures, research capabilities, and degree or certification programs.

- A development such as this should include a microscopy facility with dark room and maybe computer illustration capabilities. A microscopy lab should include a transmission and scanning microscope plus a light microscope with brightfield, phase, and fluorescence capabilities, also an inverted scope with phase for tissue cultures. This type of lab would enhance any biological research and the pictures generated would be great for wall displays to interest the public. No complete microscope facility presently exists in the State of Alaska; and the proposed facility would fill a void for investigators.

- The facility proposed for Seward should focus on marine mammals, and a facility for marine birds should be located in Homer. The Homer facility could be combined with FWS' seabird biologists located there.

- Recommendations that the facility be used to train licensed veterinarians in wildlife rehabilitation for response during emergency situations in Prince William Sound or Cook Inlet.

Comments on the Research and Wildlife Rehabilitation Component:

- A recommendation was received to drop the wildlife rehabilitation component of the proposed project. There will not be enough injured species on an annual basis to support development of a large rehabilitation center.

- The holding of animals in captivity for public enjoyment only is an exploitation of animals.

- Disagree with the need for the submersible and support vessel. These vessels are not only expensive to purchase but the annual overhead is high. There are research submersibles all over the world that could be leased, if required, for particular studies.

- Many of the proposed facilities and operations are a duplication of what already exists throughout the state.

- The project should focus on the restoration of Alaska's damaged environment and wildlife populations.

- The research vessel and submersible should be available for public education to generate revenue for its operating costs.

- Research should include the study of infectious conditions that historically have not been seen in the Sound but are now occurring. Should also consider the impacts of the spill or other pollution on subsistence food chain links, i.e. DDT in harbor seals, etc.

- Would like to see the proposed facility work with area schools to ensure that students have the greatest possible chance to participate in on-going research projects.

- Although wildlife rehabilitation is popular with the general public, there remain questions regarding its overall general application in conjunction with large scale environmental disasters. Rehabilitation is a labor intensive and expensive commitment. Once a public facility is provided for such an activity, we can guarantee there will be no lack of injured animals that will be rescued and brought there. Rehabilitation could become a major financial and time sink that could drain resources from other activities. We are not suggesting that rehabilitation not be considered, but believe the sponsors should seriously consider whether they wish to make it a major activity of the facility.

- Industry presently has the responsibility of wildlife rehabilitation with oversight by the federal government. Industry has been encouraged to provide mobile facilities to respond to spills throughout the State. A fixed facility in Seward would not be able to provide the needed care in a timely manner should a major spill event occur in a remote part of Alaska.

- Identify the research and monitoring needs of the injured resources and services in the spill impacted area to justify facility components.

- Determine how to efficiently and effectively use existing research facilities, and state and federal agencies in the entire spill impacted area, to accomplish the goals and objectives of the comprehensive research and monitoring plan. Coordinate and integrate the expertise and capabilities of facilities in Seward, Kodiak, Cook Inlet, and Prince William Sound. This will ensure that there is no duplication of effort between areas, or unnecessary competition for scarce funds.

Comments on the Public Education and Visitation Component:

- Public education should focus on university and extension service course work and libraries. Gift shops should be left to the city.

- A visitation component should not be part of the project. Funds should be directed to fisheries research/enhancement and repair of damaged habitat for the benefit of all Alaska, not the City of Seward and the tourists.

- Concerns were raised about what types of animals would be kept in this facility and whether they can survive captivity.

- Possible options to maintaining captive animals for visitation purposes are an I-MAX Theater or Virtual Reality Theater. These would be cheaper, reliable, humane, and still generate money for research.

- A formal training program should be part of the program to teach handling skills and perhaps response skills, such as how to clean and care for oiled and injured animals.

- The interface of science, education, and public participation will be key to the success of the project.

- Education displays should include information on our dependence on oil and suggest ways to reduce consumption, such as car pooling and solar energy. Center should be 60% research and 40% visitation services.

- Contact area school boards to implement an environmental education component.

Project Design:

Project design issues included the ability of the facility to withstand earthquakes, allowing adequate space to treat ill animals, allowing for adequate training space, and recycling.

- The project design must consider the risk of earthquakes. If large tanks are used, address how they should be protected from seismic activity.

- Egress for the staff and visiting public after an earthquake and prior to a tsunami should be easy, clearly marked, and lead quickly to higher ground or public transportation. As there will be chemical reagents needed for research, storage shelves should be lipped, guarded, or cut-out to keep containers in place and prevent spills. The risk of hazardous materials spills or human injury subsequent to a natural event should be designed for and prevented.

- Animal treatment, recovery, observation, and research areas should have adequate space for isolating sick animals, allowing healing animals the space they need for recovery of their strength.

- Project design should include classrooms for formal training programs for students, researchers, and public volunteers.

- In the event of other hazardous material spills, the appropriate infrastructure will be necessary to deal with large training requirements. Additional land should be available for the construction of temporary facilities.

- To the greatest extent possible, waste generated by the Center must be recycled.

Air Quality:

- If there are outdoor tanks for marine mammals, they will have their own particular smell which may impact downtown Seward.

- What impacts will the area activities (coal facility, fish processing plant, ferry dock) have on research activities? If outdoor tanks are used, coal dust may collect in them and foul support systems.

Noise:

- If there are outdoor tanks for marine mammals, will their noises impact downtown Seward?

Marine Mammals:

- This whole scenario is obviously a plan to establish a center where captured and exploited wild sea mammals are touted for the amusement of tourists. Alaska's marine mammals are hardly inaccessible to visitors. Our marine mammals do not need more research. What they need is to be left alone and not to be exploited.

Social Environment:

- Concern was expressed that the project would impact the "small town atmosphere" of Seward with traffic problems; increase pollution, crime, and overcrowding; and overload the city utilities, hospital, and social services.

- The project could cause negative impacts on the social environment of Seward.

- Project will cause taxes to rise and will increase the population.

- Researchers and students utilizing the facility would need housing either on or off site. School groups visiting the facility may need overnight accommodations.

Local Involvement:

- An effort should be made to assure that what is already known by local residents about the marine ecosystem of the region is collected and incorporated into the facility.

- Local residents could be trained to collect animals and/or tissue samples.

Aesthetics:

- The facility may reduce existing views of the bay.

Historic Resources:

- Concern was expressed regarding the potential impacts to the historic railroad station.

Land Use and Zoning Compatibility:

- Concern was expressed regarding the displacement of the teen center.

Site Suitability:

- Proposed site is a high tsunami risk location.
- The nature of facilities in the area may impact activities at the research center. Discharges from ferries or commercial canning operations may influence the water intake for the facility.
- There should be adequate room on-site for future expansion of the facility.

Economic Concerns: Questions were raised both about the ongoing costs to support the proposed facility and the potential costs to the taxpayers of Seward for roads and utilities.

- Concerns were expressed about who will pay for the cost of new roads and possible land purchase for additional parking.
- The tax status of the proposed facility should be addressed in the EIS. If it is tax exempt, that effect on city residents should be analyzed.
- Will there be higher taxes for Seward residents to support the center or due to higher property values?
- The center will need $4 million in tourist revenues a year just to break even and will not become a legitimate study center because of the operating costs.
- Concern was expressed about anticipated high maintenance and operational costs.
- The proposed facility is cost prohibitive, since operation and maintenance is dependent on a questionable seasonal revenue.
- A concern was expressed about where "private funding" will be found.
- Should the project be approved, a concern was expressed about who would manage the funds to ensure they are spent wisely.
- Evaluate the validity of tourist numbers being used for planning and budget purposes. If the numbers are dependant on the cruise ship passengers, be cautious of the future of this source.

- The economic analysis for this project has highly overestimated the revenues and grants that can be brought into this facility. Operating funds will be required out of the pot of money needed for field studies.

Recreation and Tourism:

- Concern was expressed regarding the potential adverse impact on the shoreline and park area.

Traffic and Parking:

- The location of the ferry access road through the site would be a security concern.
- Traffic congestion and parking spillover may result from the project and may impact the commercial district of Seward.

Construction Impacts:

- Concern was expressed about the potential for siltation and sedimentation in the bay.
- Address the potential noise and dust impacts during construction.
- During construction, concern was expressed about how the ferry and existing vehicle traffic will be handled to minimize congestion.

1.5.2 Agency Meeting

An agency scoping meeting was held on March 29, 1994, at the State of Alaska DGC, Southcentral Regional Office, with 16 federal, state, and local government representatives in attendance. The purpose of the meeting was: 1) to review the permits that may be required for the proposed project; and 2) to obtain comments about issues that should be addressed in the EIS. Permitting requirements were addressed and are presented in section 1.4. Topics discussed at the agency meeting included: the potential for hazardous materials to be present at the facility; the tsunami hazard zone; grading and fill requirements; potential for the transfer of disease through discharge of animal waste water from the rehabilitation component; erosion potential and soil stability; dredging; effects on the existing UAF IMS dock and the R/V *Alpha Helix*; and effects on camp sites in the proposed project area, the municipal ferry dock, and the ferry access road.

1.5.3 Significant Issues Considered in the EIS

The significant issues listed below resulted from an evaluation of issues raised during the scoping process. Analyses in this EIS are focused on these issues:

Geology and Soils: Site geology and soils are evaluated. Analysis includes potential effects of project construction and operation on soil stability and erosion. Proposed mitigation measures are discussed.

Hydrology and Water Quality: The existing water quality characteristics of the bay are described. Potential effects to water quality resulting from construction of a small rock rip-rap breakwater at the facility are addressed. Mitigation measures are presented to prevent deterioration of water quality during construction and operation.

Air Quality: Air quality is expected to be affected primarily by construction activities and increases in local traffic. Potential changes in air quality are estimated based on anticipated construction activities and changes in traffic.

Noise: Existing noise conditions and anticipated noise increases from this project are addressed in the EIS. Mitigation of increased noise levels is described.

Wildlife and Aquatic Resources: The effects of construction and operation activities on terrestrial wildlife and marine mammals are analyzed. Mitigation measures are provided, as appropriate.

Vegetation, Wetlands, and Habitat: Terrestrial vegetation and wetland habitat in the proposed project vicinity is described. Mitigation for potentially affected areas is addressed.

Visual Quality: The EIS describes the quality of existing views from the commercial district of Seward towards the bay, and views of Seward from the water. These proposed changes in visual character are evaluated and mitigation measures are provided.

Archaeological and Historic Resources: The EIS includes a description of archaeological and historic resources in the project vicinity and a discussion of how these resources are analyzed in coordination with NHPA Section 106 requirements. Effects of the proposed project on these resources are evaluated, and mitigation measures provided.

Land Use: The site's existing and past land uses and existing zoning requirements are described. The change in land use and zoning, including the displacement of the existing teen center, ferry dock, camp sites, warehouse, and welding shop, are analyzed for direct, secondary, and cumulative effects on Seward.

Socioeconomics: An analysis of the potential socioeconomic effects of the project, both for construction and operation includes:

- Potential increase in tourism, and potential revenues;
- Housing impacts during construction/operation, and specifically during the tourist season;
- Increase in local revenues during the construction phase; and
- Expenditures for the ongoing maintenance and support of the proposed facility.

Mitigation measures are described.

Utilities and Public Services: The EIS discusses the capacity of local power, water, and other utility services, and the potential effects that could be caused by construction and operation of the proposed project. Local police, fire, and emergency services are also discussed.

Recreation and Tourism: The existing recreational resources in the project vicinity are described including: boating, fishing, diving, and camping activities; recreation land and facilities; and tourist opportunities. Effects of the proposed project on these resources are examined and mitigation measures provided.

Traffic and Transportation: The EIS describes existing traffic and parking conditions in Seward and analyzes the potential effects from the proposed project and its alternatives. The EIS considers the rerouting of ferry traffic to the ferry dock; access routes for visitors, including residential streets and potential conflicts with marina traffic; parking needs, availability, and potential for spillover parking; parking availability on nearby commercial streets; and the condition and capacity of area roads. Changes in these conditions are addressed for both construction and operation of the proposed project. Mitigation measures are discussed.

Public Safety Concerns: The public safety concerns of the project addressed in the EIS include the effects of an earthquake and potential tsunami on the proposed facility and the presence of hazardous wastes buried at the site.

Cumulative Effects: The EIS includes a discussion of the project as it relates to other projects likely to be developed in the Seward area in the reasonably foreseeable future.

1.5.4 Issues Raised That Will Not Be Addressed in the EIS

Several scoping comments were received that questioned the use of EVOS settlement funds for this proposed project. Some expressed concern that the money was not being used appropriately, i.e. for the proposed project and the preparation of an EIS. Some felt that the funds would be better used for acquisition and restoration of habitat. Others suggested restoration of the lifestyles of villages damaged by the spill.

Although the use of the settlement funds is a significant issue to be addressed with public input, it is not an environmental issue for purposes of this EIS. A programmatic environmental impact statement on the EVOS Trustee Council's Draft Restoration Plan, prepared by the U.S. Forest Service on behalf of the Trustee Council, was published recently. That Draft EIS examines the research and monitoring needs of the overall restoration program. Moreover, through the annual work plan process, the EVOS Trustee Council seeks and obtains public comment on the appropriateness of the funding for this, and other projects, as part of the overall restoration program. Comments received regarding the issue of project funding have been directed to the EVOS Trustee Council for consideration. A Draft Fiscal Year 1995 Work Plan currently is available for public review and comment.

1.5.5 Alternatives Suggested But Not Selected For Inclusion in the EIS

Some comments received suggested that the EIS examine alternative sites for all, or part, of the proposed project. One specific suggestion was to locate the marine bird facility in Homer where the FWS has proposed a visitor facility featuring displays of marine birds.

Alternative site locations for the proposed facility are not analyzed in this EIS. In January 1994, the State of Alaska put forward a proposal to the EVOS Trustee Council for a research and wildlife rehabilitation facility in Seward, Alaska. In addition, the 1993 Alaska Legislature had appropriated $12.5 million for partial funding for the planning, design, and construction of this facility in Seward. At its January meeting, the EVOS Trustee Council approved this additional financial support for the proposed facility in Seward contingent on completing several tasks, one of which is NEPA compliance. Thus, the intent of the State of Alaska in proposing the facility and appropriating partial funding for it, and the EVOS Trustee Council in tentatively approving additional funding for it, clearly is that the facility would be located in Seward and that the environmental effects of constructing and operating the facility in Seward were to be examined in NEPA documentation. Accordingly, alternative locations for this proposed facility are not examined in this EIS.

An alternative design for the proposed project was received that suggested using UAF-owned land (Block 5A) to accommodate visitor parking needs related to the proposed project. The alternative design is intended to create an IMS Seward Marine Center "campus" and to allow Tracts 5 and 6, proposed in Alternative I for visitor parking, to remain park land.

As more fully described in Section 5.2, a conceptual design was analyzed to determine if parking requirements of the proposed project could be met on the existing IMS Rae Building site, Block 5A. Title 15 of the City of Seward Planning and Land Use Regulations require that parking for facilities, such as the proposed project, be designed to meet peak parking demand. With the square footage available on the Block 5A site, the peak parking demand of the proposed project could not be met.

Additionally, correspondence from Mr. Tom Smith, Assistant Director for Coastal and Marine Operations for the UAF IMS Seward Marine Center, offers his opinion that "the University would not support a request to utilize the remainder of its property to provide visitor parking for the proposed facility" (see Appendix A for correspondence). This opinion is based on the long-range master plan for the IMS Seward Marine Center, which includes potential expansion of existing IMS facilities. Although the University is supportive of locating the proposed staff parking lot on Block 5A, there is an important difference between changing its long-range plan to accommodate an incremental (50-space) expansion of an existing parking lot versus changing the plan to accommodate 216 parking spaces. The latter would foreclose, as a practical consideration, future opportunities to expand university facilities on Block 5A.

In consideration of the above, this alternative design for the proposed project is not examined further in this EIS.

1.6 KEY DIFFERENCES BETWEEN THE DRAFT EIS AND THE FINAL EIS

The following summarizes key changes that have occurred since publication of the Draft EIS. These changes are reflected in this Final EIS. None of the changes result in substantial alteration of the effects previously identified in the Draft EIS.

- As adopted by the City Council, Resolution 90-095 identifies Tracts 2 through 6 as a future construction site for the proposed project. Although the Draft EIS discusses the options of a land transfer versus a lease arrangement with the city, information available at that time indicated that a land transfer would be most likely. Discussions between the City of Seward and SAAMS have progressed; it now appears more appropriate for the Final EIS to focus on a lease agreement rather than a land transfer. Analysis of potential effects in the Final EIS is based on the most current information regarding a potential lease arrangement.

- Recent P&Z Commission action on the CUP, Variance, Rezone, and Replat has occurred that affects the Land Use and Local Approvals sections of the Draft EIS. To date, a height variance has been issued by the City Clerk's office, and a resolution was adopted authorizing issuance of a CUP to SAAMS for the proposed project with 16 stated conditions. An appeal by SAAMS of two conditions will be addressed by the Board of Adjustment of the City Council. These actions and the potential effects are addressed in the Final EIS.

- Recent City Council action has introduced an ordinance for public hearing to change the Land Use Plan and Zoning for all of the proposed project site to CBD. The text of the Final EIS reflects this information.

- With the information provided to EIS analysts at the time of the Draft EIS, evaluation of effects assumed a greater likelihood of ferry service relocation from the Municipal Dock on the project site than of it remaining at its current location. The approach in the Final EIS is to equally evaluate the two scenarios rather than assume one or the other. Additional correspondence is included that reflects the current status of discussions between the City of Seward and the ADOT/PF Alaska Marine Highway System regarding ferry service in Seward.

- As lease negotiations have progressed between the City of Seward and SAAMS, preliminary agreements have been made regarding SAAMS' involvement in the lease termination and relocation of Northern Stevedoring Handling Corporation (NSHC), and the relocation of the Teen/Youth Center activities. The Final EIS mentions the commitment by SAAMS to assist the city in those endeavors.

- SAAMS has agreed, as part of the lease negotiations with the city, to pay sales tax to the city and borough on ticket and sales revenue. This economic effect to city revenues has been analyzed in the Final EIS.

- A spring located on Lowell Point Road has been added as a potential source of freshwater for fish genetics studies.

- The purchase of a submersible and support vessel may or may not occur as part of the proposed project. Nonetheless, for NEPA purposes, purchase of these vessels still is assumed as part of the proposed project for the Final EIS.

- The infrastructure for the tide pool would be completed during the construction of the proposed project. The Draft EIS indicates that operation of the tide pool would be part of this phase; however, further design work has determined that its operation would occur at a future phase of the project. Only the tide pool infrastructure is incorporated into the project design at this time.

- A reference to a recent verification of visitor assumptions and revenue projections was added to the Final EIS (Fox, 1994). A summary of that verification is included as an appendix to the Final EIS.

- The final location of the site(s) to be used as a material source would not be chosen until an engineering assessment has been made. Four additional potential material source sites were discussed in the Final EIS rather than the Lowell Point Road option only.

- Archaeological and Historic Resource and Visual/Aesthetics sections were revised throughout the Final EIS to reflect recent consultations with the SHPO to address NHPA Section 106 requirements. Additionally, an archaeological survey and historic resource inventory have been included as Appendix B of the Final EIS.

- Comments received on the Draft EIS are included in Chapter 5.0 of the Final EIS. Responses to comments also appear in Chapter 5.0; and text of the document has been revised, as appropriate.

- An alternative project design proposed during the public comment period after the Draft EIS prompted an evaluation of its reasonableness for inclusion as an alternative to be fully examined in the Final EIS. The Final EIS addresses the proposed alternative both in Section 1.5 and Chapter 5.0.

2.0 ALTERNATIVES, INCLUDING THE PROPOSED ACTION

CHAPTER 2.0

ALTERNATIVES, INCLUDING THE PROPOSED ACTION

2.1 INTRODUCTION

This section includes a description and comparison of the alternatives analyzed in this EIS. It also includes a discussion of mitigating measures, both measures that are considered part of the proposed project and potential measures, and an evaluation of effectiveness.

Two action alternatives have been analyzed in this EIS. Both action alternatives are proposed to be constructed adjacent to the existing campus of the IMS Seward Marine Center on city-owned land made available by lease to SAAMS for the project. The Seward Marine Center has been operated by the UAF IMS since 1970. The existing program consists of marine biological and medical research conducted through the UAF research and graduate student training programs. The areas of study include oceanography, marine biology, fish and invertebrate physiology, and ecology. The existing laboratory has the only continuously running seawater system in the northern Gulf of Alaska region.

Alternative I, The Proposed Action, would have both a research and wildlife rehabilitation component and a public education and visitation component. Alternative II would be a reduced project with a research and wildlife rehabilitation component only; the public education and visitation facilities, including the parking lot and plaza adjacent to the building, would not be part of this Alternative.

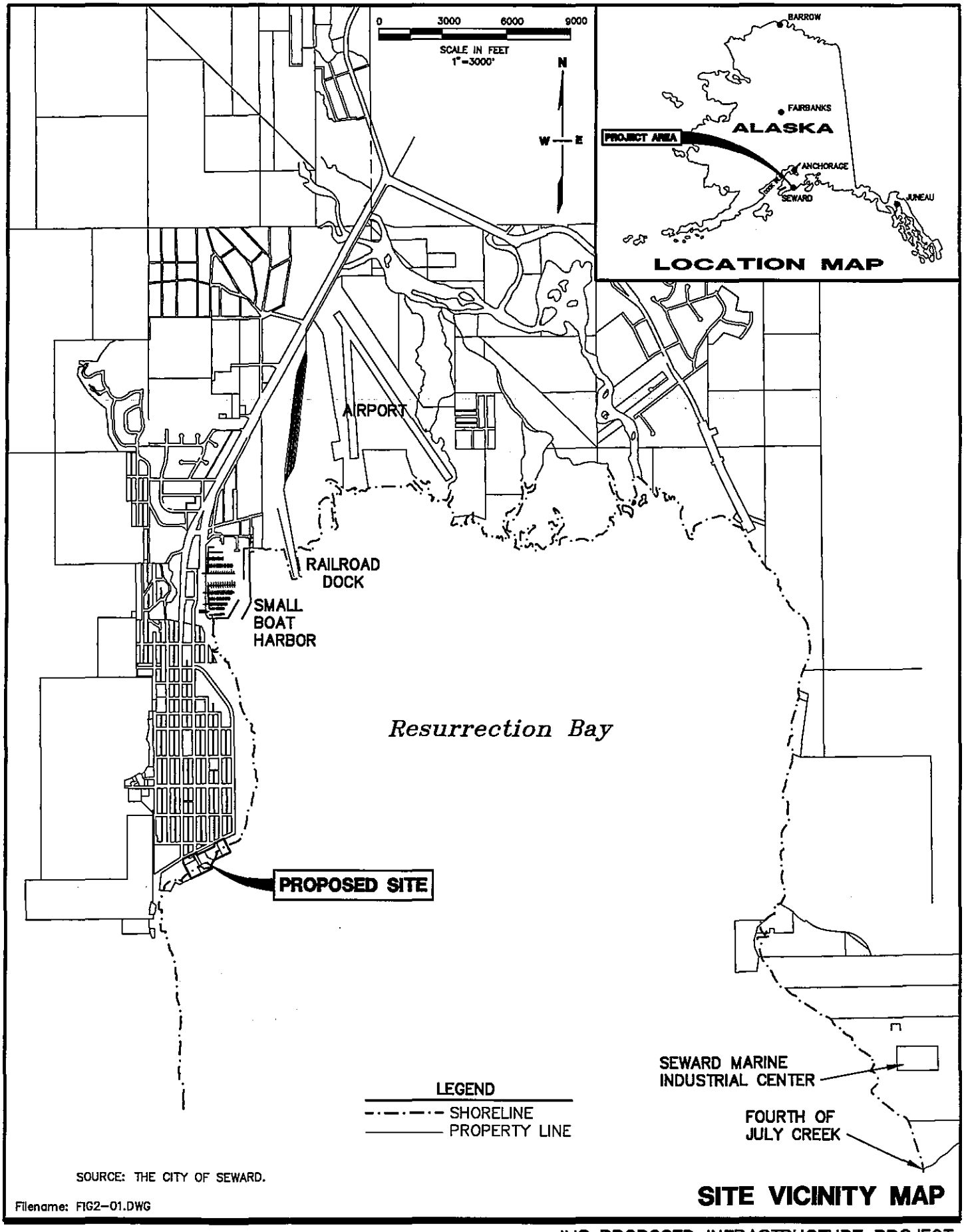
A No Action Alternative also is evaluated in the EIS as required under the NEPA and its implementing regulations (40 CFR 1500-1508). This alternative would mean that the improvements proposed as part of this project would not be made to the infrastructure of the IMS Seward Marine Center. The following sections present a detailed discussion of the project alternatives.

2.2 ALTERNATIVE I - THE PROPOSED ACTION

The proposed project would be constructed adjacent to the existing IMS facility in Seward, Alaska, on the shore of Resurrection Bay. The proposed action would have two components: (1) a research and wildlife rehabilitation component; and (2) a public education and visitation component.

2.2.1 Proposed Site

The proposed project site is an industrial waterfront property with a mix of industrial and historic structures on the shore of Resurrection Bay (Figure 2-1). The proposed project site is currently owned by the City of Seward and occupied by the Northern Stevedoring Warehouse and welding shop, the Youth/Teen Center, the Municipal Dock, and a portion of Waterfront Park. The dock serves the Alaska Marine Highway System as the landing for the ferry M/V *Tustumena*, as well as other commercial marine interests.



SOURCE: THE CITY OF SEWARD.

Filename: FIG2-01.DWG

SITE VICINITY MAP

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DAMES & MOORE

IMS PROPOSED INFRASTRUCTURE PROJECT
SEWARD, ALASKA
FIGURE 2-1

Figure 2-2 shows the land to be leased by SAAMS from the city. It includes Tracts 2, 3, 4, 5, and 6; the Municipal Dock; the ferry access road; and a portion of the city tidelands to construct the tide pool infrastructure, wave barrier, and building face. An easement from the city would be required for the seawater intake and outfall structures since they would extend beyond the leased area. Negotiations are underway between the city and SAAMS on conditions of the lease.

Tract 2 of the proposed site is currently zoned Central Business District (CBD). Tracts 3 and 4, the Municipal Dock and its access road, are zoned Industrial (I), and Tracts 5 and 6 are zoned Park (P). A request by SAAMS was submitted to the city to amend its Land Use Plan and to rezone these tracts to CBD. Ordinance No. 95-35 was introduced by the City Council on August 22, 1994 to grant the request by SAAMS to rezone Tracts 3, 4, 5, and 6 to CBD. A public hearing was set for September 12, 1994, and, if action is taken by the Council at that time, the rezone will become effective on September 22, 1994.

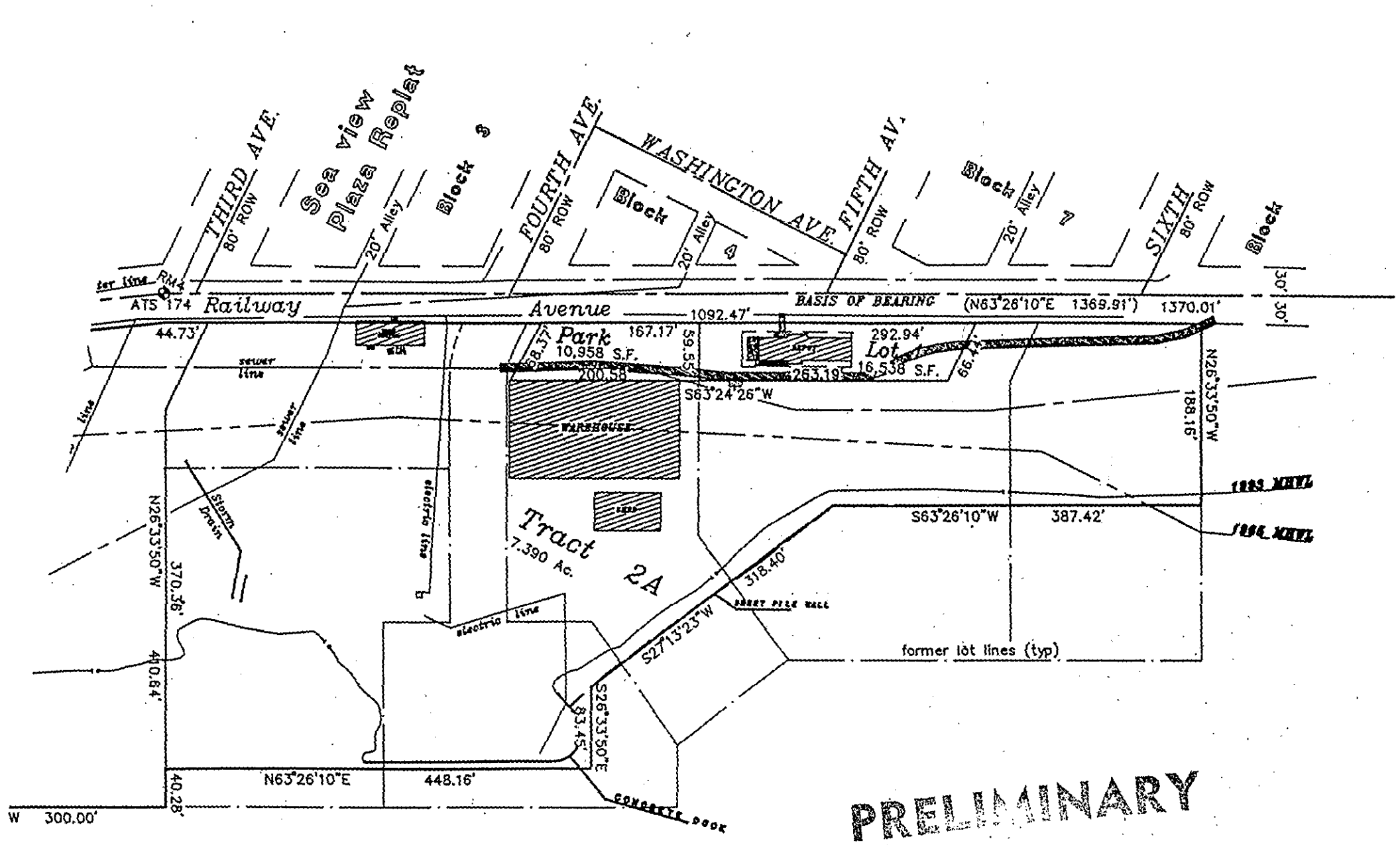
SAAMS also applied for a Conditional Use Permit (CUP) to develop a marine research and public education facility on Tracts 2 through 6 of the Seward Waterfront Tracts. The P&Z approved the CUP subject to 16 conditions, two of which are being appealed by SAAMS (see Section 3.9 for more details).

The following is a brief discussion of existing activities and structures on the proposed site.

Municipal Dock: The Municipal Dock is located in Tract 2 at the foot of Fourth Avenue. Relocation of state ferry service has been under consideration by the city and the Alaska Marine Highway System for some time. Due to the east to west orientation of the dock, vessels are particularly susceptible to damage from the prevailing south to north wave movement in Resurrection Bay. Additionally, a Shore Condition Survey done by the Alaska Department of Transportation and Public Facilities (ADOT/PF) for Seward's city bulkhead indicates that major structural defects cause concern for the useful life span of the dock (see Appendix A for letter from the Alaska Marine Highway System).

It is the city's intent to relocate the state ferry service from the city-owned dock at the proposed project site to an alternate site in Seward that meets the needs of the Alaska Marine Highway System (a letter of intent from the city is included in Appendix A of this document). The existing arrangement between the city and the Alaska Marine Highway System, which provides preferential berthing to the M/V *Tustumena*, will expire in 1996. At this time, discussions are in progress to determine the most feasible location for an alternate site.

Relocation of the state ferry service may occur at any time; however, the potential exists that an acceptable alternate site in Seward would not be found before construction of the proposed facility begins, or even before the opening of the new facility in the spring of 1997. If an alternate site location is not resolved before the spring of 1995, construction plans would include the safe routing of ferry traffic to the dock through the proposed visitor parking lot area until the summer of 1996 when final site work occurs. Should the relocation not be resolved before opening, the ferry could continue to dock at its present location and ferry traffic would be routed through the facility's visitor parking lot. This would



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REPLAT RECOMMENDED TO CITY OF SEWARD

IMS Infrastructure Improvement Project
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require coordination with the Alaska Marine Highway System office with respect to the ferry berthing schedule, and strict monitoring of the parking lot and Railway Avenue to control the entering, exiting, and queuing of ferry traffic. Control and maintenance of the Municipal Dock would remain with the city as long as ferry service stays at that location. All lease revenues from the Alaska Marine Highway System to the city for use of the dock would continue as well.

Youth/Teen Center: The building housing the Youth/Teen Center is located on Tract 2 of the proposed project site at the southwest corner of Fourth Avenue and Railway Avenue (Figure 2-3). City officials and residents have long considered this a less than appropriate location for the center, and relocation options are being investigated. SAAMS is currently working with city officials to financially assist in the relocation of the center as part of this project. The building would be removed from the site, when necessary, to complete the proposed project.

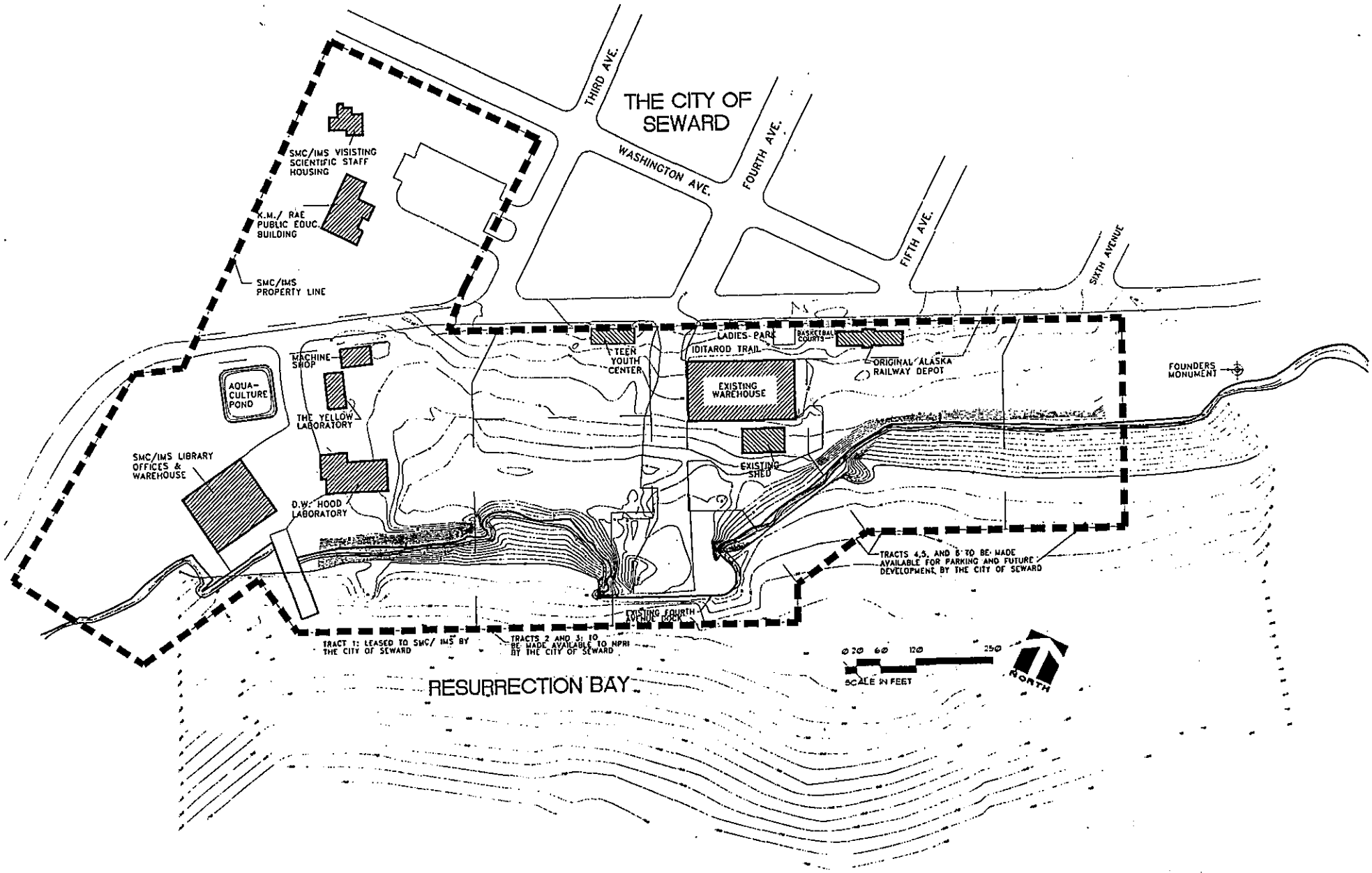
Northern Stevedoring Warehouse and the Welding Shop: Northern Stevedoring Handling Corporation (NSHC) currently leases the property in Tract 4 from the city; a lease that is to expire in 1999 (Figure 2-3). SAAMS has agreed to purchase the existing lease and buildings from NSHC as part of this project. The contents of the warehouse have been sold to a private company and will be removed before construction begins. Prior to construction of the proposed facility, the welding shop would be removed from the site. The warehouse could be retained during construction as a staging facility and removed when necessary, to complete the proposed project.

Waterfront Park: This recreational area begins on Tracts 5 and 6 of the proposed project site and extends east and north of the proposed project site along the Resurrection Bay Shoreline for a distance of approximately 1.5 miles. Waterfront Park is a multi-use area, incorporating four RV campgrounds (Resurrection North and South, Marathon, and Iditarod), a tent camping area, and day-use areas such as the Adams Street Pavilion. A bike path runs the entire shoreward length of the park, linking the Small Boat Harbor to the north with the Municipal Dock south of Waterfront Park. A portion of the Iditarod Campground (57 camp sites) would be removed as a result of the proposed project.

2.2.2 Adjacent Sites

The Alaska Railroad Depot: The existing Alaska Railroad Depot (Figure 2-3), which is on the National Register of Historic Places (NRHP), currently serves as the ticket office and operations building for the Alaska Marine Highway System. The depot is adjacent to the proposed project site to the north of Tract 5. The proposed project design would be visually compatible with the historic nature of the facility and landscaping would serve as a buffer between the two facilities. Consultation with the SHPO is underway, and a MOA is being developed to ensure protection of historic resources, such as the Railroad Depot (see Appendix A for correspondence between DOI and the SHPO).

Ladies Park: The existing Ladies Park is the remaining segment of an older city park known as Niles Park or Hoben's Park. It occupies a small parcel of land west of the Alaska Railroad Depot (Figure 2-3). It is primarily an open green space, with a small concrete pad for basketball. As with the Alaska Railroad Depot, no proposed project activities would occur on park land; however, SAAMS is currently



EXISTING SITE PLAN

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IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-3

working with the city's Historic Preservation Commission to protect and/or improve the character of this site. The park has a city historic designation, but is not on state or federal registers.

Iditarod Trail: At the southern edge of the Ladies Park is a paved walk and commemorative display which marks the location of the beginning of the original Iditarod Trail (Figure 2-3), which is on the National Register of Historic Trails. The original trail was established in the early 1900's to provide a transportation route for dog sleds to the gold rush community of Iditarod. It currently serves as a walkway and bike path that terminates at the west side of Ladies Park.

IMS Seward Marine Center: The existing IMS Seward Marine Center consists of facilities located on Tract 1 and on Block 5A, across Railway Avenue to the north. The four buildings on Tract 1 are: the D.W. Hood Physiology and Medical Research Building; a machine shop building; the Marine Biology Lab; and a larger building holding the library, offices, and warehouse. An aquaculture pond, outdoor seawater tanks, dock, and life support system with intake and outfall structures also are located on Tract 1 (Figure 2-3). The UAF medical program uses the Seward facility to conduct their joint UAF-Russia medical research projects. Additionally, the Seward Area Native Association is actively involved in shellfish aquaculture at the laboratory, and the site is under consideration for the location of a State of Alaska Mariculture Technical Center and Shellfish Hatchery.

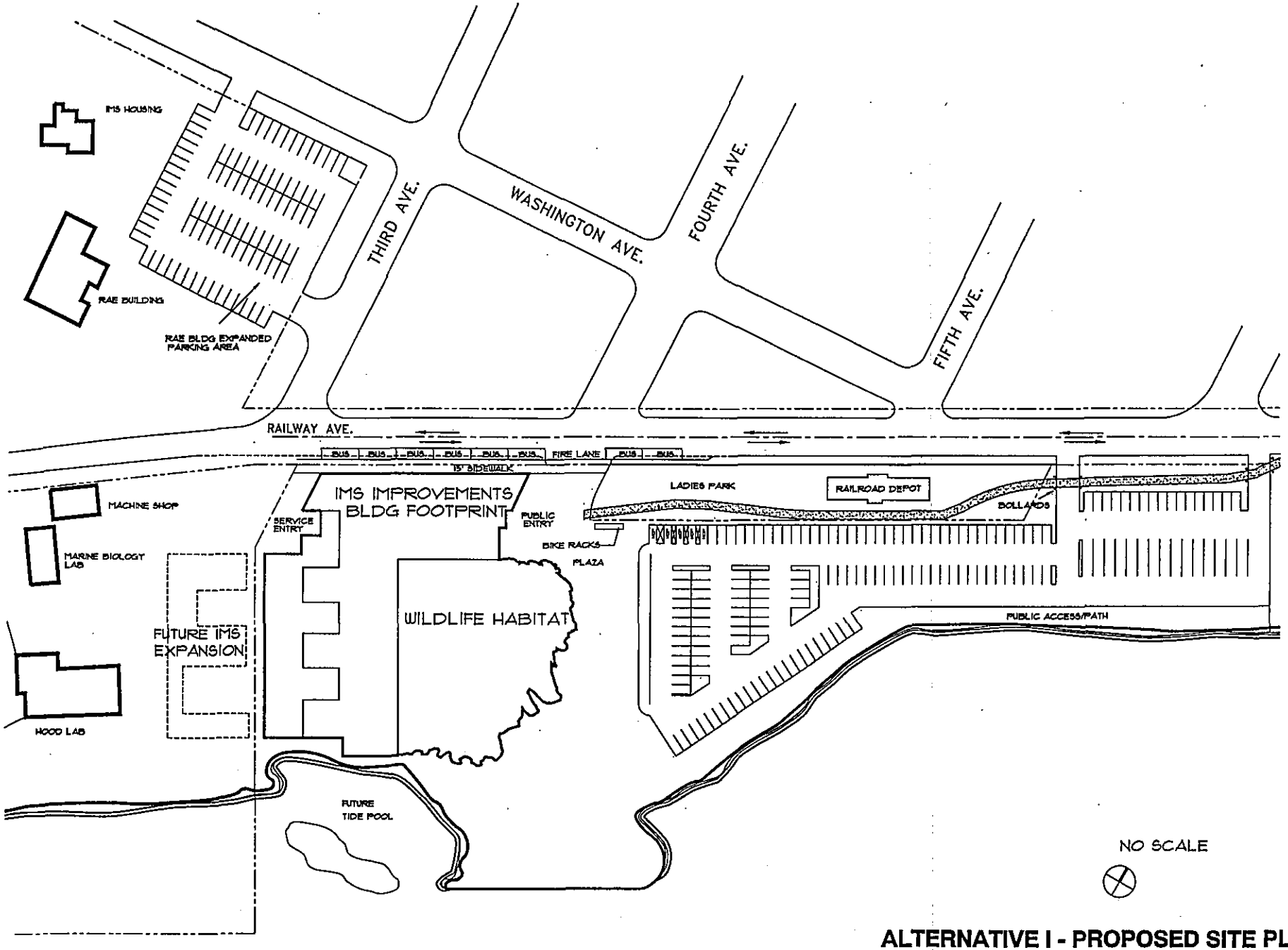
An educational program is operated from the K.M. Rae Building in Block 5A. This public service program disseminates the results of marine science research to the public, science educators, policy makers, and researchers from other institutions. A large gravel parking lot and four-plex apartment unit to accommodate visiting faculty and students are adjacent to the Rae Building.

The 133-foot research vessel R/V *Alpha Helix* is operated by UAF for the National Science Foundation and uses the IMS Seward Marine Center dock on Tract 1 as its home port.

2.2.3 Proposed Improvements

The proposed improvements to the IMS Seward Marine Center would provide a facility for the rehabilitation and study of marine mammals and birds, particularly pinnipeds (harbor seal and Steller sea lion), sea otters, and alcids (common murre, pigeon guillemont, marbled murrelet, and tufted and horned puffin). Proposed improvements would include: tanks and pens (temporary holding, long-term habitat, and quarantine); a life support system (running seawater and disinfection); a freshwater system; pathology and water quality laboratories; and x-ray, surgery, pharmacy, and necropsy facilities.

Research and Wildlife Rehabilitation Component: The research and wildlife rehabilitation component would consist of approximately 22,000 square feet of interior space made up of wet and dry laboratories, staff offices, and a 1,500 square foot library for the study and rehabilitation of marine mammals, marine birds, and other marine life (Figures 2-4 through 2-6). An additional 27,000 square feet of building support area would be shared with the public education and visitation component of the facility. There would be approximately 46,000 square feet of exterior space containing an outdoor research habitat with tanks and pools for pinnipeds, sea otters, and marine bird species.

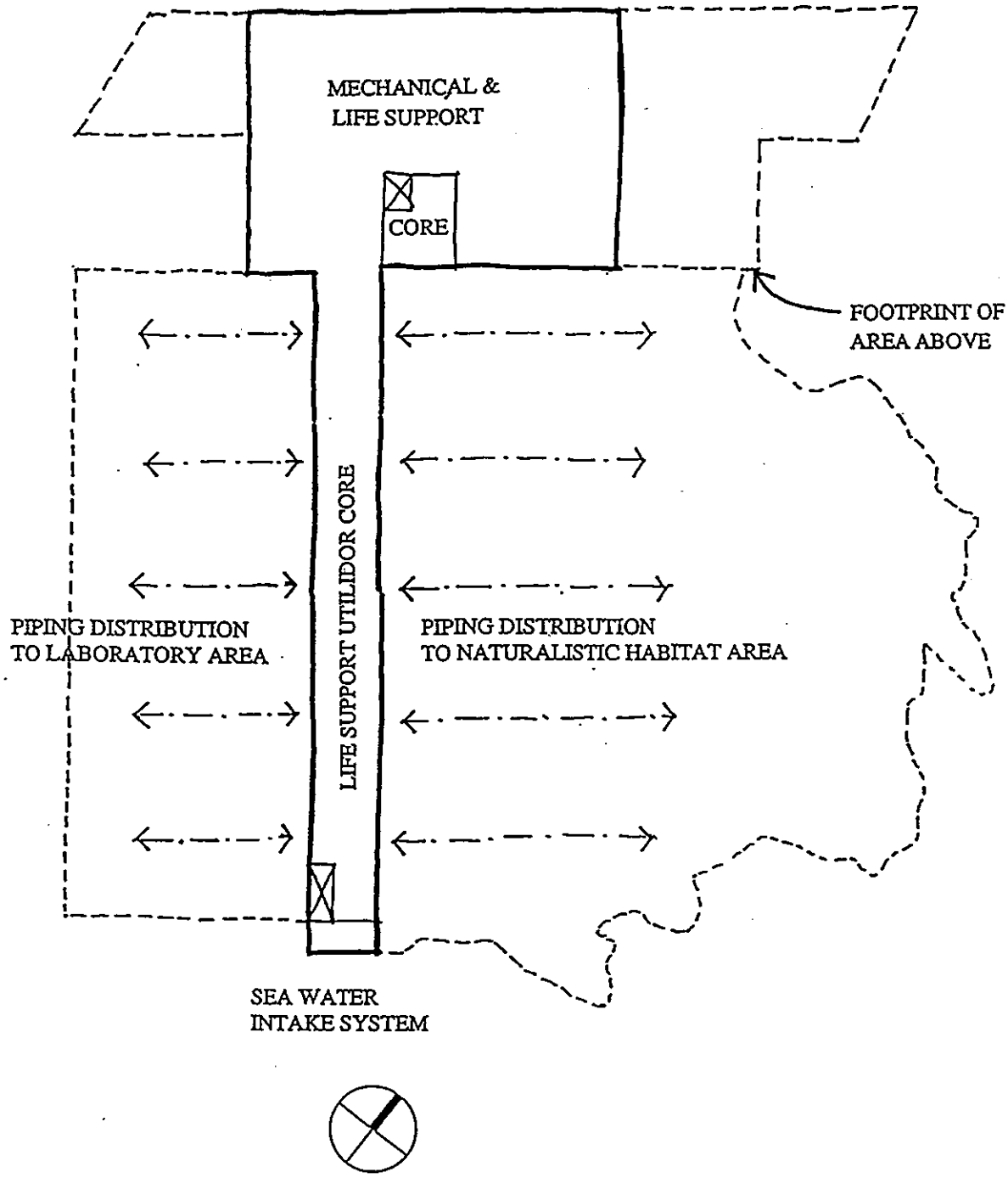


ALTERNATIVE I - PROPOSED SITE PLAN

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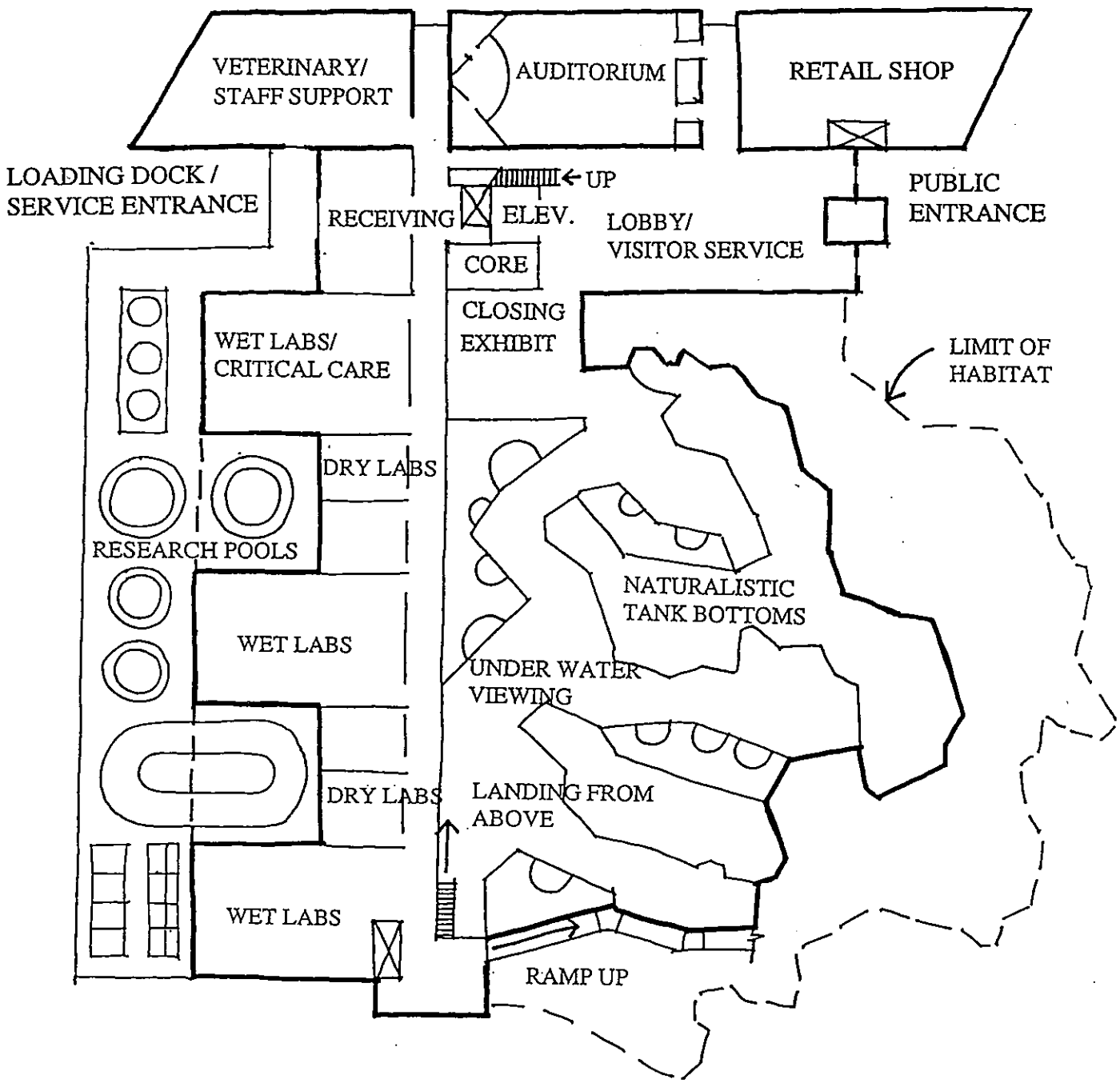
IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-4



ALTERNATIVE I
BASEMENT LEVEL FLOOR PLAN

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IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-5



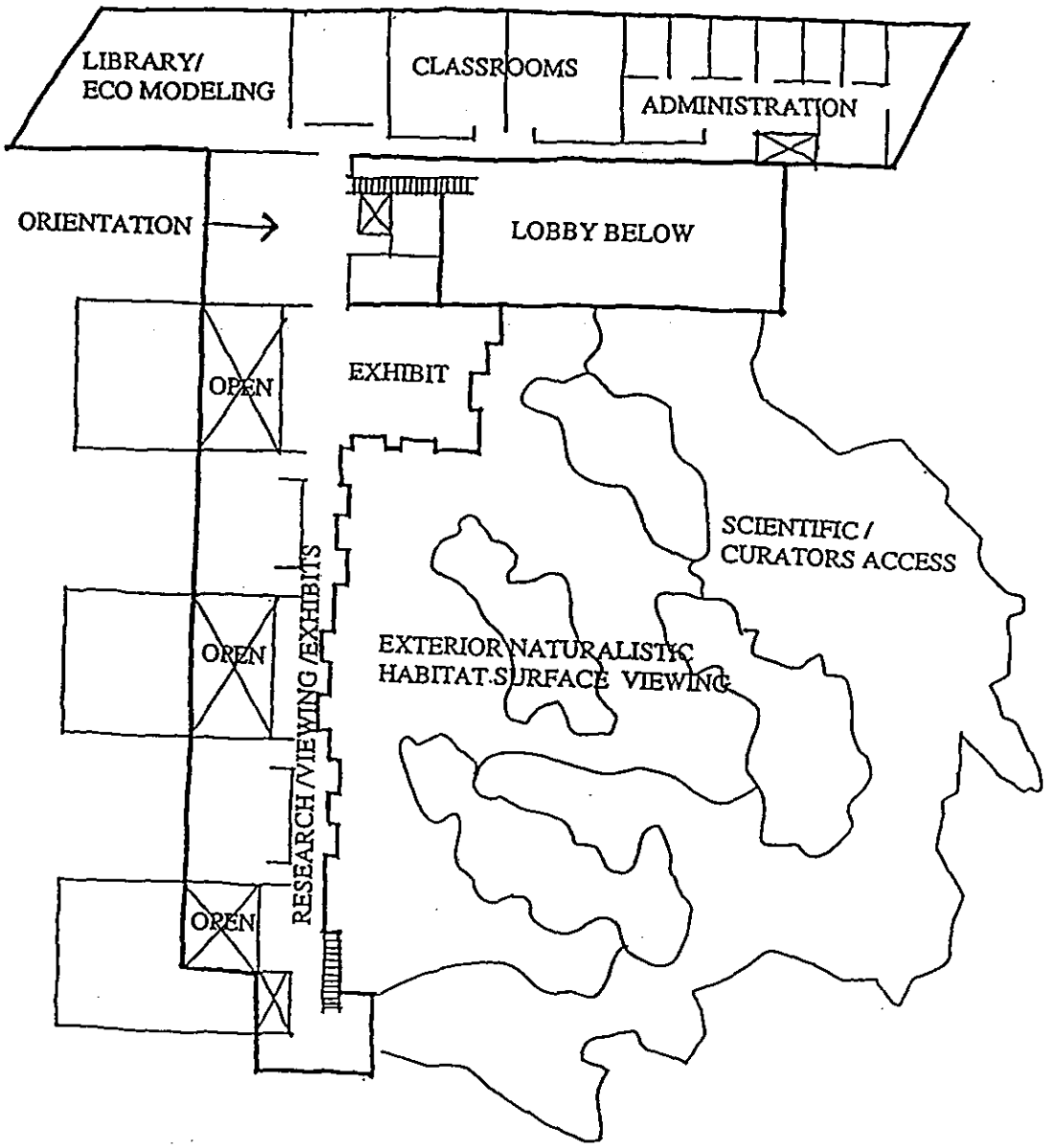
NO SCALE

MAIN LEVEL FLOOR PLAN

ALTERNATIVE I
MAIN LEVEL FLOOR PLAN

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IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-6



ALTERNATIVE I
UPPER LEVEL FLOOR PLAN

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IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-7

A 50-space parking lot for staff vehicles would be constructed adjacent to the existing IMS Rae Building parking lot (Figure 2-7). This lot, approximately 37,000 square feet, would be paved, striped, and lighted; and a stormwater drainage system would be installed to accommodate additional runoff from the proposed staff lot and the upgraded Rae Building parking lot. The proposed system would connect with the city's stormwater line in Third Avenue.

The proposed project would provide extended research facilities for current and future efforts of the UAF IMS faculty and scientists in an integrated program emphasizing animal health research. In order to allow for possible future growth, the new structures would be constructed on property directly adjacent to the existing IMS Seward Marine Center, which occupies land currently leased from the city. Future development by SAAMS or UAF could occur between the two facilities to further enhance this integrated program.

A variety of sheltered outdoor tanks and pools would be provided for marine mammal and bird research that would cover approximately 30,000 square feet of the site. The tanks would consist of permanent and portable "ring"-tanks varying from 35 feet to 51 feet in diameter, and an oval 40 foot by 60 foot tank. Tank depths would vary between and 5 and 15 feet deep. These tanks have been designed to exceed minimum standards for marine mammal and bird haul out and water depths. The habitat would provide areas for marine mammals and birds to exercise and would be an appropriate rehabilitation space for the transition of recovering marine birds and mammals. A flight area is unnecessary, since seabirds develop wing strength through underwater swimming.

This research habitat would provide for the long-term care of those marine mammals and birds involved in specific research programs. It would, to the extent possible, duplicate the natural environment for proper husbandry and behavioral studies. The habitat would consist of wet pools, dry haulout areas, and resting areas to accommodate up to four sea otters, 125 seabirds, 6 to 12 harbor seals, and 2 to 4 Steller sea lions. The marine bird habitat would allow for perching, nesting, and swimming as in the natural environment. The habitat would include separate areas for the different species groups and specific individual animals.

A Life Support System (LSS) would supply seawater similar to natural conditions of Resurrection Bay for the live tanks, live pools, wet laboratories, and the research habitat. The system would be sized to circulate up to 5,000 gallons per minute (gpm) from Resurrection Bay. The LSS would be a partially closed system using a low pressure sand filtration process and ozonation for disinfection and water quality enhancement as required. The LSS includes: pumps; piping; valves and pipelines for intake, discharge and circulation; and filtration, ozone generation, and emergency circulation systems. A more detailed discussion of the LSS is provided in Section 2.2.5.

Approximately 150 gpm of freshwater would be needed for fish genetics studies. This is intended to be supplied by a spring located approximately 2,500 feet from the project site on Lowell Point Road. Preliminary analysis of this water source indicates that water quality parameters are within acceptable ranges for salmonid cultures (see correspondence from ADF&G in Appendix A). Further testing is being conducted, however, and if water quantity and/or quality is not acceptable, other potential sources include

a well or wells drilled on the IMS Seward Marine Center campus near the Rae Building (see "letter of agreement" in Appendix A), surface water (Lowell Creek), or water supplied from the city. A gravity fed storage tank would be required.

Anticipated laboratory equipment would include: lab benches and cabinetry; office furnishings; shelving and office equipment; sinks, gases, and seawater service; and fixed and loose equipment such as balances, scales, centrifuges, metering and analyzing devices, fume hoods, hydro-acoustic systems, video equipment, computers and printers, a modem, microscopes, autoclaves, freezers, transport cages, hoists, dollies, tanks, and oceanographic equipment.

Anticipated long-term research and monitoring in the EVOS region might identify the need for a dedicated research vessel and submersible to help carry out an integrated research program that includes oceanographic sampling, fish trawling, hydroacoustics, population surveys, and basing for scientific crews. Additionally, there are anticipated research projects that would involve the use of a submersible and tender such as:

- Assessing physical and biological factors that affect productivity, recruitment, growth, and survival of species that are linked by food webs to injured resources in the pelagic and nearshore environments;
- Investigating linkages between pelagic and benthic food webs in the EVOS area;
- Supporting field studies assessing basic biological processes including mating, rearing, molting, predation, and species' interactions;
- Conducting studies of fish and invertebrates in ecologically sensitive benthic and nearshore habitats, and in protected areas to assess spill impacts and other human-induced factors which might be affecting the recovery of injured species;
- Assessing abundance and distribution of benthic resources in high relief, nearshore environments which are difficult to sample with conventional gear; and
- Investigating human-induced factors affecting key species and benthic habitats including impacts from fish and shellfish harvesting (trawling, longlines, scallop dredging), and processing (disposal of fish wastes).

EVOS research and monitoring is currently being conducted from a suite of platforms, including private and government vessels. The nearest available submersible is located in California and must be ferried to and from Alaska. The availability and cost of these vessels may not meet long-term research needs for the EVOS area. Achieving the goal of a fully integrated research program may be more difficult and costly if numerous and less-than-optimum research platforms were to be used.

This EIS analyzes the potential impacts of basing a research vessel and submersible in Seward. A decision on whether an EVOS dedicated research vessel and submersible would be purchased, leased, or chartered would reflect the specific requirements of the long-term research mission and the cost effectiveness of the various options. Such a decision would be made by the EVOS Trustee Council as part of its budget review process.

Should a vessel be part of this project, it would use the existing IMS Seward Marine Center dock for loading and unloading the submersible, equipment, and supplies, and would moor at the dock when the R/V *Alpha Helix* is at sea. The R/V *Alpha Helix* is at sea for approximately 180 days per year, nearly continuously from May through October. The research vessel would also be at sea and would use the IMS Seward Marine Center dock for the majority of time during April through November. Therefore, the need for transient moorage in the Small Boat Harbor during times of peak crowding would be minimal. During infrequent periods in summer when both vessels are in port, the research vessel could use the Small Boat Harbor with prior permission of the Seward Harbormaster, anchor outside the Small Boat Harbor in Resurrection Bay, or use other transient moorage such as the Seward Marine Industrial Center (SMIC) dock. Coordination of vessel schedules and moorage arrangements with the IMS Seward Marine Center and the Seward Harbormaster would occur to minimize potential impacts on available moorage space.

The rehabilitation element of this component would have trained staff and resources to respond to routine incidents involving sick, injured, or deceased marine mammals and marine birds in the northern Gulf of Alaska. Examination of such injured marine mammals and birds could provide important data on the status of these species and their habitats. Rehabilitation activities at the proposed facility would aid in the recovery of marine mammal and bird populations that were injured as a result of the *Exxon Valdez* oil spill. Studies would be conducted on animals brought to the facility to determine diseases or injuries that may be affecting the recovery of wild populations. A repository of tissue and blood specimens would be maintained from all animals handled by the facility. Dead birds and mammals would be necropsied to determine, to the extent possible, the cause of mortality.

The goal of wildlife rehabilitation services at the proposed facility is to restore the health of such wildlife in order that they can be released back to the environment. In coordination with the other response facilities in the Prince William Sound area, the proposed facility would provide long-term and critical care functions not currently available in the EVOS area. Wildlife which cannot survive in the wild, or which present a health risk to wild populations, would be kept at the proposed facility in long-term care for research and public education purposes, transferred to other appropriate facilities, or, as a last resort, euthanized.

Public Education and Visitation Component: The public education and visitation component would require the construction of approximately 26,000 additional square feet of interior space allocated to a 200 seat auditorium, exhibits, circulation areas, public restrooms; and a retail outlet for the sale of educational materials (Figures 2-4 through 2-6). This component would share with the research and rehabilitation component approximately 27,000 square feet of building support area, consisting of the space for the LSS, mechanical, administration, maintenance, and curatorial functions. The public

education and visitation component would also include a 90,000 square foot, 166-space paved parking lot adjacent to this component and 67,000 square feet of walkways, landscaping, and an outdoor public plaza (Figure 2-7). The tanks and pools of the research component would be provided with a visitor walkway for viewing the outdoor habitats of marine mammals and birds.

The public education and visitation component of the proposed project would function in concert with, and in support of, the research component. It would be funded through private donations; no EVOS joint restoration funds would be involved in its construction or maintenance. These funds, approximately $10 million, are to be raised from private sources by SAAMS. The public education and visitation component would, via admission fees, parking fees, and sales of educational materials, provide financial support for the operations of the facility.

The mission of the public education and visitation component is to offer the message of environmental responsibility of Alaska's marine resources through educational programs. Visitors to the center would observe interpretive displays of a cross-section of Alaska's marine habitats. They would have the opportunity to meet members of the science and research staff, and gain exposure to an array of scientific investigations. The proposed facility would complement marine programs in educational institutions across the state.

2.2.4 Construction Program

Site work for the proposed project would include: grading, excavation, removal of shoreline debris, city sewer main relocation, city storm water diversion, and electrical line relocation. The proposed facility construction efforts would include: foundation, substructure, wet well, roofing, interior finishes and habitat, and installation of circulation, mechanical, and electrical systems. Excavation for the wet well would occur to depths of -13 feet; street level is at +22 feet, resulting in a maximum 35 foot depth. The foundation of the building footprint, however, would require excavation of materials to a depth of +11 feet, an excavation of only 11 feet.

In order to comply with the General Permit for Stormwater Discharges under the NPDES, a Stormwater Pollution Prevention Plan would be written and implemented. It would include a description of measures that would be installed to control pollutants in stormwater during construction. The purpose of such a plan is to identify potential sources of stormwater pollution and to describe practices which would be utilized to prevent releases of pollutants into stormwater discharges which, in turn, end up as pollutants (including sediment) in Resurrection Bay. The plan would emphasize implementation of best construction management practices. Many construction activities contribute to erosion and sedimentation. The techniques for minimizing erosion and sedimentation rely on a few simple principles, including shielding soil from rainfall and runoff, reducing soil exposure time, controlling runoff water, slowing runoff velocity, and trapping sediment. Best management practices involving these principles would be specified for construction of the proposed project and would include the following (more specific measures would be determined via the stormwater planning process):

- Stabilization Controls - Temporary seeding, permanent seeding, mulching, surface covering, and stabilization matting.

- Structural Controls - Sediment traps, sediment basins, silt fences, earth dikes, subsurface drains, interceptor trenches or barriers, temporary berms, slope drains, straw bale barriers, and velocity dissipation devices.

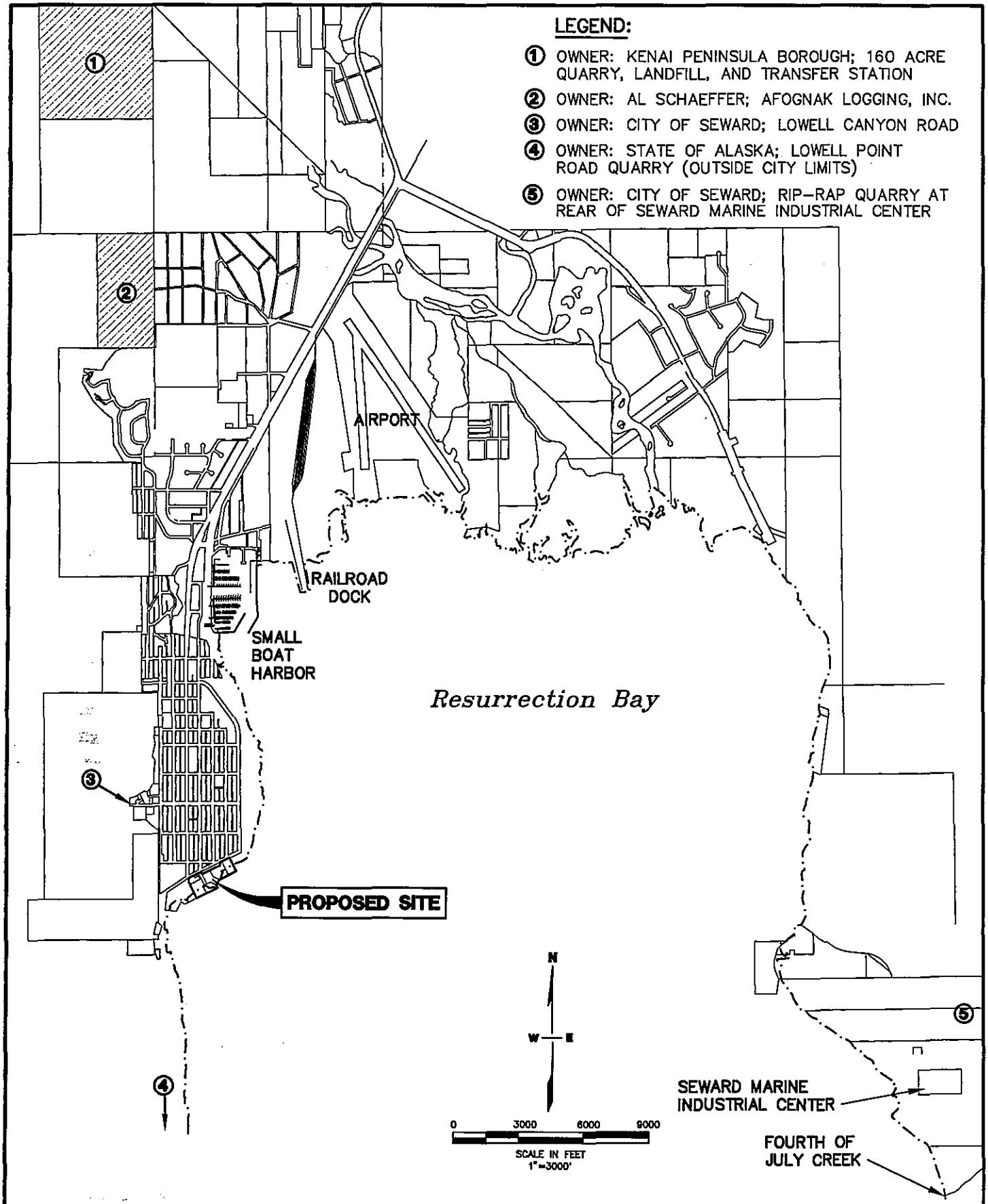
Grading, Excavation, and Fill Activities: Based on conceptual site layouts, approximately 10,000 cubic yards of material would be excavated from beneath the building substructure to achieve design sub-grade elevations. Roughly 7,000 cubic yards of this structural fill if suitable, or fill from nearby sources, would be required beneath the second story foundations and adjacent to the structure. The remaining 3,000 cubic yards of excavated fill would be used for other site development, such as leveling the plaza, sidewalk, and parking areas. Peratrovich, Nottingham, & Drage, Inc. (PN&D) conducted a preliminary geotechnical study of the proposed site in 1993, which found the material at the site suitable for use as structural fill. As stated in the geotechnical report, there may be buried debris requiring removal during construction, but nothing was discovered suggesting that the native material would be unsuitable for use as structural fill. Should additional fill be required, sources of alluvial deposited fill material conforming to the ADOT/PF specifications are located within approximately three miles of the proposed building site.

Shoreline activity would include excavation and backfill from elevation contour 13.8 seaward.

A 60-foot by 160-foot man-made tidal pool is planned adjacent to the facility along the shoreline. Adequately sized armor rock is available from local quarries to place around the tide pool and along the shoreline for stabilization and wave protection purposes (these potential quarry locations are shown in Figure 2-8). Offshore dredging is not anticipated for this project; only minor reshaping of the shoreline near the man-made tidal pool would be required. Shoreline activity is anticipated to clear the area of minor debris resulting from the 1964 earthquake and tsunami. Excavation of approximately 200 cubic yards of material would also be necessary for intake line placement.

To further protect the shoreline from erosion, a sheet pile bulkhead wave barrier would be constructed behind the tide pool. The wave barrier would be located adjacent to the shoreline and designed to protect against erosion from significant storm wave action. The required length of the barrier would extend from the existing armor rock wave barrier fronting the IMS property to the existing Municipal Dock, approximately 160 linear feet (Figure 2-4). The wave barrier would have a low profile, with armor rock in front to minimize the visual impact and to provide habitat for marine organisms. Approximately 5,000 cubic yards of armor rock would be placed in this area for both shore stabilization and landscaping.

Table 2-1 provides a summary of the estimated excavation and fill requirements for the proposed project.



SOURCE: THE CITY OF SEWARD.
Filename: FIG2-08.DWG

LOCATION OF POTENTIAL QUARRY SITES

Job No. 28347-002-160
DAMES & MOORE

IMS PROPOSED INFRASTRUCTURE PROJECT
SEWARD, ALASKA
FIGURE 2-8

TABLE 2-1
ESTIMATED EXCAVATION OR FILL QUANTITIES

Material for Site Development	Quantity
Armor Rock	5,000 cubic yards
Excavation	10,000 cubic yards
Structural Fill	7,000 cubic yards
Other Site Development Fill	3,000 cubic yards
Sheet Pile Bulkhead Wave Barrier	160 linear feet
Wave Barrier	**Quantity**
Total Riprap Fill from Elevation Contour 9.6 Seaward	2,740 cubic yards
Total Riprap Fill between Elevation Contours 9.6 and 13.8	1,500 cubic yards
Total Excavation Between Elevation Contours 9.6 and 13.8	500 cubic yards
Excavation for Building Foundation and Wet Well	**Quantity**
Total Excavation from Contour Elevation 9.6 Seaward	1,200 cubic yards
Intake Pipe Excavation	**Quantity**
Total Excavation from Elevation Contour 9.6 Seaward	200 cubic yards
Areal/Extent of Fill	0.8 Acres or 35,000 Square Feet

Source: PN&D, 1994.

Tide Pool: As previously described, a tide pool is planned to be constructed for wave protection. The shore side structure of the tide pool would be included in the initial construction as it is formed by the construction of the protection required for the building. It would be formed of sheet pile cells and armor rock. The two- to three- foot sheet pile edge would have a continuous "basket" welded to it, which would be filled with rocks. This rocky edge would provide habitat for marine fauna and flora, as well as protection for certain nearshore species, including salmon smolts.

The bay side structure of the tide pool would be formed in much the same way at a later phase of the project. The addition of marine invertebrates and plants would complete the tide pool. The tide pool, when completed, would be supplied with a portion of the treated seawater being discharged from facility tanks and pools. The amount of discharge would depend on the species living in the tide pool and the

final design. As an added benefit, the tide pool would provide an educational and research opportunity for the study and observation of marine life occurring in the region.

Potential Material Sources

There are five potential sites for armor rock in the Seward vicinity (Figure 2-8). Site one is a Kenai Borough-owned quarry located in the far north west quadrant of the city. The site consists of about 80 acres adjacent to the borough-owned and operated landfill transfer site. It was an active rock source in the mid 1980s for a retaining wall in the river. The site is adjacent to the city limits and no city land use controls apply. No residential or commercial uses are within a fourth of a mile of this area. Access to the new extraction area would be through the borough transfer site. Diamond Boulevard is the primary access and connects the area to the Seward Highway through Forest Acres Subdivision. Land use in the immediate area is predominantly light industrial and vacant.

Site two is on privately-held land (Afognak Logging Incorporated). The area is near Japanese Creek, slightly to the south and closer to the developed areas of the city. This is the only site within the city limits. The parcel is about 80 acres and is currently undeveloped. An area to the east is platted into residential lots as the Forest Acres Subdivision. Much of this subdivision is not developed on the west side. The nearest residences (two) are at the corner of Maple and Ash streets. Access to the extraction site would be by Ash Street off of Diamond Boulevard.

The third site is a city-owned pit located on Lowell Canyon Road, west of the proposed project site. It is currently being used as a source of construction material. The fourth site is a state-owned quarry to the south of the city on Lowell Point Road. This site is an inactive state material site occasionally used for maintenance of the Lowell Point Road. It was originally established during the construction of the Seward Small Boat Harbor in the mid-1960s. The site is outside of the Seward city limits and the land use is administered by the DNR. The site is approximately three acres in size.

The fifth potential site is a city-owned quarry just east of the SMIC on the east side of Resurrection Bay. It consists of material left over from site preparation and stockpiled by the city, which has priority use of the material stockpiled there.

Exterior Building Description: The exterior building construction would be concrete and masonry, on the lower level (street level), and would transition to wood or steel construction on the upper level. The exterior finishes (wood, masonry, or metal) of the facility would be visually compatible with the downtown area with regard to exterior forms, materials, and colors of surrounding buildings in the downtown area and on the adjacent IMS site.

The roof would consist of an architectural grade metal roof system of various heights. The average building height would be approximately four feet above the 34-foot-above-grade limitation, as required by city ordinance. The City of Seward P&Z Commission issued a Variance Permit on August 8, 1994 that allows this exceedance of maximum building height limits.

Parking and Traffic: Visitors to the educational component of the proposed facility would arrive in Seward by four primary modes of transportation: cruise ships, the Alaska Railroad, tour-buses, and private car or recreational vehicle (RV). Those visitors arriving by rail or cruise ship would disembark near the Small Boat Harbor or Railroad Dock (Figure 2-1), and then proceed to the proposed facility by charter bus or other informal transportation modes, which could include walking, taxi, or the local trolley.

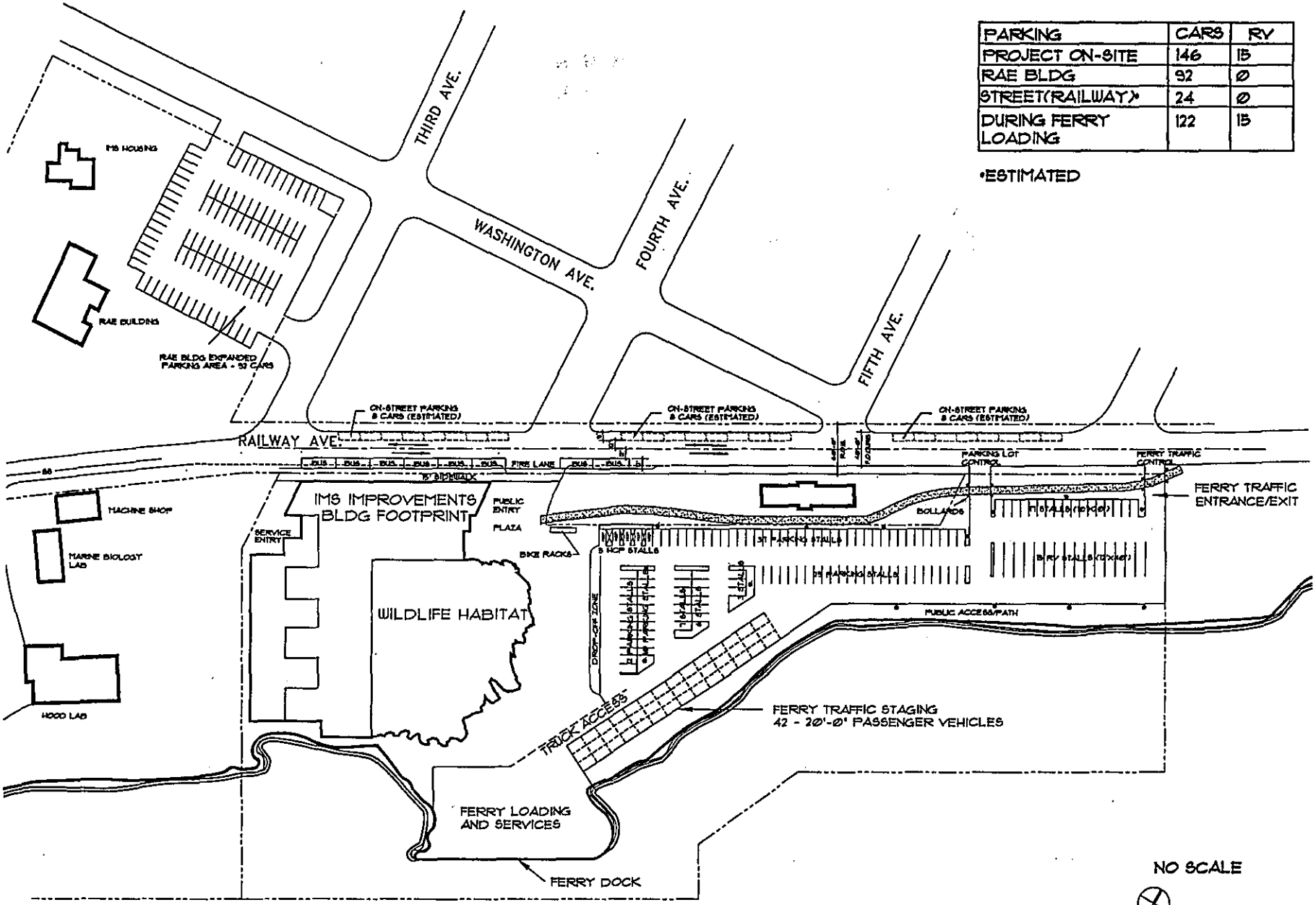
Parking would be provided for the peak number of private cars and RVs expected to bring visitors to the proposed facility at one time, estimated to be 216 vehicles -- 50 for staff and 166 for visitor vehicles, including 15 to 20 RVs. This would be accomplished by construction of a paved, 166 space lot to the east of the proposed facility for visitor parking and a paved, 50 space lot constructed north of the existing Rae Building parking lot for employees (Figure 2-7). An agreement with the UAF IMS for construction of the employee lot would include improvement of the existing IMS parking lot with asphalt paving, striping, lighting, and improved access to Third Avenue, and a stormwater drainage system (letter of agreement in Appendix A). Access to the proposed staff lot would be from Washington Avenue. Bike racks would be provided at both parking lot locations to encourage this alternative mode of transportation.

A passenger drop-off area for eight to nine buses would be provided by a "cut-out" on the south side of Railway Avenue between Third and Fourth Avenues (Figure 2-7). This would accommodate visitors arriving in Seward by cruise ships, chartered or private boats at the Small Boat Harbor, by rail at the railroad dock, chartered bus services, school groups, and existing or potential shuttle bus service.

After dropping off passengers, buses would circulate back to existing layover locations in other areas of Seward, via Fourth or Fifth Avenues. The bus loading zone would be a pullout type of space, which would eliminate the potential for encroaching on the eastbound through travel lane. A maximum of 18 buses could arrive and depart during the peak hour of a high visitor day, which equates to an average of one bus movement every 3 minutes in the peak hour. It is recognized that bus activity may occur in surges from a cruise ship, which would result in short periods of higher intensity, followed by extended periods with little or no bus activity.

Visitor parking access is planned via two driveways on Railway Avenue, one at the eastern periphery of the site and the other approximately 200 feet to the west, between Fifth and Sixth Avenues.

The bicycle/pedestrian path that extends from the east through Ladies Park would continue to the west side of the project site, passing in front of the proposed IMS building (Figure 2-7). It would cross the driveways parallel to Railway Avenue; driveway crossings would be protected by bollards and other demarcation to alert trail users.



PARKING	CARS	RV
PROJECT ON-SITE	146	15
RAE BLDG	92	0
STREET(RAILWAY)*	24	0
DURING FERRY LOADING	122	15

*ESTIMATED

NO SCALE

FERRY TRAFFIC OPTION

Job No. 28347-002-160
DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-9

If the Municipal dock is not relocated prior to facility startup, there is a potential that the parking lot would have to be shared with ferry traffic. This could be accommodated by separating facility and ferry vehicle usage of the parking lot. Ferry traffic would use the eastern-most driveway, travel along a cordoned-off route at the south edge of the parking lot, and utilize cordoned-off parking spaces near the Municipal Dock (Figure 2-9). Coordination of ferry schedules with facility operating hours and efficient traffic management would make joint use feasible.

Landscape Concepts, Treatments, and Site Design Features: Three major landscape components are proposed: (1) a public space between the habitat area and the parking lot; (2) the parking lot; and (3) the buffer between the proposed project and the existing city park. A landscaping plan would be reviewed and approved by the city P&Z Commission as part of the Conditional Use Permit. Consultation with the SHPO on a Landscaping Plan would also be required as part of NHPA Section 106 compliance.

The proposed visitor parking lot adjacent to the education component of the project would be paved and striped, and would contain green islands planted with appropriate shoreline vegetation. Similarly vegetated strips would provide a buffer zone for the bike path at the northern edge of the visitor parking lot, and an improved setting for the historic elements within the adjacent city park (Figure 2-7).

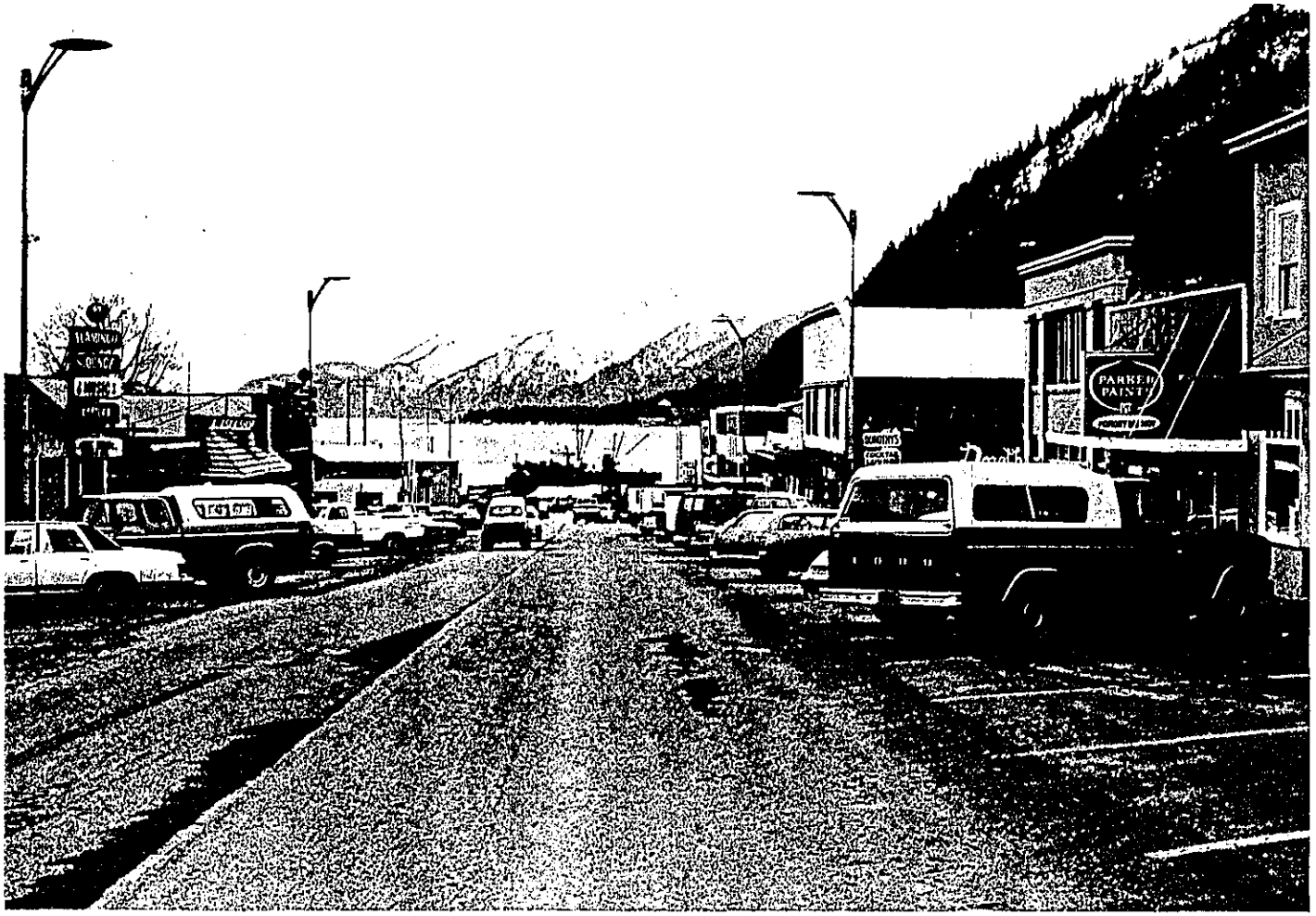
The public space between the parking lot and the research habitats would have three essential subcomponents. One would be a hard surfaced public plaza in front of the main entrance to the facility. This open plaza would maintain and enhance the view corridor from Fourth Avenue, introduce the transition to the water's edge, and provide an opportunity for Seward public events (Figure 2-10). The plaza would bring visitors to the second subcomponent, a viewpoint at the existing Municipal Dock overlooking Resurrection Bay.

The third subcomponent would be the extensions and outcroppings of the rockwork habitat planted with appropriate shoreline vegetation. These outcroppings and plantings would offer visitors a resting place protected from winds. Like the habitat, the extensions and outcroppings would resemble rock formations of the region.

Stormwater Drainage System: It is estimated that approximately 80 percent of the 7 acre site would be covered by building structures, paved parking areas, sidewalks, and other impervious surfaces. A new on-site storm drainage system would be constructed to capture surface water runoff resulting from the proposed project. Additionally, there are two existing 24-inch city storm drain lines that cross the proposed building site and discharge into Resurrection Bay (Figure 2-11). These city lines would be consolidated with the proposed drainage system; with the line sized to accommodate the combined flow volume. A preliminary review of climatic conditions for Seward indicates that drainage structures should be designed for a peak rainfall of 2 inches per hour.

Seward's business district.

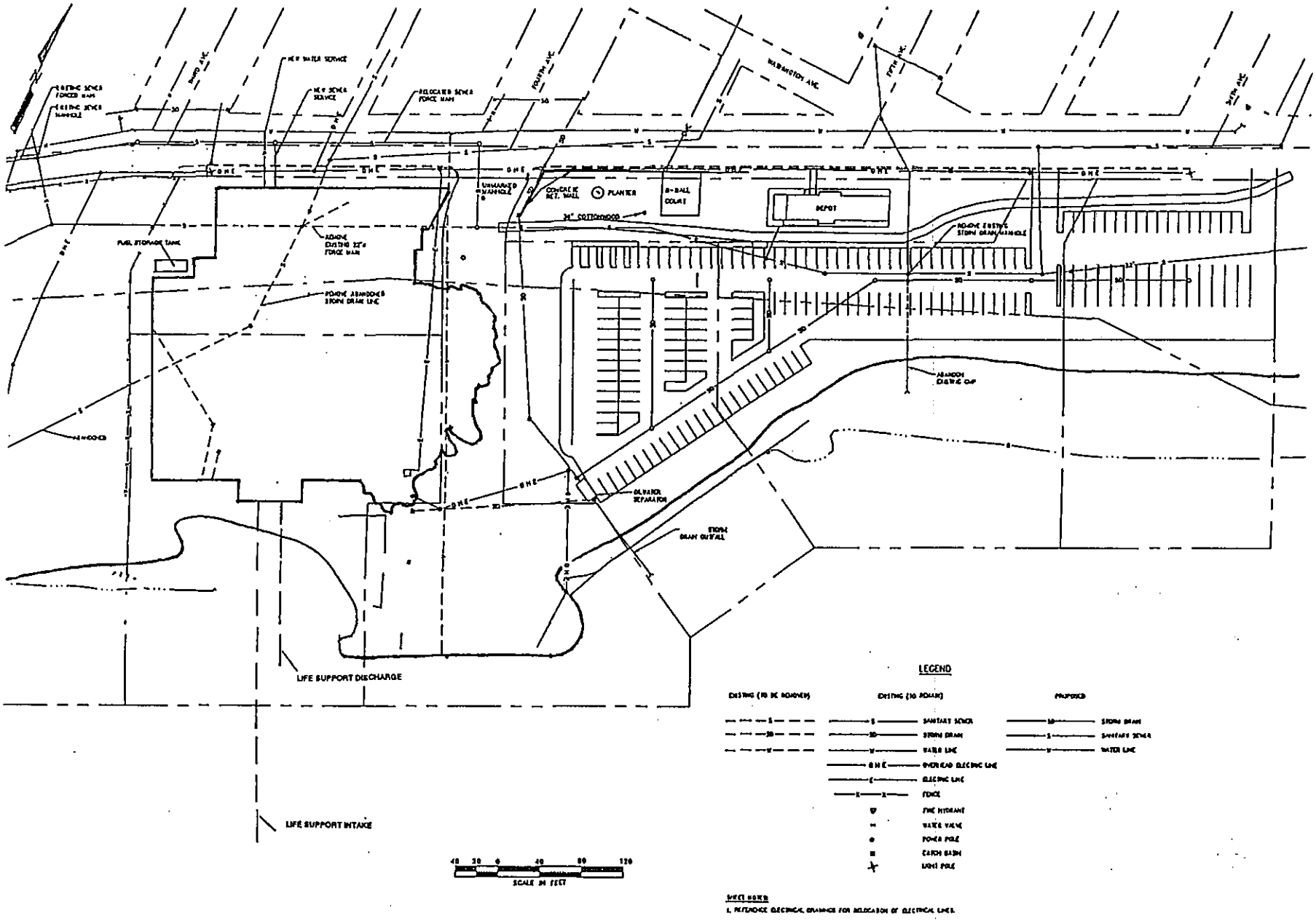
Photo by Brent Whitmore.



FOURTH AVENUE VIEW CORRIDOR

Job No. 28347-002-160
DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-10



ALTERNATIVE I - UTILITY LAYOUT

Job No. 28347-002-160

DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-11

Schematic development plans include approximately 1,200 linear feet of 18-inch diameter, and 800 linear feet of 24-inch diameter, high density, polyethylene storm drain line. The storm drain system would also include approximately 15, 48-inch concrete catch basins. The entire system would have a single discharge point to the bay. Approximately 300 linear feet of existing 18-inch diameter storm drain line will be removed.

Project plans include an oil/water separator at the storm drain outfall location. This separator would be sized to accommodate runoff generated on-site and crossing the site from the city, estimated to be 5,000 gpm. Residue would be collected periodically and disposed of by a contracted hauler. This activity is regulated by EPA, ADEC, and ADOT/PF.

Construction Codes: The proposed construction would be designed to meet or exceed the requirements of the Uniform Building Code adopted by the City of Seward.

Foundation Design: Preliminary foundation recommendations indicate the new buildings and marine habitat tanks could be supported on shallow foundation systems. Building foundations would consist of conventional strip and spread footings. Basement areas, where life support systems are located, would utilize a slab-on-grade floor and concrete retaining wall. At grade, floor systems may be slabs on grade, or crawl spaces may be used, subject to mechanical requirements. For frost considerations, exterior footings would be buried at least 42 inches below final grade. Interior footings would be at least one foot below finished floor elevation or ground surface.

The foundation for the marine habitat tanks would likely be a thick concrete mat. This mat would distribute the weight of the water to the soil and provide for integrity of the tank should an earthquake cause loss of soil strength. All foundation designs will be developed in accordance with recommendations and requirements outlined in a detailed geotechnical program conducted in the proposed project area.

Structural Framing - Building: The complete framing system for this building has not yet been determined. Both steel frame and concrete bearing wall systems are under consideration. Floors would consist of concrete slabs supported by either steel or concrete beams. Roof framing would consist of steel or heavy timber framing supporting a metal or wood deck. Floor and roof framing could be supported by either load-bearing concrete or masonry walls, structural steel framing, or a combination of both.

The proposed structure would be designed in accordance with Uniform Building Code requirements for a seismic Zone 4 facility. Lateral loads from wind and seismic activity would be resisted by a system of horizontal diaphragms and vertical shear walls or braced steel frames. Diaphragms at the roof and floor levels would transfer lateral loads to the vertical shear-resisting walls or braced frames. Walls and braced frames would transfer lateral loads into the foundation. Shear-resisting diaphragms, and walls or braces, would be designed in accordance with the Uniform Building Code requirements.

Marine Habitat Tanks: The Marine habitat tanks would be designed for both hydrostatic and hydrodynamic pressures resulting from seismic events. American Water Works Association guidelines would be followed for tank design. The tanks would likely be formed and cast in-place with a

high-strength, high-density concrete. Walls would resist hydrostatic pressures by cantilever action from the mat foundation or by buttress walls. Corrosion protection for the concrete reinforcing would be provided by a variety of methods which may include coating of reinforcing bar, densifying concrete, or using protective tank liners. The foundation mat for the tank would be protected against storm surges by a sheetpile bulkhead.

Fuel Storage: Heating fuel for the proposed facility would be locally available #1 and #2 fuel oil. The estimated fuel consumption for the proposed building is 100,000 gallons per year. Oil would be stored in an above ground, double-walled fuel tank with spill and overfill protection devices. An SPCC Plan will be prepared in accordance with EPA regulations prior to start of operation to address proper transfer, storage, and handling procedures. A 15,000 gallon fuel storage tank, approximately 12 feet in diameter by 30 feet in length, is proposed. The tank's location would comply with all applicable codes including NFPA-13 which states that the tank must be located a minimum of 20 feet from property lines, and a minimum five feet from the building. The anticipated location of the fuel tank is near the loading dock on the north side of the outdoor research tanks and pools, approximately 200 feet from the waters of Resurrection Bay (Figure 2-5). The fuel tank would be screened from view and protected from loading dock traffic. Fuel piping to the building would be above ground and protected from physical damage by bollards.

The facility would have a stand-by, 750 kilowatt generator for emergency power situations.

Domestic Water Usage: Domestic water usage has been estimated to be 21,470 gallons per day (gpd) based on staff, visitor, and lab usage, for an average high day during the peak period of June 1 to September 15. These calculations are summarized in Table 2-2.

TABLE 2-2
DOMESTIC WATER USAGE
JUNE 1 TO SEPTEMBER 15

Usage	Requirement	Quantity
Staff	60 persons x 35 gpd[1]	2,100 gpd
Visitors	2914 persons x 5 gpd	14,570 gpd
Lab Sinks	5 gpm[2] x 16 hrs/day x 60 min/hr	4,800 gpd
	TOTAL	21,470 gpd

Source: PN&D
[1] gpd
[2] gpm

Water for domestic use would be supplied by the city. The current city water pressure near the site is 85 pounds per square inch (psi) static and 72 psi residual, which is sufficient for the proposed project. The size of a new water service line for the project would be approximately 6 inches in diameter. It would tie in to the existing city water main in Railway Avenue.

The existing city wastewater collection and treatment plant systems are capable of accommodating domestic effluent generated at the proposed facility. The city's plant is reportedly operating between 60 to 70 percent of capacity at the present time. Freshwater discharge can be disposed of to the city sewer system if it is processed to remove all hazardous materials. A 10-inch diameter, 25-foot long sanitary sewer line is anticipated to connect with the city system. Any saltwater must be disposed of through outfall lines to the bay.

An existing 22-inch diameter sewer main line would need to be relocated as part of the proposed project. Preliminary plans call for this line to be relocated in Railway Avenue. It is assumed that the new project sewer line would tie into this relocated line.

Life Support System: The LSS would supply seawater similar to natural conditions for the support of the live tanks, live pools, wet laboratories, and the research habitat. The LSS would be a partially-closed, loop system using a pressure sand filtration process with ozonation for disinfection and water quality enhancement as required (Figures 2-12 and 2-13).

The LSS for the proposed project is comprised of: duplicate intake pipelines and intake structures; a seawater intake wet well located within the building; a centrally located seawater supply pump room above the wet well; and various seawater supply distribution systems consisting of pumps, piping, valves, fittings, filters where required, flow meters, operating controls, etc. Each distribution system draws seawater from the wet well and supplies it to the respective research, rehabilitation, or marine habitat facility within the complex.

The following separate seawater supply distribution systems are included:

- Marine mammals and seabird habitat;
- Indoor research tank areas;
- Outdoor research tanks; and
- Quarantine facilities.

Each system would include at least two pumps (one to be redundant for emergency standby purposes), and a single pipe distribution system feeding the respective tanks or pools. A separate recirculation line would return a portion of the total system supply flow to the wet well; this ensures that the seawater in the piping distribution system is maintained similar to the conditions of Resurrection Bay. Filters would be used on some of the systems to remove suspended sediments.

Seawater Intake System

The concept for the seawater intake system is as shown in Figure 2-14. The intake structures would be two perforated 24-inch pipes, approximately 400 feet in length, supported on concrete anchor blocks to keep the intakes off of the sea bottom and submerged at a 250 foot depth. The number of perforations would be calculated and determined on the basis of the established final design flow and on criterion to keep the intake velocity less than 0.1 feet per second.

Each intake structure and pipeline would be designed for the full flow requirements of the proposed project, estimated to be between 4,500 and 5,000 gpm. The second intake line is for redundancy and would allow maintenance on one line while the other is in service. A two-intake design provides the degree of reliability required for life support systems supplying ongoing research work.

The wet well is common to all seawater supply and distribution systems. It serves as a recirculation and monitoring chamber as well as an untreated (raw) seawater holding well. Because it is readily accessible, it provides onshore storage and settling of untreated seawater. If both intake pipelines were to fail due to a seismic, or some other, event, temporary pumps could be used to transfer seawater directly from a beach intake to the wet well. This wet well concept therefore increases the reliability of the overall seawater intake and supply system.

Seawater Collection and Disposal Systems

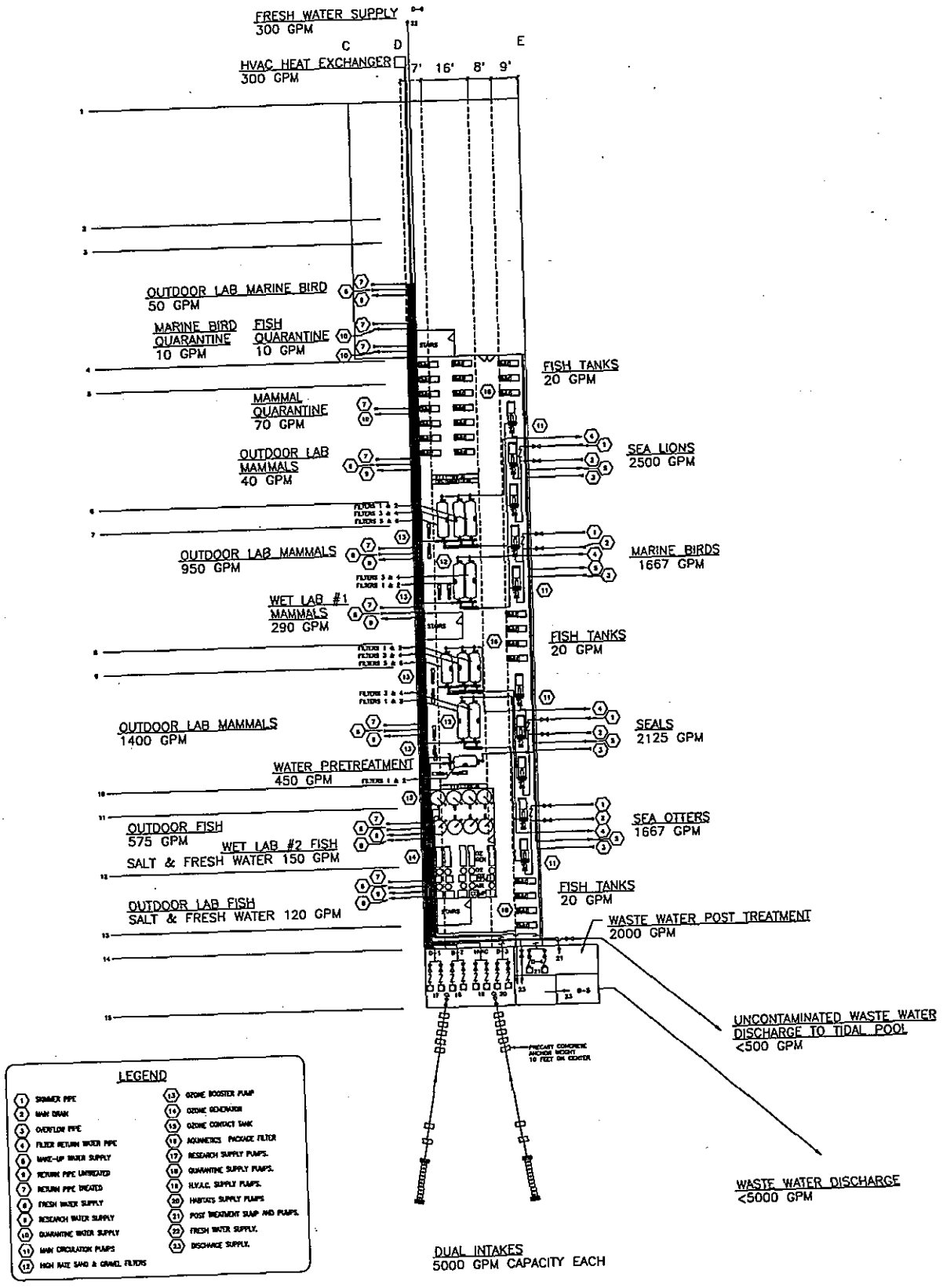
Each seawater supply system will be augmented by seawater collection and disposal systems, depending upon the specific use of the seawater in the respective systems. Generally, used seawater is discharged into an outfall pipe which terminates at a depth of approximately 50 feet below mean lower low water (MLLW). A small amount of seawater (<500 gpm) from the uncontaminated research flow will be discharged to the future tide pool. Several categories of used seawater have been identified as follows:

- Clean Wastewater - Untreated (raw) or filtered seawater supplied to a research or holding tank or pool will be discharged directly to the disposal system outfall without treatment. Some of this seawater may also be directed or discharged through the proposed tidal pool.

- Contaminated Wastewater - Wastewater from holding and research tanks that may be contaminated would be separately collected and treated to disinfect, dechlorinate, or otherwise treat wastewater prior to discharge to the main outfall.

- Chlorinated Wastewater - Overflow wastewater from any marine mammal or seabird tank containing a chlorine residual would be separately collected and treated prior to discharge to the main outfall.

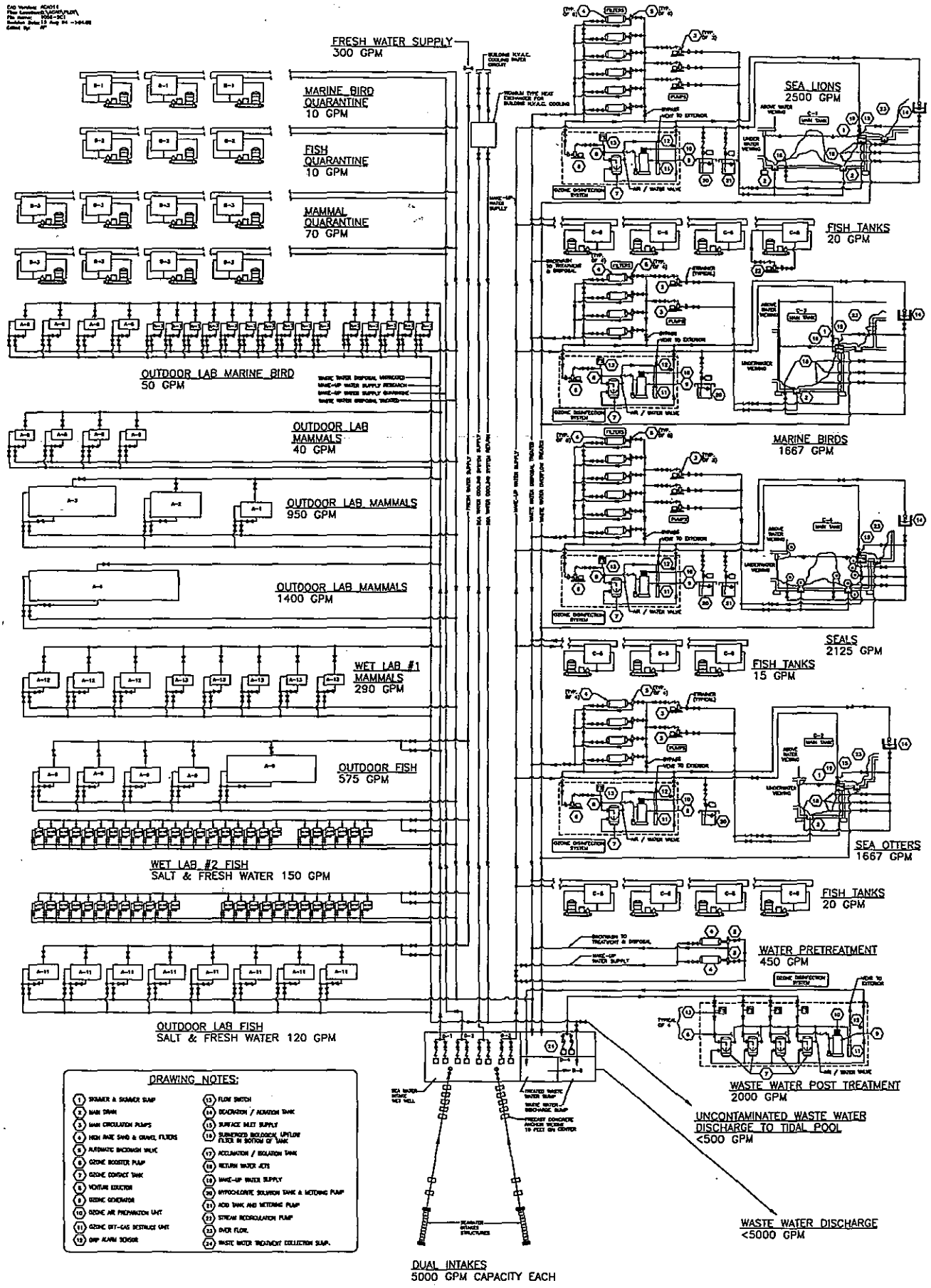
- Filter Backwash Water - All filter backwash water would be separately collected and would be discharged to the central treatment facility, as for other contaminated wastes.



LIFE SUPPORT SYSTEM - FLOW DIAGRAM

Job No. 28347-002-160
DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-12



LIFE SUPPORT SYSTEM - DETAILED FLOW DIAGRAM

Job No. 28347-002-160

DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-13

The following outlines the anticipated quantities of waste or spent seawater and the type of collection and disposal system (including waste treatment) required:

- Marine Mammals and Seabirds Habitat - Each marine mammal and seabird habitat tank (five total) will employ a self-contained recirculating LSS using high rate sand and gravel filters; biological filters where fish are held (11 smaller tanks); and disinfection facilities (ozone, chlorination, or a combination of both). The seawater make-up supply system to all of the five tanks would have a capacity of 500 gpm. Because these tanks include underwater viewing, the seawater make-up flow would be filtered using high rate sand and gravel filters for water clarity.
  Some of the overflow water from these tanks may be chlorinated (not greater than 0.5 parts per million [ppm] residual) such as the seal and sea lion tanks. The chlorinated overflows would be treated (with ozone) along with other wastes from the complex. Overflow water which is not chlorinated would be discharged to an outfall sump, along with other waste discharges, and then to the outfall pipe.

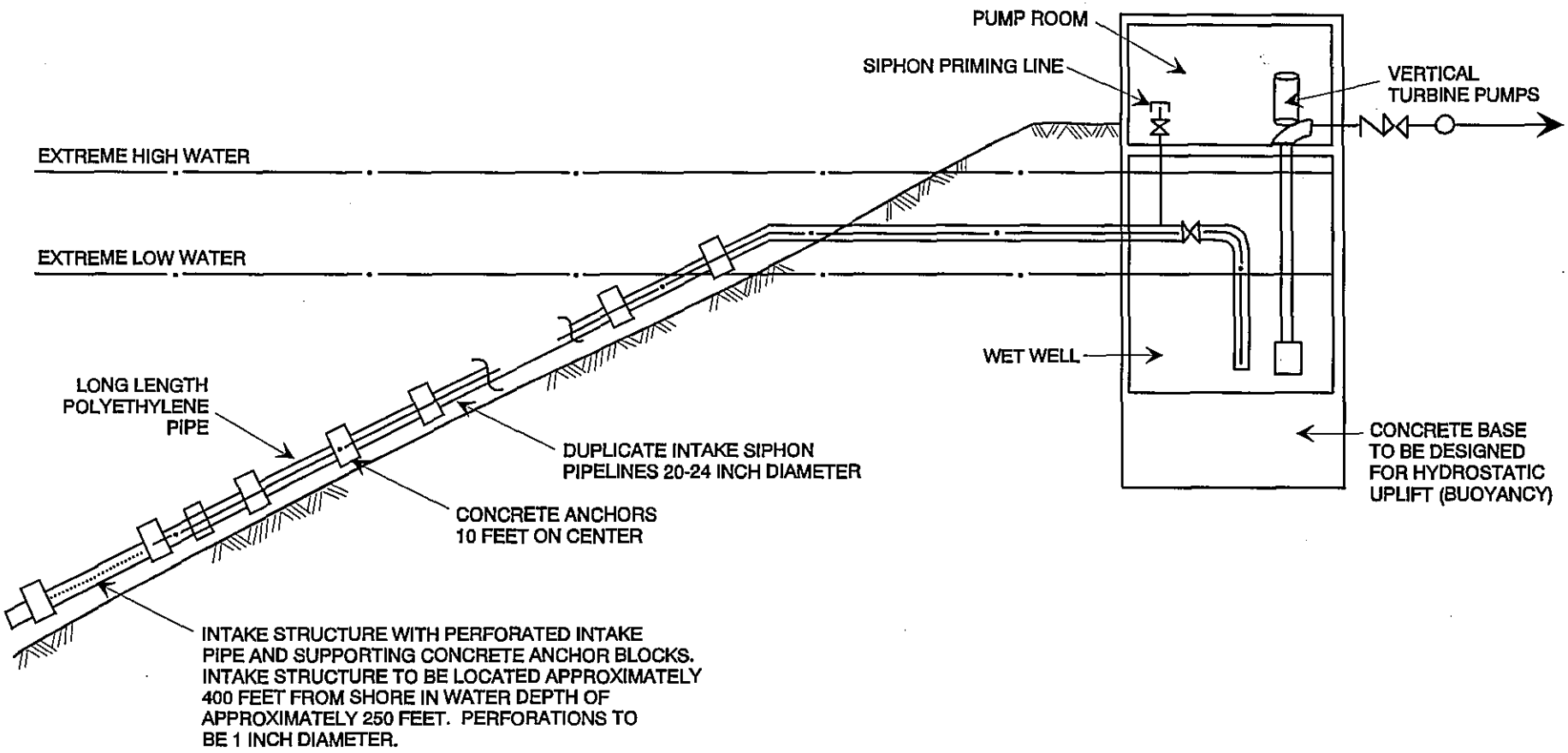
- Indoor Research Tanks - The seawater supply system to all indoor research tanks and pools would have a capacity of 500 gpm. The seawater supply will be untreated water. The used or spent seawater from some of these tanks or pools, if considered contaminated, would flow to the waste treatment facility prior to discharging to the outfall sump and outfall. Uncontaminated seawater emanating from these rehabilitation tanks and pools would discharge either through the proposed tidal pool or directly to the outfall.

- Outdoor Research Tanks - The seawater supply system to all outdoor research tanks would have a capacity of 3,200 gpm. This supply would be untreated water. The used or spent seawater emanating from the tanks would be either treated, if contaminated, and then discharged to the outfall; or discharged to the proposed tidal pool or to the outfall directly, if uncontaminated.

- Quarantine Areas - The seawater supply system to all quarantine work areas would have a capacity of 200 gpm. This supply would be untreated water. It is anticipated that all of the wastewater emanating from these work areas would be contaminated and that it would be separately collected and run through the treatment system prior to discharging into the outfall.

Marine Outfall

The marine outfall system would include a main collection sump on shore, and a 24-inch diameter outfall pipe with a perforated diffuser structure at the discharge end. The diffuser discharge structure would be located at a depth of approximately 50 feet below MLLW. A portion of the marine outfall system would flow through the tide pool infrastructure.



NOTES:

1) NUMBER OF PERFORATIONS IN INTAKE STRUCTURES TO ACHIEVE INTAKE VELOCITY OF LESS THAN 0.1 FEET PER SECOND.

2) LOCATION OF WET WELL AND PUMP ROOM TO SUIT BUILDING COMPLEX AND BEST ARCHITECTURAL LAYOUT.

3) EXACT INTAKE PIPELINE DIAMETERS TO BE FINALIZED AT DESIGN STAGE.

CONCEPT FOR SEAWATER INTAKE SYSTEM

Job No. 28347-002-160
DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-14

TABLE 2-5
SUMMARY OF EFFECTS
(continued)

RESOURCE CATEGORY	ALTERNATIVE I, PROPOSED PROJECT	ALTERNATIVE II[2]	CUMULATIVE
Traffic and Transportation[4]	Construction: LOW		
Option 1	MODERATE		MODERATE
Street System	Operation: NEGLIGIBLE	NEGLIGIBLE	
Traffic Volumes	MODERATE/LOW	NEGLIGIBLE	
Traffic Operations	LOW	NEGLIGIBLE	
Traffic Safety	LOW	NEGLIGIBLE	
Parking	LOW/MODERATE	NEGLIGIBLE	
Transit	MODERATE	NEGLIGIBLE	
Rail Services	NEGLIGIBLE	NEGLIGIBLE	
Ferry Services	NEGLIGIBLE	NEGLIGIBLE	
Option 2		NEGLIGIBLE	MODERATE
Cruise Ships	LOW	NEGLIGIBLE	
Non-Motorized	NEGLIGIBLE	NEGLIGIBLE	
Ferry Service	LOW/MODERATE		

[1]Refer to Table 2-4 for the definitions of levels of effect for each resource category.

[2]Effects of construction for Alternative II would be similar to those of Alternative I. The duration of effects would be less with Alternative II, but the conclusions for effects would remain the same.

[3]The overall effect of the proposed project is dependent on peak and off-peak seasons, which is reflected in the range of potential effects.

[4]Effects on Traffic and Transportation range from Negligible to Moderate. The project assumes that ferry service will be relocated to another Seward location at some time. Option 1 considers the effects of ferry service remaining at the site during construction. Option 2 considers the effects of ferry service remaining through potential operations.

Note: Alternative III (No Action Alternative) -- The effects associated with Alternative I or Alternative II would not occur with this alternative.

Freshwater Usage: Approximately 150 gpm of freshwater would be needed for fish genetics studies. A potential source for the freshwater has been located approximately 2,500 feet from the project site along Lowell Point Road. Preliminary investigation indicates that the source would provide a minimum of 300 gpm, the maximum capacity of the freshwater system. The water would be collected, filtered, and pumped to the site via a 4-inch pipeline in the city's utility corridor in Lowell Point Road. If water quantity and/or quality of this source is not adequate, other sources include wells drilled at the present IMS facility near the K.M. Rae Building, surface water (Lowell Creek), or water supplied from the city. A gravity fed storage tank would be required.

Approximately 50 gpm would be treated and discharged through the marine outfall; an estimated 100 gpm of uncontaminated freshwater would be discharged through the outfall. This estimated 150 gpm of treated and untreated freshwater would be added to the discharge water, which would dilute the salinity to a small degree. This water would primarily contain organics with some minor concentrations of fine sediment.

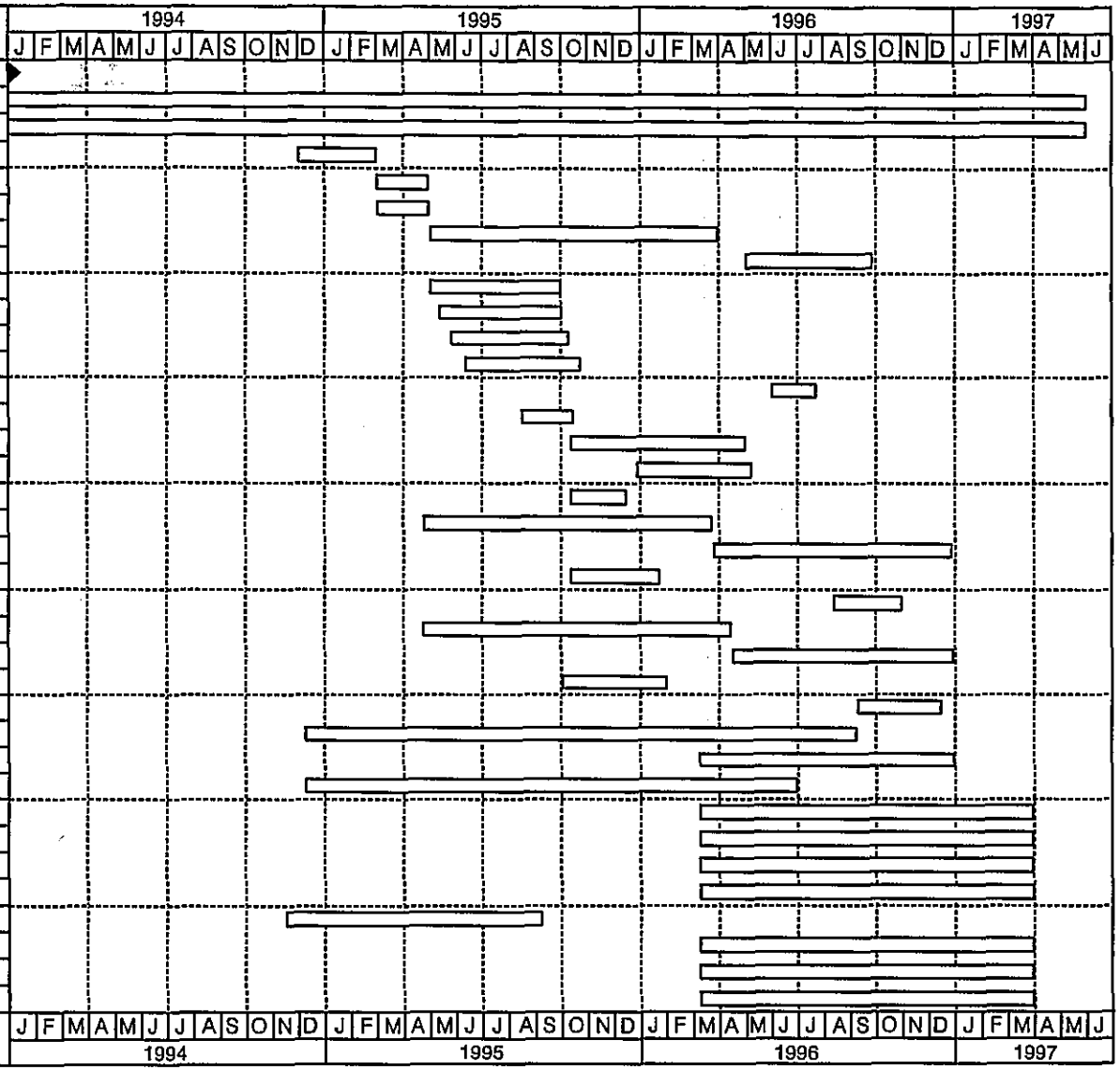
Small concentrations of halogenated compounds (chlorine and hypobromous acid) used in disinfecting surfaces and pools may also be contained in the discharge water. The concentration of these chemicals in discharge water would be minimized by using freshwater for disinfectant washdown which would go into the sanitary sewer system. The surfaces near the mammal and marine bird pools would slope away from the holding water in the pool so that washdown water can be separated, further reducing the amount of these chemicals in the discharge water and separating the washdown water. The small amount of chemicals in the discharge water would be further diluted below levels which would effect marine fish or invertebrates.

Construction Schedule and Labor Projections: Construction of the proposed project would occur from December 1994 through the spring of 1997. Operation would begin during the summer of 1997. Figure 2-15 represents a summary of the major activities of the construction schedule. The activities are identified, and start to finish dates defined.

The construction schedule provides approximate windows of time within which each of the major on-site activities is expected to occur. Estimated on-site labor resources have been assigned to each major activity across its entire duration. By summing the labor component of each activity for each month, the required monthly on-site personnel is determined. It should be noted that in addition to craft personnel, such as carpenters and electricians, the workforce projections include non-manual personnel such as the project manager. It would not include, however, any labor performed off-site for prefabrication or assembly functions.

The estimated duration of on-site construction employment is from December 1994 to spring of 1997. A peak of 47 workers occurs in September 1995 when the workforce will be concentrating on getting the facility enclosed prior to the 1995 winter season. Approximately 1/3 of the work force is expected to be local hires.

ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH
PROJECT START	1JAN94	
Building Design	1JAN94	31MAY97
Project Management	1JAN94	31MAY97
Sea Wall	1DEC94	1MAR95
Site Preparation	2MAR95	2MAY95
Site Utilities	2MAR95	2MAY95
Research Tanks	3MAY95	2APR96
Public Site Improvements	1MAY96	25SEP96
Foundations	3MAY95	30SEP95
Substructure/Slab	20MAY95	30SEP95
Structure	7JUN95	10OCT95
Exterior Building Skin	19JUN95	28OCT95
Exterior Finish	1JUN96	15JUL96
Roofing	16AUG95	12OCT95
Interior Construction	11OCT95	3MAY96
Interior Finishes	26 DEC95	14AUG96
Vertical Circulation	11OCT95	11DEC95
Plumbing Rough-In	3MAY95	23MAR96
Plumbing Finish	25MAR96	28DEC96
Fire Protection Rough-In	13OCT95	25JAN96
Fire Protection Finish	15AUG96	4NOV96
Electrical Rough-In	3MAY95	16APR96
Electrical Finish	17APR96	26DEC96
HVAC Rough-In	3OCT95	1FEB96
HVAC Finish	13SEP96	14DEC96
BP2 - Life Support Contractor/Main Building	1DEC94	31AUG96
BP4 - Artificial Habitats Contract	1MAR96	1JAN97
BP5 - Natural Habitat Materials Contract	1DEC94	1JUL96
BP6 - Environmental Sound Systems Contract	1MAR96	1APR97
BP7 - Video Systems Contractor	1MAR96	1APR97
BP9 - Furniture and Equipment Contractor	1MAR96	1APR97
BP10 - Start Up Contractor	1MAR96	1APR97
BP11- Acrylic Contractor	15NOV94	1SEP95
BP11 - Graphics/Photography Contractor	1MAR96	1APR97
BP12 - Exhibit Film Contractor	1MAR96	1APR97
BP13 - Film System Contractor	1MAR96	1APR97



CONSTRUCTION SCHEDULE

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IMS Infrastructure Improvement Project
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FIGURE 2-15

To determine the approximate monthly on-site payroll, the labor requirements were multiplied by the anticipated hourly wages. When the monthly payroll amounts are accumulated, approximately $5.6 million in labor payroll is anticipated for on-site activities, with an estimated $1.8 million for local hire.

2.2.5 Operating Characteristics

The following operating information has been derived from two feasibility studies, one prepared by Thomas J. Martin and Fox Practical Marketing, the other prepared for Alaska Industrial Development and Export Authority (AIDEA) by Public Finance Management, Inc. Since publication of the Draft EIS, Martin and Fox substantiated their evaluation with up-to-date information (see Appendix C). More detailed and updated projections will be necessary as the project moves forward, and additional planning regarding refinements in the physical plant, project sizing, and program content are likely to occur.

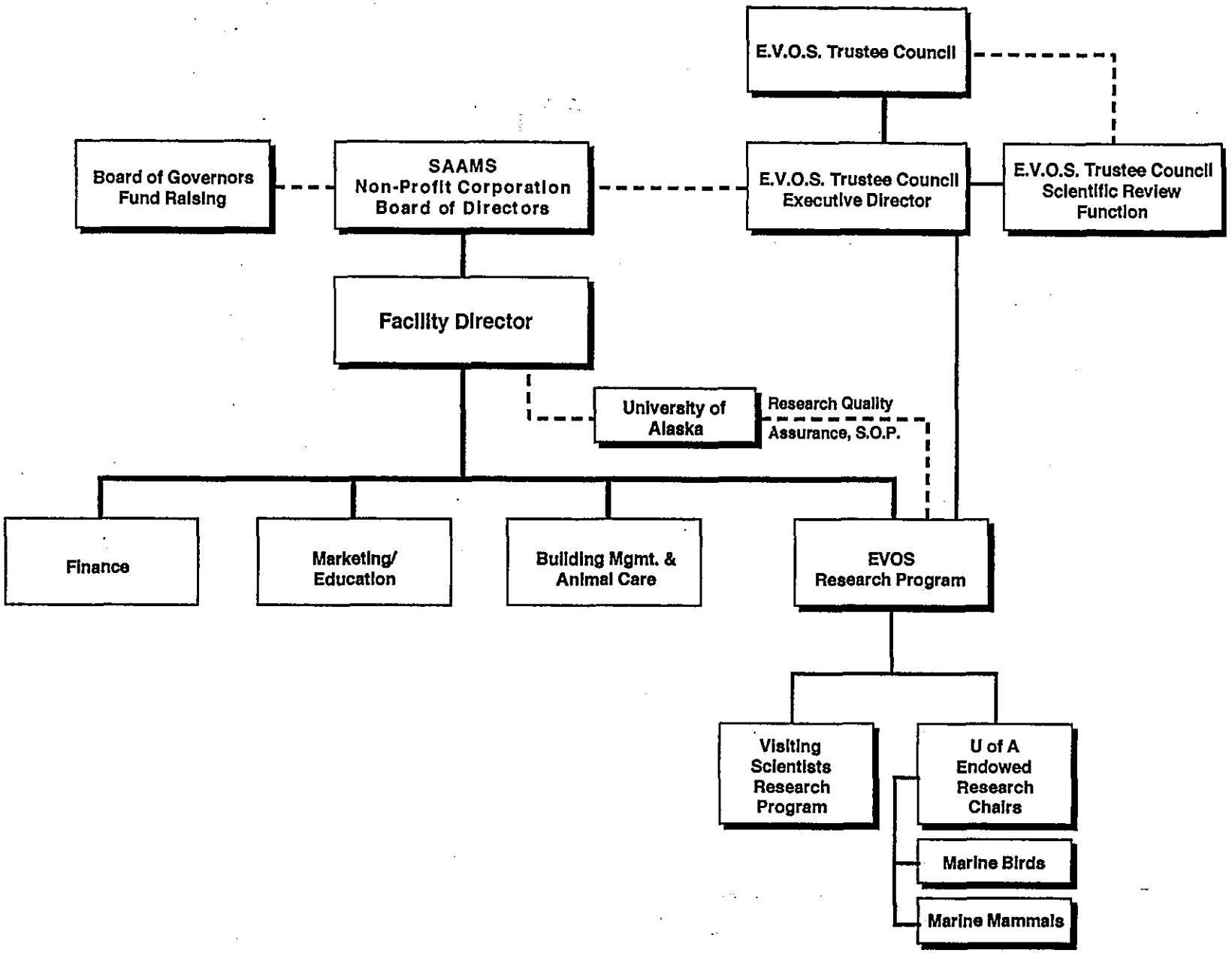
These projections have assumed a well planned, constructed, and operated facility that creates a unique research and educational attraction. It is assumed that the project will be aggressively marketed and will receive full community support in the private and public sectors.

A non-profit Board of Directors would be charged with operating and maintaining the proposed project, as well as all budgetary matters. Figure 2-16 presents a preliminary organizational chart for the facility, including staff positions.

The following discussion provides operating assumptions, an estimate of potential revenues, and an estimate of operating expenses.

Operating Assumptions: The proposed project would operate from 10:00 a.m. to 9:00 p.m. in the summer, and from 10:00 a.m. to 4:00 p.m. in the winter. Special hours may be necessary to accommodate the cruise ship arrival and departure times and special events. The facility would be open every day in the summer and five to six days a week in winter, preferably closing mid-week. Special openings would accommodate school or tour groups in the winter season. The following admission prices are assumed for the discussion of revenues. Adult summer ticket price would be $12.50; children - $6.50 (children under two years old free); and a group ticket price of $11.00 per adult. A reduced ticket price may be offered in the off-season to encourage Alaska resident visitation. In the first year of operations this would result in $9.01 per capita admissions income.

In a typical year, approximately 85 percent of the total visitation should occur during the peak period of June 1 to September 15. Using the moderate assumptions of the PFM Study fifth year projection of 262,085 visitors to the proposed facility as a planning parameter, this results in 222,772 visitors in this 107-day period. Weekly attendance would average 14,570. Average high day counts are projected at 2,914. Assuming an average stay of 1-1/2 hours, peak accumulation within the facility is estimated at 875 people.



PROPOSED OPERATING ORGANIZATION CHART

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IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-16

To determine maximum occupancy, the peak visitor count of 875 must be added to the employee count for that peak period time of 60, for a total peak occupancy of 935.

Using the moderate assumptions of the AIDEA Study prepared by PFM, the number and analysis of visitors to the proposed project in year one and two are provided in Table 2-3.

TABLE 2-3
VISITATION ASSUMPTIONS

Sector	Capture Rate	Population	Total
Seward Residents	70%	4,000	2,800
Cruise Ship Visitors	29%	160,000[1]	46,400
Non-Resident, Non-Cruise Ship	20%	378,000[2]	75,600
South Central/Alaska Residents	19%	538,000	102,220
Fall/Winter/Spring	7-10%	262,500[2]	23,531
TOTAL			250,551

[1] Estimated 1993 cruise ship passenger visitation to Seward lower.
[2] Estimated visitation to South Central Alaska.

Visitation to Seward is expected to increase in the fall, winter, and spring markets due to the proposed project. This number is expected to be approximately 23,531, made up primarily of students, visiting friends and relatives of South Central residents, and vacation pleasure visitors.

Based on projections in both feasibility studies, approximately 50,000 new visitors will be drawn to Seward as a result of the project. Almost 50 percent of the new visitors will be in the fall/winter/spring period. With 50,000 new visitors expected to visit Seward, the movement of the existing Seward visitors from the Small Boat Harbor and cruise line docks to the proposed project site at the south end of the city will create new traffic flows and increased visitor volumes in the downtown Seward area.

2.2.6. Projected Revenues

Potential revenue sources for the IMS Infrastructure Improvements Project are as follows:

- Admissions revenue;
- Parking fees;
- Retail shop revenue;
- Membership revenue;

- Research contracts;
- Rehabilitation program income;
- Grant and donations; and
- Miscellaneous income.

Admissions Revenue: The average first year achievable admission revenue is estimated at $9.01 per person, based on adult admission proceeds of $12.50. This pricing is based on the nature of the attraction, the distance that visitors (particularly tourists) come, and the visitor knowledge that the project supports research and environmental conservation. This pricing assumes a lower price in the off-season to encourage Alaska residents to attend at a discounted rate. It is also assumed that there will be 20,000 non-paying visitors and membership holders. Admission revenues are estimated at $2,361,386 annually.

Parking Fees: Although a fee would be charged for parking in the proposed project parking lot, it is not intended to be a source of revenue for the project. Validation of visitor attendance would offset parking fees for the approximate two hour visitor parking lot stay. Revenue generated from vehicles using the lot for longer periods of time or for other purposes have not been included in the project revenue assumptions.

Retail Shop Revenue: A retail shop with appropriate and varied educational merchandise would be an important part of the visitor experience, and can be an important revenue source. This element is assumed to perform at or above industry norms, and to generate $5.00 per visitor in retail sales, with a return of $2.50 after the cost of the goods sold. This provides a projected retail revenue of $ 655,200 annually.

Membership Revenue: Membership is typically made up of individuals and families who wish to contribute to the center, but who also appreciate the financial benefits that they can accrue, such as free admission, special events, and price reductions on merchandise. The number of anticipated members is based on price, the population of the area, the projected attendance at the center, and the experience of other aquariums. Based on these factors, a membership of 5,000 is projected. This annual average rate is composed of less expensive single, student, and couple memberships at $30; family memberships at $65; and donor level memberships at $100. Corporate/business memberships are projected at 100 annually at $1,000 each. This would result in $360,000 revenue from annual memberships.

Research Contracts: The presence of the proposed accredited facility will provide opportunities for the award of research grants, and for hosting researchers, particularly those working with marine mammals and marine birds. Potential public and private agencies and foundations that could fund research which would be appropriately undertaken at the facility include:

- University of Alaska, IMS;
- EVOS Trustees;
- ADF&G;
- NOAA;
- NBS;

- The Saltonstall/Kennedy program for the study of fisheries-related issues administered by the NMFS;
- The NMFS Office of Protected Resources which oversees many aspects of federal marine mammal protection programs;
- U.S. Marine Mammal Commission in Washington, D.C.;
- Center for Marine Conservation; and
- Other conservancy and philanthropic organizations.

The net income to the proposed facility from research is estimated at $246,000 annually.

Rehabilitation Program Revenue: The proposed project will provide facilities to support marine mammal rehabilitation activities in its region. The facility will be prepared to augment rescue and rehabilitation of injured marine mammals. Revenue potential is associated with three sources:

- Emergency Rehabilitation of Animals Brought to the Facility - It is estimated that a federally certified wildlife rehabilitation program and facility could draw significant grants and donations from individuals and private foundations. An estimated $200,000 annually could be raised through grants and donations.

- Contracts for Spill Response Capacity - The Oil Pollution Act of 1990 requires the formulation of a response plan for oil spill-related accidents that includes appropriate wildlife rehabilitation capacity. An appropriate response would be the on-going operating support of the IMS rehabilitation facility through the establishment of an endowment. Investigations indicate that a reasonable estimate of funding potential from this source is up to $500,000 annually to support operations.

- Research on Marine Mammal Rehabilitation - A cross-over between research and rehabilitation is likely to occur, and major activities at the proposed facility would suggest the potential for the endowed scientists and EVOS restoration projects to generate such research proposals.

Because these sources of revenue are somewhat speculative at this time, a conservative income estimate of $150,000 for wildlife rehabilitation programs was used. It is clearly possible and probable that this number could be higher when a certified facility is in place.

Grants and Donations: Grants are for such activities as general operations, education and capital items, and refurbishment. Donations typically are from individuals and institutions. Similar facilities receive between three and ten percent of their revenue from this source. The forecast level of $150,000 annually is based on the experiences of comparable facilities.

Miscellaneous Income: Similar facilities receive additional income from a variety of miscellaneous sources. These include facility rental and catered events, interest and investment income, education

programs, group travel programs, naturalist programs, and fund-raising events. Many facilities receive anywhere from five to 20 percent of their revenue from these sources. For the purposes of this analysis, a conservative assumption of $20,000 annually for miscellaneous income has been made. If the experience of other facilities is achieved in actual operation in Seward, then miscellaneous income will substantial exceed this amount.

The total estimated income in the first year of full operations is $3,900,000.

2.2.7 Projected Expenses

Projected expenses for the IMS Improvements Project are categorized by the following major functional categories:

- Personnel expenses;
- Administrative expenses;
- Plant operations expenses; and
- Curatorial expenses.

Personnel Expenses: The proposed project is a unique facility with a unique operating profile. Some functions, such as research, will go on equally throughout the year, while others, such as the visitor attendance, will be most active during the summer months. The staffing profile reflects this pattern, with a staff of 56 full- and part-time workers in the winter, and 67 full- and part-time workers in the peak summer months. Compensation levels for employees at the proposed project were developed by reviewing information on wage rates and fringe benefits for workers in Alaska provided by the Alaska Department of Labor.

The total payroll for the proposed project based on this staffing load, is estimated at $1,965,600 annually.

Administrative Expenses: The administrative expenses include telephone and postage, professional fees and outside services, marketing, equipment, office supplies, insurance, printing and publications, professional development, travel, dues and subscriptions, and miscellaneous. The total administrative expense is estimated at $776,000 annually.

Facility Operations Expenses: This category includes utilities, supplies, equipment, building renewal and replacement, and outside services. The total facility operations expense is estimated at $720,000 annually.

Curatorial Services: This category includes specimen food, specimen purchase, and collecting and stranding trips. The total curatorial expenses for the proposed facility are estimated at $375,600 annually.

The total estimated annual expenses for Alternative I are $3,837,200.

As previously stated, revenue assumptions presented in this document are based on numerous studies but remain somewhat speculative. Should, at some unforeseen time, facility expenditures exceed revenues generated, facility operations would be curbed. Options would include reducing operating hours, thereby reducing staff and support functions, to compensate for the short fall.

2.3 ALTERNATIVE II - RESEARCH AND WILDLIFE REHABILITATION ONLY

Alternative II would have only one component, research and wildlife rehabilitation. The structures and facilities would generally be the same as described above under Alternative I, with the education and visitation components eliminated, including the 166-vehicle parking lot and public plaza (Figure 2-17).

2.3.1 Construction Program

The square footage of the indoor space with Alternative II would be approximately 49,000 square feet. The elimination of visitor related indoor space for this alternative, such as the auditorium, retail shop, and lobby would result in a reduction of the building footprint and massing. The upper level of the building would be eliminated, resulting in a one-story structure at approximately 17 feet above grade (Figures 2-18 and 2-19).

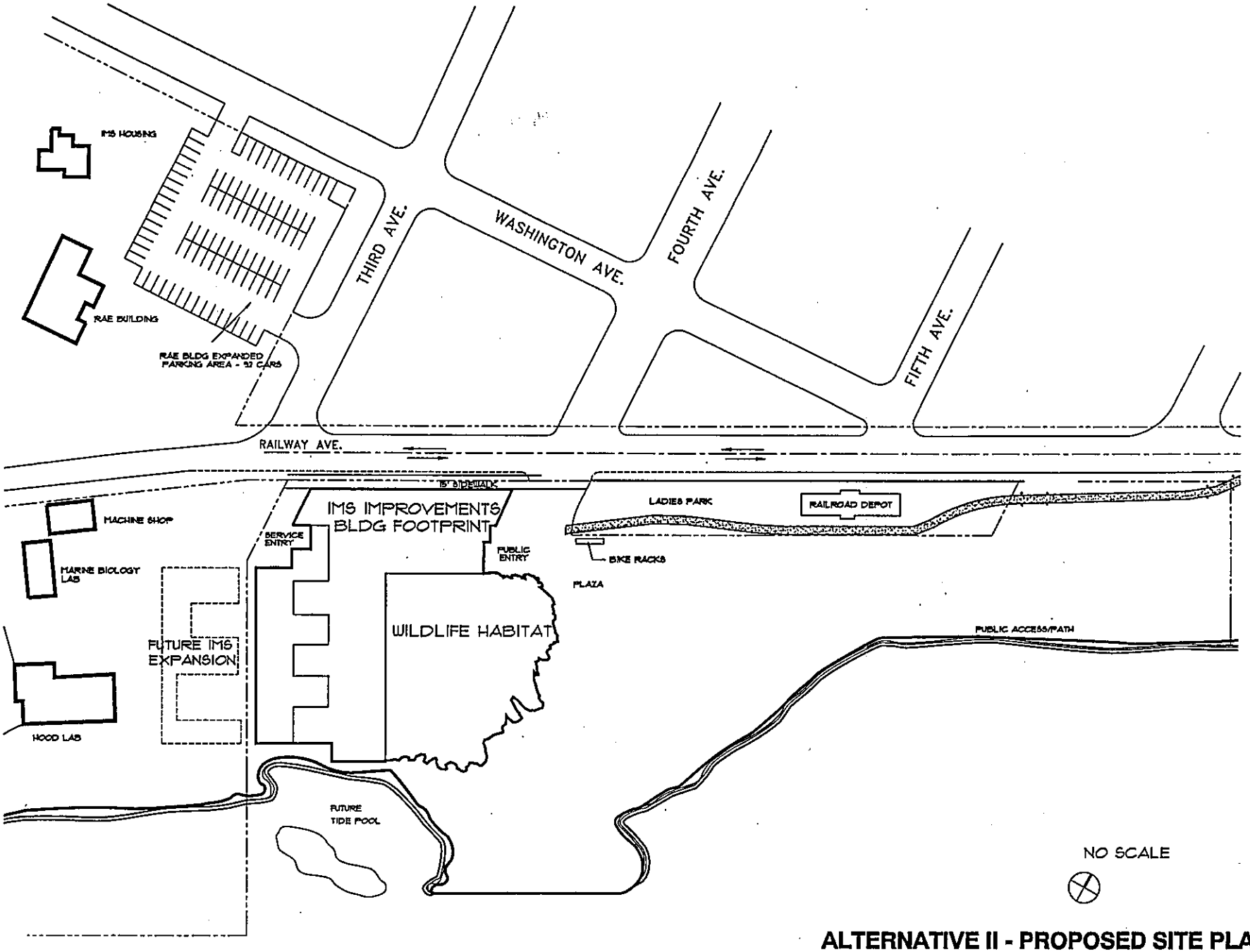
The outdoor areas for research habitat and research tanks and pools would be the same as for Alternative I, although the subsurface visitor walkway surrounding the tanks would be altered to accommodate researchers only. The proposed walkway would be a partially covered trench that allows researchers to view the animals and have access to animal haul out areas.

The parking requirement for Alternative II would be 50 vehicles for research staff and associated visitors. Parking would be made available in a newly constructed paved lot adjacent to the north of the existing IMS Rae Building parking lot, as described for Alternative I. A stormwater drainage system would be installed to connect with the city's existing line in Third Avenue. The visitor parking lot, plaza area, and its associated stormwater drainage system would be eliminated (Figure 2-20). The 90,000 square foot visitor parking lot and 67,000 square foot plaza area would be graded and landscaped and would be available for future expansion.

The capital construction cost of Alternative II would be reduced from Alternative I by approximately $10 million. This $10 million difference would not effect the EVOS funding, however, as funds for the education component are intended to come from private donations and fund raising efforts.

2.3.2 Operating Characteristics

This operating performance information for Alternative II is intended to provide a base of assumptions regarding the research-only facility revenue, expense, and operating income potential. This operating information has been derived by analyzing and revising operation assumptions for the project as originally

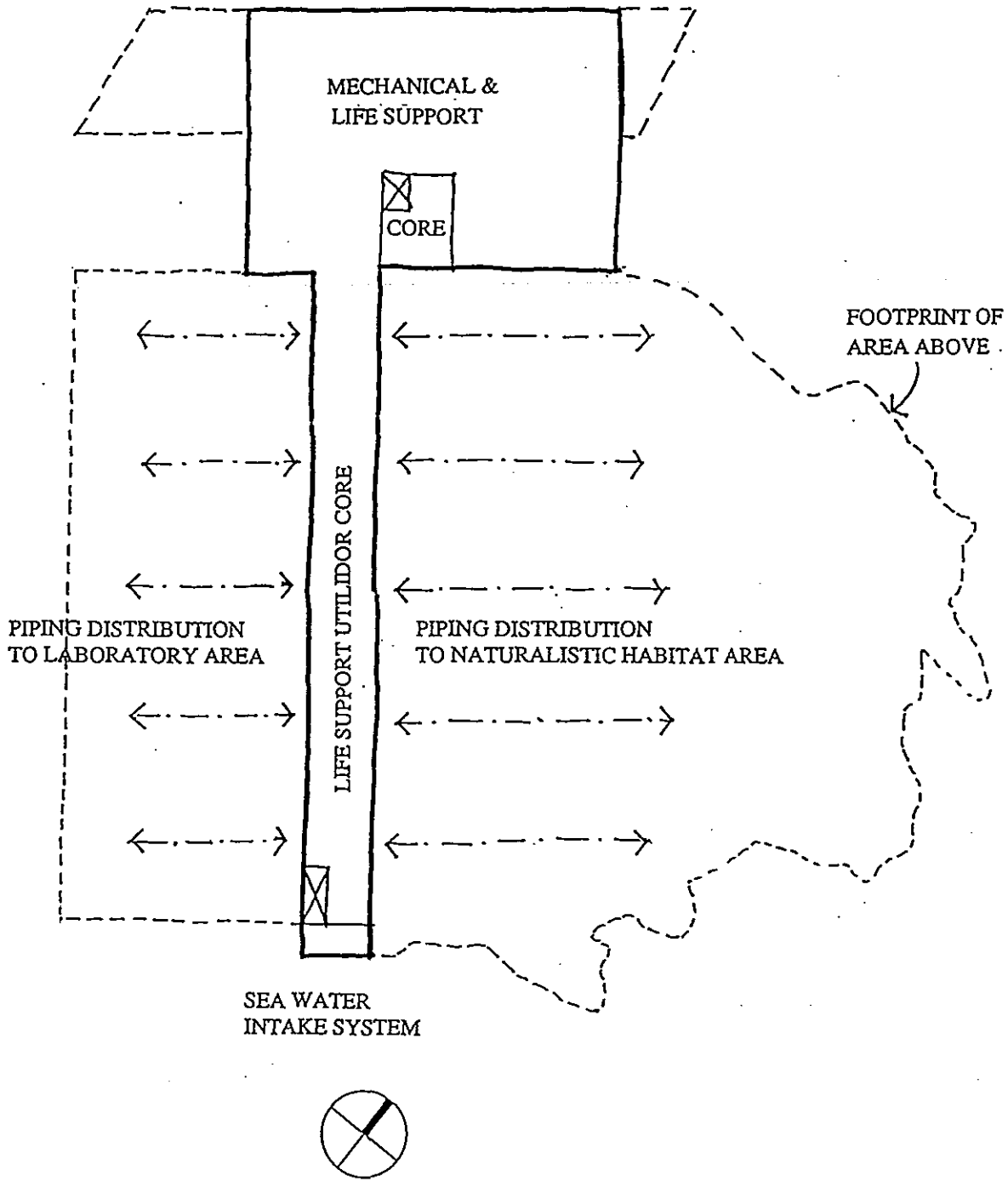


ALTERNATIVE II - PROPOSED SITE PLAN

Job No. 28347-002-160

DAMES & MOORE

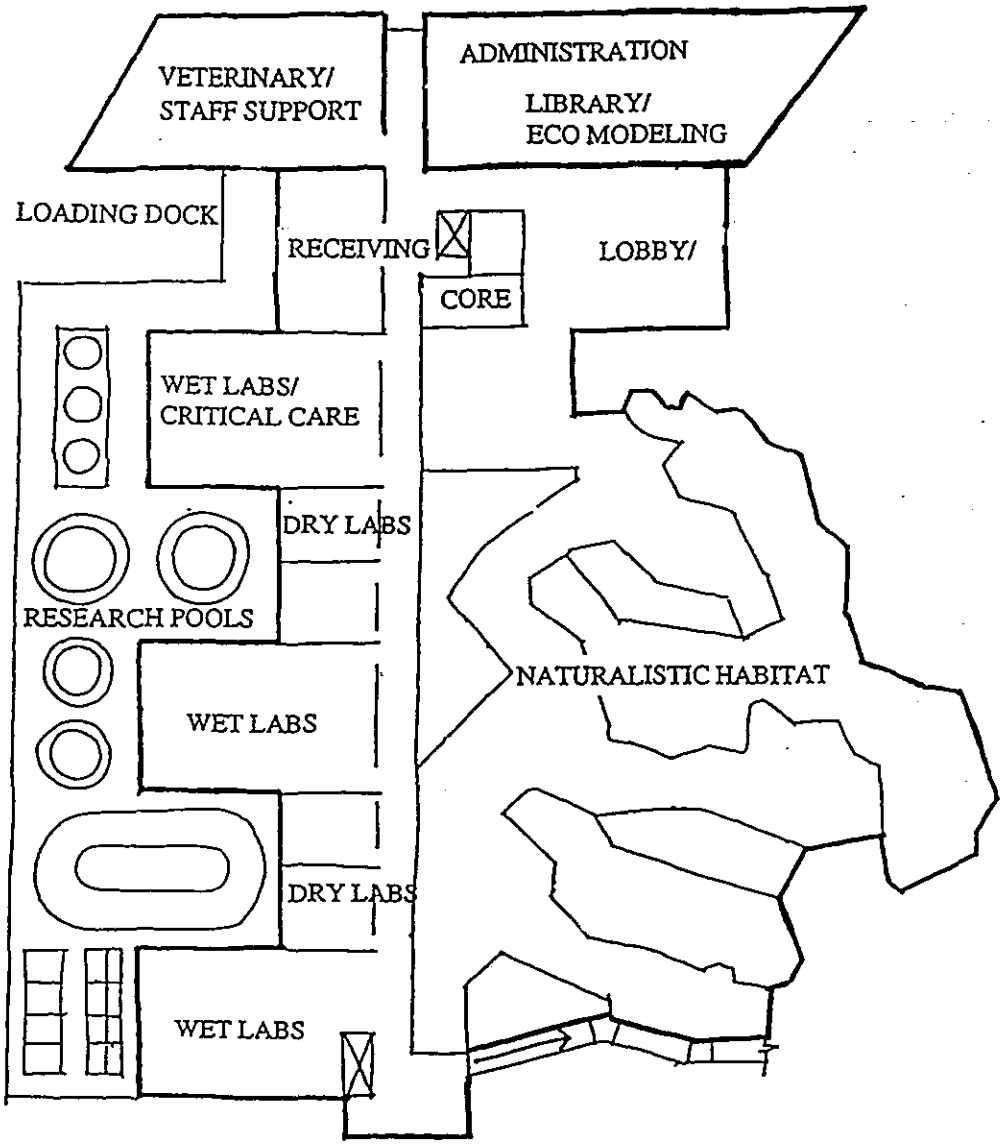
IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-17



ALTERNATIVE II
BASEMENT LEVEL FLOOR PLAN

Job No. 28347-002-160
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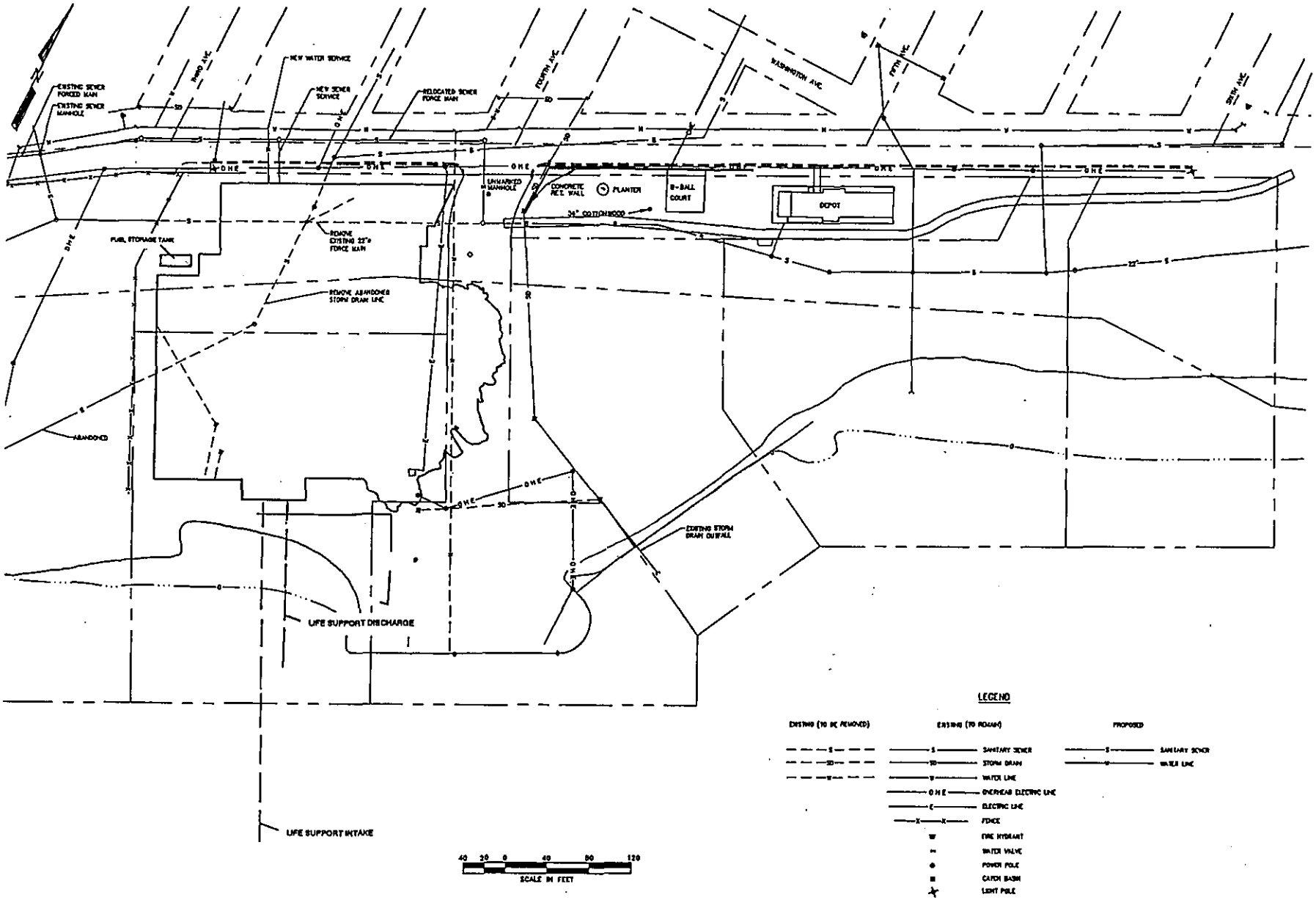
IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-18



ALTERNATIVE II
MAIN LEVEL FLOOR PLAN

Job No. 28347-002-160
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IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-19



ALTERNATIVE II - UTILITY LAYOUT

Job No. 28347-002-160

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IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 2-20

planned with a visitor and education component. More detailed and updated projections will be necessary as the project moves forward, and additional planning regarding refinements in the physical plant, project sizing, and program content are also likely to occur.

These projections have assumed a well planned, constructed, and operated facility that creates a research facility only. In the first section, the operating assumptions are given; in the second section an estimate of potential revenues are projected; while in the third section, an estimate of expenses is made.

Operating Assumptions: As a research institution only, the proposed facility would operate from 8:00 a.m. to 5:00 p.m. Special hours for research activities and animal care would require 24-hour occupancy. The facility would be open seven days a week for the research staff. Public visitation to the proposed project would consist of occasional tours arranged upon request, much like the current IMS facility.

2.3.3 Projected Revenues

The potential revenue sources for the Alternative II are as follows:

- Research contracts;
- Rehabilitation program income; and
- Grants and donations.

Research Contracts: Research at the proposed project would consist of visiting scientists and in-house research positions. The researchers are all expected to be grant or contract funded, with the revenue for overhead support flowing to the facility and the general overhead staff support being carried as a cost of the facility. The net income to the facility is estimated at $246,000 annually, the same as Alternative I.

Marine Mammal Rehabilitation: Revenue potential from wildlife rehabilitation activities at the proposed facility is the same as with Alternative I described previously, conservatively estimated at $150,000 yearly.

Grants and Donations: As with Alternative I, a forecast level of $150,000 annually is estimated.

The total estimated income in the first year of full operations for Alternative II is $546,000.

2.3.4 Projected Expenses

Projected expenses for Alternative II are categorized by the following major functional categories:

- Personnel expenses;
- Administrative expenses;
- Plant operations expenses;
- Curatorial expenses.

Personnel Expenses: Projected staffing requirements for Alternative II are based on facility size, research functions, and rehabilitation components of the project. Research will go on equally throughout the year. The staffing profile reflects this pattern, with a staff of 26 year-round employees. Nearly one-half of those employees will be local hires. Compensation levels for the project were developed by reviewing information on wage rates and fringe benefits for workers in Alaska provided by the Alaska Department of Labor. The total annual payroll for Alternative II, based on this staffing, is estimated at $1,101,650.

Administrative Expenses: The administrative expenses include the same as those listed for Alternative I, with the exception of a marketing budget. Lower anticipated expenses reflect a reduced facility. The total annual administrative expense is estimated at $415,000.

Facility Operations Expenses: This category includes those listed for Alternative I. Again, total operational expenses are lower due to the smaller facility. The total plant operations expense is estimated at $580,000 annually.

Curatorial Services: This category includes specimen food and collecting and stranding trips. The total curatorial expenses are somewhat lower due to the smaller facility and are estimated at $345,000 annually.

The total estimated annual expenses for Alternative II are $2,441,650.

2.4 ALTERNATIVE III - NO ACTION

In addition to the two action alternatives, a No Action Alternative is evaluated in the EIS. The No Action Alternative required for consideration under NEPA regulations is interpreted in this EIS to mean no new research/wildlife rehabilitation and public education/visitor facilities would be constructed on the IMS Seward Marine Center site at this time.

Under the No Action Alternative, the project sponsors would continue to use the limited laboratory facilities which exist in the state, and send other laboratory studies out of state. There would not be a facility primarily dedicated to the research needed to support the recovery of species injured as a result of the *Exxon Valdez* oil spill. The EVOS Trustee Council's capabilities to study marine mammals, marine birds, and the ecosystem injured by the *Exxon Valdez* oil spill would continue as currently exists.

2.5 SUMMARY OF MITIGATING MEASURES

2.5.1 Mitigating Measures as Part of the Proposed Action and Alternatives

The following mitigating measures are part of the proposed project to reduce or eliminate the potential adverse effects.

Geology and Soils:

- Limiting grading disturbances to essential project areas;
- Limiting, to the extent practical, the amount of cut and fill; and
- Stabilizing disturbed areas through revegetation as soon as it is practical.

Hydrology and Water Quality:

- Installing settling pond(s) or trench(es) to clarify discharges associated with de-watering activities prior to these waters being discharged to Resurrection Bay;
- Installing a stormwater drainage system to control the increased volume of stormwater discharge from site improvements;
- Installing an oil/water separator to ensure water quality of stormwater/discharge; and
- Treating facility seawater and freshwater before discharge to bay.

Air Quality:

- Requiring that a detailed inspection/maintenance program for construction equipment be implemented by the contractor to optimize engine performance and fuel efficiency;
- Using water or dust suppressants to control fugitive dust emissions;
- Encouraging higher vehicle occupancies for employees;
- Creating transit/shuttle bus service to the proposed facility;
- Improving pedestrian linkage to the proposed facility by sidewalks and marked pedestrian crossings; and
- Encouraging other non-auto travel modes for local travel by providing bike racks.

Noise:

- No construction would be performed within 1,000 feet of an occupied dwelling on Sundays, legal holidays, or between the hours of 10 p.m. and 6 a.m. on other days;

- All construction equipment would have muffled exhaust systems, and all construction equipment would have sound control devices no less effective than those provided as original equipment;

- Construction equipment would comply with applicable EPA equipment noise standards;

- No pile driving operations would be performed within 3,000 feet of an occupied dwelling on Sundays, legal holidays, or between the hours of 10 p.m. and 6 a.m. on other days;

- All pumps, generators, and chillers would be installed in the basement level of the buildings; and

- Vegetation would be planted between the facility and the Ladies Park and Railroad Depot to provide a noise buffer.

Wildlife and Marine Resources:

- To prevent attraction of wildlife, food and garbage would be stored in covered storage areas or closed containers;

- Captive birds would be isolated to prevent the possible transmission of disease from these birds to the local population;

- Marine mammals and birds would be protected from potential abuse and harassment by the public by attendant supervision and physical barriers, such as fences, walls, trenches, and glass partitions;

- The operation of the LSS will involve a seawater intake structure approximately 400 feet offshore and approximately 250 feet deep. This depth is well below the euphotic zone (where phytoplankton density is the highest) and below the freshwater lens which carries much of the silt load from local streams;

- Taking water from the 250 foot depth would minimize the entrainment of commercially important crustacean larvae (shrimp and crab), juvenile fish and larval fish, and other species which have planktonic life stages. These organisms are typically found in greater densities at higher levels in the water column. Biofouling organisms such as mussels, barnacles, and marine algae would also be much less prevalent at this depth;

- Intake structures would be elevated approximately 3 feet off the bottom of the seafloor to avoid interfering with benthic organisms;

- The intake pipes would be perforated with numerous one-inch holes to reduce the velocity of incoming water to approximately 0.1 feet/second, which would minimize the entrainment of small mobile organisms and larger marine fish and invertebrates;

- Wastewater sources would be treated by the facility treatment system, diluted, and discharged to 50 feet below MLLW via a specially designed outfall diffuser head, therefore, minimizing the concentration of contaminants from the facility, as well as minimizing organic buildup at the outfall location;

- The outfall structure would be a perforated pipe 24 inches in diameter and would have a flange end. The perforations can effect a dilution of the wastewater into the receiving water of up to 1:100. The dilution would greatly reduce any potential effect on the receiving water as far as temperature, salinity, or turbidity; and

- The concentration of disinfecting chemicals in discharge water would be minimized by using freshwater for disinfectant washdown to the sanitary sewer system. The surfaces near the marine mammal and marine bird pools would slope away from the holding water in the pool so that washdown water could be separated, further reducing the amount of chemicals remaining in the discharge water and separating the washdown water. The small amounts of chemicals in the discharge water would be further diluted below levels which would effect marine fish and invertebrates.

Vegetation, Wetlands, and Habitat:

- Creation of habitat through development of artificial tide pool habitat;

- Landscaping (i.e., revegetation of areas disturbed by construction, addition of vegetation where none existed before); and

- An armor rock face would be attached to the wave barrier to provide a surface for attaching organisms.

Visual/Aesthetics:

- In coordination with the SHPO and the city, integration of traditional non-industrial architectural elements to be compatible with the surrounding landscape and habitats;

- Public plaza in view corridor from Fourth Avenue; and

- Appropriate shoreline vegetation in parking lot islands, as a buffer between Ladies Park and the proposed facility, and integrated into rockwork of the habitat area.

Archaeological and Historic:

- A landscaping plan would be developed and reviewed by the city and the SHPO to minimize the effects of the proposed project on resources;
- Archaeological monitoring would occur during excavation; and
- Additional stipulations would be developed in a MOA between the DOI and the SHPO in compliance with Section 106 of the Historic Preservation Act.

Land and Shoreline Use:

- Fencing during construction;
- SAAMS financial assistance to the city for the relocation of the Youth/Teen Center activities;
- Assistance in the lease buy-out of NSHC;
- The public fishing area east of the project site would be kept available to public during construction and operation; and
- Accommodation of ferry traffic during construction and, if necessary, during operation.

Socioeconomics/Quality of Life:

- Percent of local procurement during construction and operation to stimulate Seward economy;
- Construction would not occur from 10:00 p.m. to 6:00 a.m;
- Dust levels during construction would be controlled by watering;
- Litter would be controlled on and around the site, including building materials, demolition materials and trash from the workforce. SAAMS would incorporate a "three Rs" policy - reduce, reuse, recycle - in all aspects of the facility;
- Although SAAMS is a non-profit organization and, as such, is legally eligible for exemption, sales tax generated from ticket sales and retail sales would be paid to the city and borough in compensation of property and revenue loss. This has been agreed to by SAAMS as a condition of the lease for the property;
- SAAMS has agreed to financially assist in the relocation of the Teen Center activities as a condition of their lease for the property. Because the project will displace this local

recreational facility, the purpose would be to mitigate the lost opportunity for recreational activity there; and

- A condition of the construction bid package would be that the contractor provide temporary housing for construction workers.

Recreation and Tourism:

- To minimize the effect on city campground capacities, a condition of the construction bid package would be that the contractor provide temporary housing for construction workers.

Traffic and Transportation:

Construction

- Coordinate truck routes with the City Engineer. Truck traffic would be limited to designated routes.

- During construction, truck routes and schedules would be announced and published.

- If the Lowell Point Road quarry site is selected as a material source, SAAMS would work with the City of Seward to ensure that the structural integrity of the Lowell Creek Bridge would accommodate the increase in heavy vehicle traffic.

- During the period between mid-April and mid-May, load restrictions of 75 percent of maximum legal load may be in effect along the Seward Highway. Construction activity occurring during this period would be scheduled to comply with this condition.

- Sufficient employee parking would be supplied on-site to minimize the effect of construction activity on traffic and parking conditions in the site vicinity.

Street System

- SAAMS would work with the city to encourage the use of Third Avenue for IMS project traffic by locating information signs along street and highway approach routes.

- If the ferry dock remains at the Municipal Dock, resulting in on-going joint use, directional signing should be installed which separates ferry traffic from IMS traffic. IMS traffic would be directed to use Third Avenue and Railway Avenue; ferry traffic would be directed to the east on Railway Avenue, to Ballaine Boulevard, and D Street. SAAMS would work with city officials to determine the best approach to accomplish this.

- A variance would be sought from the P&Z Commission to allow off-site signing to be installed.

- A bus pull-out would be located on the south side of Railway Avenue to minimize the effect of bus loading activity on other Railway Avenue traffic.

- Railway Avenue would be reconstructed and resurfaced along the project frontage. The reconstruction would result in either a two lane section which maintains on-street parking (24 spaces) on the north side of the street, or a three lane section (with a center left turn lane) which eliminates these spaces.

Traffic Volume and Operations

- Adequate parking would be provided on-site to accommodate all anticipated visitor and employee traffic likely to occur on high demand days in July. This would minimize the excess circulation around the site which could occur if the parking supply was not adequate.

- Site access operations would be mitigated on peak visitor days by on-site parking and traffic management personnel. These personnel would assure that vehicles are parked in appropriate spaces (i.e. only RVs over 20 feet would park in the oversized RV stalls). A general plan for the operation of site traffic and parking will be developed in a Site Operations Plan.

Traffic Safety

- On-site parking/traffic personnel will manage potential conflicts between vehicles and pedestrians in the parking area and at driveway entrances, including the locations where the bike trail crosses the site driveways.

Parking

- All parking spaces would accommodate vehicles up to 20 feet long. A total of 15 spaces for over-sized vehicles up to 40 feet long are also provided. On-site parking management personnel would assure that the larger parking spaces are reserved for use by the larger vehicles.

- Use of the facility's on-site visitor parking lot would be limited by a maximum two hour parking validation with the facility attendants. This would encourage a "turn over" of available parking spaces. The cost of longer term parking would be economically impracticable past the attendance validation period.

Transit

- Charter buses would be encouraged by on-site traffic management personnel to layover off-site between dropping off and picking up visitors on peak visitor days. Buses would likely layover at locations currently used by the cruise ship and other tour buses. The most heavily used layover location is currently a gravel lot near the railroad dock.

Ferry

- If the ferry service and the proposed facility share operations at the site, on-site personnel would cordon-off an area of the visitor parking lot for ferry parking (vehicles waiting to load the ferry), still leaving 135 parking spaces available for visitor parking.

- Coordination with the Alaska Marine Highway System would occur to determine if specific ferry berthing schedule adjustments would be necessary to reduce the potential for joint site use.

- With city approval, off-site signing would be implemented to route ferry traffic as described above.

- The current project site plan, which has two driveways onto Railway Avenue, lends itself to joint use operation as ferry traffic could be directed to the easterly driveway and proposed project traffic could be directed to the westerly driveway. Signing and on-site traffic management would be implemented to accommodate further joint use operations.

Non-motorized Travel

- The proposed project would include bicycle racks on-site.

- The pedestrian/bicycle trail would be extended through the project site to provide for future development of the trail to the west.

- Intersecting points of proposed site driveways and the bike path would be protected by bollards.

2.5.2 Potential Mitigating Measures

The following mitigation could be implemented by SAAMS to further minimize effects.

- Arrangements made by SAAMS' contractor to use private campgrounds outside of Seward during the peak visitor months;

- The auditorium could be used as a sleeping area for school children on overnight field trips;

- Information signs could be installed to keep visitor traffic on Third Avenue to Railway Avenue and minimize congestion on other city streets;

- Buses could be encouraged to drop off and pick up visitors in one trip. This would reduce or eliminate empty bus trips;

- Each construction worker could be provided with a "Welcome to Seward" package with a map of facilities, businesses, recreation-sites, discount coupons, and community events;

- Open houses or public ceremonies could be held to mark major milestones in construction scheduling from ground breaking to completion;

- The new facility could provide volunteer opportunities to Seward residents, including high school students, such as work with the marine habitats and species. This could help mitigate some of the disturbances associated with construction of the project, and provide beneficial links between the facility and the community.

- SAAMS could coordinate with and assist the City of Seward's Historic Preservation Commission to renovate Ladies Park.

- Advance emergency procedures could be established with the hospital, ambulance service, police, and fire department to ensure effective service and to minimize effects of emergency calls to adjacent areas;

- For the RVs which arrive at the Iditarod Campground (part of the Waterfront Park) during construction and operation of the facility and cannot stay due to the reduced camping area, signage could be provided regarding other Seward area campgrounds to assist RV users in seeking out alternative sites. This could ensure the RV parking occurs in appropriate locations, provide good recreational opportunities, and will not impact Seward residents' property.

- Silt curtains could be installed in the immediate nearshore zone to minimize the extent of turbidity resulting from the removal of shoreline debris in the tidal and intertidal areas, and the action of installing sheet piling and armor rock materials to form the tidal pools and wildlife habitat areas; and

- Further restrictions could be placed on when construction activity may occur.

2.6 SUMMARY AND COMPARISON OF EFFECTS OF THE PROPOSED ACTION AND ALTERNATIVES

Chapter 2.0 provides a description of the proposed project and alternatives considered for the existing IMS Seward Marine Center. The purpose of the EIS is to provide sufficient information about the proposed project and alternatives, and an analysis of the potential effects of each. The discussion and analysis presented in this document provides a comparative look at the alternatives considered and their potential effects. This section provides a summary of that comparison. Table 2-4 provides the definitions assumed in the effects assessment as they apply to each environmental issue. Table 2-5 shows the comparison of alternatives, and the cumulative effects resulting from the proposed project when combined with the effects of other developments in the project vicinity.

The alternatives analyzed in this document include: Alternative I, the Proposed Action; Alternative II, Research and Wildlife Rehabilitation Only; and Alternative III, No Action. Alternatives I and II have both beneficial and unavoidable adverse effects. Both Alternatives I and II would provide the infrastructure for long-term research and monitoring of the ecosystem affected by the *Exxon Valdez* oil spill, with the goal of benefiting the long-term health and restoration of affected resources. The proposed facility of either alternative is intended to serve as a center for the coordination and integration of on-going and planned comprehensive research and monitoring of the EVOS area as part of an overall restoration plan.

Alternative III, the No Action Alternative, is not shown in Table 2-5. The effects associated with Alternative I or Alternative II would not occur with this alternative.

The main difference between Alternatives I and II is the type of facility intended for the site. Alternative I would provide a research and wildlife rehabilitation component and an education and visitation component to promote public awareness of marine habitat and wildlife conditions. Alternative II would eliminate project components that are visitor-related. Alternative II addresses the major effects resulting from Alternative I, specifically the influx of visitors to Seward.

The following is a discussion of the effects attributed to each alternative.

2.6.1 Soils and Geology

The effect of Alternative I on soils and geology at the proposed site would be short-term and limited to site preparation and construction activities. Excavation and fill would be required for building structures and for the habitat area at the water's edge.

Although the square footage of the proposed facility would be reduced by 26,000 square feet with Alternative II, the building footprint would not change significantly. Therefore, the area to be disturbed during construction is equivalent to Alternative I. The 90,000 square foot visitor parking lot and 67,000 square foot plaza area would be eliminated with Alternative II; however the parking lot and plaza area would be graded and landscaped.

Alternative I and Alternative II would have similar effects to soils and geologic conditions at the proposed project site; these effects, mainly construction related, are considered to be low due to the relatively small size of the site and the limited time frame of these activities.

2.6.2 Hydrology and Water Quality

The effects of Alternative I and Alternative II on hydrologic conditions and water quality in the project area are attributed to de-watering activities and stormwater runoff during construction and operation.

During operation, Alternative I would experience higher levels of stormwater runoff due to the increase in impervious area with the 90,000 square foot visitor parking lot and 67,000 square foot plaza area. A stormwater drainage system would be part of the project design to accommodate the increase in drainage. Additionally, the system would have an oil/water separator to intercept drainage from the site before it discharges into the bay. The system would incorporate an existing city stormwater line which currently discharges directly into the bay. Alternative I would provide a beneficial effect to Resurrection Bay with the use of the oil/water separator for project site drainage and city stormwater flow.

A potential source of freshwater for research purposes is a spring located approximately 2,500 feet west of the project site along Lowell Point Road. Another option is a well or wells drilled on the IMS campus; however, the site is not located in an aquifer recharge area and groundwater levels appear to be influenced by local seawater fluctuations. Freshwater could also be obtained form a surface source at Lowell Creek. Domestic water would be obtained from the city.

Alternative II would not require the visitor parking lot or plaza and, therefore, would not have the levels of stormwater runoff of Alternative I. A drainage system with oil/water separator would not be part of the project, and the city stormwater line would continue to flow untreated into the bay. Required volumes of water for domestic and research uses would be reduced by 40-percent due to the smaller size of the building and less people to be accommodated.

2.6.3 Air Quality

Construction activities for both Alternative I and II would increase the amount of regulated pollutants in the air. Operational effects on air quality would be attributed to the use of #1 and/or #2 heating fuels for heating purposes and, for Alternative I, increases in visitor/tourist/employee vehicle emissions.

Alternative II eliminates the visitor component, which minimizes the level of effect from car, bus, and RV air emissions. Additionally, Alternative II would have a smaller structure to heat, which would reduce both the need for fuel oil and the resulting emissions.

2.6.4 Noise

Noise generated from construction activities with either Alternative I or II would create a short-term, low level of effect to those in the project vicinity. Alternative II would have a slightly shorter construction period with the smaller building size and the absence of the visitor parking lot and plaza area.

The difference in noise levels generated from operation of the proposed facility would be due to the lack of visitor and traffic activity with Alternative II. With noise buffers between the facility and other public areas, the effect from the facility-related noise of Alternative I would be low.

2.6.5 Wildlife and Marine Resources

The proposed project area is active with human, vehicular, and mechanical activities and currently supports little wildlife. Construction of the wave barrier and tide pool with Alternative I or Alternative II would have a short-term, low-level effect on area wildlife. There are no operational differences between the two alternatives, with respect to the effect on wildlife.

The research and wildlife rehabilitation component of each alternative would have a long-term beneficial effect on wildlife. Information and experience gained from the project's research activities could have untold benefits to generations of wildlife.

A LSS would be required with both alternatives to maintain a healthy habitat for wildlife that is similar to that in the wild. The system processes and treats wastewater generated by the facility to ensure that water quality standards are met for discharge to the bay. The effects of the water intake and discharge system on marine microorganisms are considered to be low. The effect on the nearshore marine environment is also expected to be low.

The effects of Alternative I and Alternative II on wildlife and marine resources are similar.

2.6.6 Vegetation, Wetlands, and Habitat

Both action alternatives would result in a negligible to low level effect on vegetation, wetlands, and habitat. As previously mentioned, site work would require the same level of disturbance and would result in the same level of revegetation and planting. A beneficial effect to habitat would be the tide pool and armor rock wave barrier proposed with both Alternative I and II.

Construction and operation of either Alternatives I or II would result in a beneficial/negligible effect to vegetation, wetlands, and habitat.

2.6.7 Visual/Aesthetics

The construction activities of either alternative would effect the view of Resurrection Bay. Several mitigating measures have been incorporated into the project design to minimize the visual effect of the

proposed facility after construction. Alternative II would have a slightly less effect than Alternative I, primarily due to the smaller facility and lack of a visitor parking lot and plaza area. The structure proposed with Alternative II would be 26,000 square feet smaller, primarily from the second story of the building. Rather than a two-story building as proposed with Alternative I, the structure would be one-story with Alternative II, thereby reducing the effect of the visual change.

When comparing the effect of either alternative with existing conditions, the proposed facility would have a positive effect on the waterfront property.

2.6.8 Archaeological and Historic Resources

There are no known archaeological resources in the area of potential effect identified for the proposed project. There would be temporary effects on the setting of historic resources in the immediate vicinity of the proposed project from construction noise and dust. There would be a potential adverse effect on the Seward Machine Shop which is potentially eligible for inclusion on the NRHP. However, the MOA between the DOI, the SHPO, and consulting parties would contain measures to minimize any potential adverse effect.

2.6.9 Land and Shoreline Use

During the summer months of the construction period, a demand for short-term housing would occur; however, with the availability of a privately-owned construction work camp just outside of Seward and other private campgrounds, the increased demand should be met satisfactorily. Construction payroll would bring economic opportunities for businesses in Seward, and local hire and procurement of materials would provide an economic benefit to local commercial businesses. These conditions would be true for both Alternative I and Alternative II.

Both alternatives would result in the displacement of approximately 57 RV campsites, the NSHC warehouse, a machine shop, and the Youth/Teen Center. This would occur with the lease of land by the city to SAAMS for the project. Ferry service would relocate to another site in Seward. The lease of land to SAAMS for this project would require a replatting of the property, rezoning, and a CUP. Land use of the site would change from industrial and park to CBD. Both Alternatives have similar effects to land and shoreline use.

2.6.10 Socioeconomics

Construction-related effects to the social and economic environment of Seward would be similar with both alternatives. The reduction of facility size and elimination of program elements would produce a proportionally reduced effect on housing, new employment and payroll, demographics, and infrastructure demands in Seward. The beneficial economic effects would also be reduced.

The major difference in alternatives is related to the elimination of the education component during operation, and with it, tourist-related activity. Alternative II would provide a facility that has only a

research and wildlife rehabilitation component. Visitors to the facility would be limited to occasional school groups or clubs. As a result, potential effects on employment, housing, population, traffic congestion, health services, and school systems would be reduced.

The quality of life in Seward is an important concern for local residents; a concern that is difficult to quantify because it varies with each individual. A beneficial effect on the quality of life could result from Alternative I with the influx of new and varied visitors who are interested in marine studies. Alternative I would also have a beneficial effect on economic conditions through the creation of employment, construction expenditures, and economic opportunities. Potential adverse effects would include an even more crowded condition in the summer months, increases in traffic and parking, and a reduced availability of recreational facilities due to crowding.

Alternative I of the proposed project depends, for the most part, on the education component for generation of operating revenue. Without the education facility, operating funds would be limited to research contracts, rehabilitation program income, and grants and donations.

2.6.11 Recreation and Tourism

The lease of land from the City of Seward to SAAMS for this project would displace up to 57 RV camping sites in the Iditarod Campground. This loss would occur with both Alternative I and II. With Alternative I, increased tourist traffic would effect the availability of recreation resources in the Seward area. There would be a minor effect on fishing and boating activities as a result of either alternative.

Alternative II would have a lesser effect on recreation resources and tourism than Alternative I.

2.6.12 Traffic and Transportation

In addition to the socioeconomic and tourism differences between Alternatives I and II, traffic and transportation would experience varying effects from the two actions. Overall, the effect of Alternative I on traffic, circulation, and parking is considered to be low to moderate as most of the potential effects are mitigated by the project design. The most notable effect of Alternative I would be on local transit as tourists circulate through Seward from the Small Boat Harbor to the project site. Alternative II would not have an effect on traffic, parking, or circulation. A parking lot for the estimated 50 staff members and researchers would be provided on the present IMS campus.

2.6.13 Conclusion

Table 2-4 provides the criteria used throughout the document to assess the level of potential effects of the proposed project alternatives (i.e., BENEFICIAL, NEGLIGIBLE, LOW, MODERATE, and HIGH). Table 2-5 is a summary of those effects by resource category. Chapter 4 of this EIS contains a comprehensive analysis of the potential effects; it is particularly important to refer to these analyses rather than to reference the summary table only as an indicator of potential effects.

As indicated in Table 2-5, the overall effects of Alternative I, the proposed project, are LOW to NEGLIGIBLE.

Exceptions to this include: a MODERATE effect on the quality of life in Seward during peak summer months; a LOW to MODERATE effect on recreation facilities and services; and LOW to MODERATE effects on traffic volumes, parking, local transit and ferry service.

BENEFICIAL effects of Alternative I would occur on water quality; marine mammals; vegetation and habitat; endangered and threatened species; site aesthetics; land use; local economy; public fiscal revenues; demographics; educational opportunities; city revenues; quality of life during off-peak tourist months; and facilities and services.

Overall potential effects of Alternative II would be NEGLIGIBLE to LOW. Exceptions include the LOW to MODERATE effect on recreation facilities and services due to the loss of campground sites.

BENEFICIAL effects of Alternative II would occur to endangered and threatened species, site aesthetics, local economy, educational opportunities, city revenues, and tourist facilities.

TABLE 2-4
DEFINITIONS ASSUMED IN EFFECTS ASSESSMENT

MAJOR ISSUES	HIGH	MODERATE	LOW	NEGLIGIBLE	BENEFICIAL
Soils and Geology	As a result of cuts and fills associated with construction, the potential for causing a major landslide exists.	Earth movement activities may result in small areas of soil instability.	Activity may cause minor, temporary earth movements during construction which would be stabilized through construction techniques or design features.	Activity does not change existing grades, or soil types.	Slope and/or soil stability is improved by activity.
Noise	Activity would permanently increase existing noise levels above local, state, or federal standards.	Activity would permanently increase existing noise levels by 10 dBA, but resulting levels would remain below local, state, or federal standards.	Activity may cause temporary increases in noise levels; or may permanently increase existing noise levels by less than 10 dBA.	Activity would not change existing noise levels.	Activity would result in a permanent decrease in existing noise levels.
Hydrology and Water Quality	A regulated contaminant is discharged from the project causing the concentration of the contaminant in receiving waters to exceed the concentration of regulatory controls.	A regulated contaminant is discharged causing the concentration of the contaminant in receiving waters to be of concern due to occasional peaks and/or multiple sources, but the concentration is generally below the concentration limit of regulatory controls.	A regulated contaminant is discharged and the resultant concentration of the contaminant in receiving waters is well below the concentration limit of regulatory controls.	No measurable change in the water quality of receiving waters.	Activity would eliminate or remove an existing source of water quality degradation; net result would be an improvement in water quality.
Air Quality	Emissions would be in violation of Federal standards for ambient air quality.	Emissions would result in pollutant concentrations that would approach the maximum levels permitted by Federal standards for ambient air quality and protection of existing air quality.	Emissions would result in pollutant concentrations that would not approach the maximum levels permitted by Federal standards for ambient air quality and protection of existing air quality.	No measurable change in air chemistry.	Activity would replace an existing source of air quality impacts; result of operation would be a net improvement (lowering) of air quality emissions.

Table 2-4
DEFINITIONS ASSUMED IN EFFECTS ASSESSMENT, (continued)

MAJOR ISSUES	HIGH	MODERATE	LOW	NEGLIGIBLE	BENEFICIAL
Wildlife & Marine Resources	A regional population or species declines in abundance and/or distribution beyond which natural recruitment would not return it to its former level within several generations.	A portion of a regional population changes in abundance and/or distribution over more than one generation, but is unlikely to affect the regional population.	Individuals of a population in a localized area and over a short time period (less than one generation) is affected.	No measurable change in local abundance or distribution.	Activity would provide new or improved habitat, *and* would have no measurable change or would cause an increase in species' population.
Vegetation and Wetlands Habitats	Habitat to be impacted is of high value for area species and is unique and irreplaceable on a national basis.	Habitat to be impacted is of high value for area species and is relatively scarce or becoming scarce on a national basis.	Habitat to be impacted is of low value for area species.	No measurable change in type, quantity or quality	New high quality vegetation and/or wetlands would be provided which would have a net increase over existing amount and quality.
Endangered and Threatened Species	A population decline resulting in a change in the distribution and/or abundance of the species with recovery in more than one generation or more than 10 years.	A population decline, resulting in a minor change in the distribution and/or abundance of the species. The expected duration of the effects on the population is 2 to 10 years.	No discernible population decline, but a number of individuals experience sublethal effects and would recover to pre-activity conditions within 1 to 3 years. Distribution changes affecting a low number of individuals in a small local area would last no longer than the described activity.	Activities that create a setting that causes an insignificant change to protected species populations.	Activity would enhance overall populations of protected species.
Visual	Visual quality is degraded to the extent that it affects all people in the area. Action results in minor reduction of property values.	Visual quality degraded to an extent which affects most people in the area. A minor reduction in nearby property values occurs.	Minor degradation in visual quality would be acceptable to most people. No reduction in area property values would occur.	No reduction in visual quality. No reduction in property values.	Visual quality of the project site is measurably improved.

Table 2-4
DEFINITIONS ASSUMED IN EFFECTS ASSESSMENT, (continued)

MAJOR ISSUES	HIGH	MODERATE	LOW	NEGLIGIBLE	BENEFICIAL
Archaeological and Historical (1)	Activities result in the loss of archaeological and historical resources or create an incompatible setting with historic resources of local, state, or national importance.	Activities result in the damage to archaeological or historical resources to create a significant degradation in the setting with historic resources of local, state, or national importance.	Activities result in the minor alteration of archaeological or historical resources or create a minor degradation in the setting with historic resources of local, state, or national importance.	Activities result in the minor disturbance of archaeological or historical resources but do not result in loss of value, or create a minor change in the setting with historic resources of local, state or national importance.	Activities result in the protection of archaeological or historical resources or create an improvement in the setting with historic resources of local, state, or national importance.
Land Use Plans and Shoreline Use	Activities are incompatible and displace a preferred land use, or conflict with four or more objectives and regulations of local, state, or federal land use plans.	Activities partially displace, infringe on or conflict with existing land use, or conflict with two objectives and regulations of local, state, or federal land use plans.	Activities infringe on or conflict with existing land use, or conflict with one objective and regulation of local, state, or federal land use plans.	Activities generally are compatible with existing land uses or conform with objectives and regulations of local, state, or federal land use plans.	Activities result in reduction of existing land use conflicts or establishment of a preferred use, or contribute to attaining compliance with objectives and regulations of local, state, or federal land use plans.
Economics	Economic effects that will significantly affect the economic well-being of residents of the area, i.e., a change in a local economic condition of 20% or greater, lasting for at least five years.	Economic effects that will moderately affect the economic well-being of residents of the area, i.e., a change in a local economic condition of 10-19%, lasting for up to five years.	Economic effects that will marginally affect the economic well-being of residents of the area, i.e., a change in a local economic condition of 5-10%, lasting for two to five years.	Economic effects that will only slightly affect the economic well-being of residents of the area, i.e., a change in a local economic condition of less than 5%, lasting for at least two years.	Economic effects that will have a positive influence on the well-being of residents of the area.
Social	Social effects that will significantly change the quality of life of residents of the area, i.e., a change in a local social condition of 20% or greater (if measurable), lasting for at least five years.	Social effects that will moderately change the quality of life of residents of the area, i.e., a change in a local social condition of 10-19% (if measurable), lasting for up to five years.	Social effects that will cause a minor change of the quality of life of residents of the area, i.e., a change in a local social condition of 5-10% (if measurable), for two to five years.	Social effects that will only marginally change the quality of life of residents of the area, i.e., a change in a local social condition of less than 5% (if measurable), lasting for at least two years.	Social effects that will have a positive influence on the quality of life of residents of the area.

Table 2-4
DEFINITIONS ASSUMED IN EFFECTS ASSESSMENT, (continued)

MAJOR ISSUES	HIGH	MODERATE	LOW	NEGLIGIBLE	BENEFICIAL
Recreation/Tourism	Activities result in the complete loss of recreation/tourism resources that are of local, state, or national importance, or create an adjacent incompatible setting with recreation/tourism resources of local, state, or national importance.	Activities result in the loss of more than 50% of recreation/tourism resources that are of local, state, or national importance, or create an adjacent setting that conflicts with recreation/tourism resources of local, state, or national importance.	Activities result in the loss of less than 50% of recreation/tourism resources that are of local, state, or national importance, or create an adjacent setting that causes degradation of recreation/tourism resources of local, state, or national importance.	Activities create an adjacent setting that causes minor degradation of recreation/tourism resources of local, state, or national importance.	Activities create additional recreation facilities, attractions or opportunities, or reduce or eliminate conflicts with recreation/tourism resources of local, state, or national importance.
Traffic and Transportation	Levels of service at area intersections would be degraded to Level F (lack of reserve capacity of roadway to accommodate side street traffic). Demand would represent 10 percent or more of total system demand and system is operating at capacity, or system operations would require significant modification to accommodate project demand.	Would represent 10 percent or more of total system demand and system is operating at near capacity; or demand would represent 25 percent or more of total system demand and system capacity is adequate to accommodate project demand without modification.	Would represent 10 percent or less of total system demand and system is operating at or near capacity; or demand would represent 25 percent or less of total system demand and system capacity is adequate to accommodate project demand without modification.	Would represent 5 percent or less of total system demand and system capacity is adequate to accommodate activity demand without modification.	Would decrease total system demand; or project would increase system capacity.

(1) There are separate but parallel and coordinated NEPA and NHPA Section 106 evaluations of effects on archaeological and historic resources. This table refers to NEPA definitions of effects; NHPA Section 106 uses definitions of adverse effect, no adverse effect, and no effect. See Sections 3.8 and 4.2.8 for discussions of the NEPA and NHPA Section 106 processes and evaluations.

TABLE 2-5
SUMMARY OF EFFECTS[1]

RESOURCE CATEGORY	ALTERNATIVE I, PROPOSED PROJECT	ALTERNATIVE II[2]	CUMULATIVE
Soils and Geology	Construction: LOW Operation: NEGLIGIBLE	LOW	NEGLIGIBLE
Hydrology	Construction: LOW Operation: NEGLIGIBLE/LOW	LOW	NEGLIGIBLE
Water Quality *Stormwater* *LSS Discharge* *Wastewater*	Construction: LOW Operation: BENEFICIAL Operation: LOW Operation: LOW	LOW LOW	NEGLIGIBLE
Air Quality	Construction: LOW Operation: LOW/NEGLIGIBLE	LOW	LOW
Noise	Construction: LOW Operation: LOW	LOW	LOW
Wildlife Resources *Marine Birds* *Marine Mammals* *Marine Resources*	Construction: LOW Operation: NEGLIGIBLE Operation: BENEFICIAL/LOW/NEGLIGIBLE Operation: LOW	LOW	LOW
Vegetation, Wetlands, Habitat	Construction: NEGLIGIBLE/LOW Operation: NEGLIGIBLE/BENEFICIAL	LOW/NEGLIGIBLE	NEGLIGIBLE
Endangered and Threatened Species	Construction: NEGLIGIBLE Operation: BENEFICIAL/NEGLIGIBLE	NEGLIGIBLE/BENEFICIAL	NEGLIGIBLE
Visual	Construction: LOW Operation: BENEFICIAL	BENEFICIAL	BENEFICIAL
Archaeological and Historic	Construction: LOW Operation: NEGLIGIBLE	NEGLIGIBLE	LOW
Land and Shoreline Use	Construction: LOW/BENEFICIAL Operation: LOW	LOW	NEGLIGIBLE

TABLE 2-5
SUMMARY OF EFFECTS
(continued)

RESOURCE CATEGORY	ALTERNATIVE I, PROPOSED PROJECT	ALTERNATIVE II[2]	CUMULATIVE
Socioeconomic	Construction:		
Economy	BENEFICIAL		
Demographics	NEGLIGIBLE		
Infrastructure and Services	LOW		
Public Fiscal	BENEFICIAL/NEGLIGIBLE		
Quality of Life	LOW		LOW
Socioeconomic	Operation:		
Economy	BENEFICIAL	BENEFICIAL	
Demographics	NEGLIGIBLE/BENEFICIAL	NEGLIGIBLE	
Infrastructure and Services	NEGLIGIBLE/LOW	NEGLIGIBLE/LOW	
Education	BENEFICIAL	BENEFICIAL	
School System	LOW	LOW	
Public Fiscal			
City Revenues	BENEFICIAL	BENEFICIAL	
City Expenditures	LOW	LOW	
Quality of Life	MODERATE/BENEFICIAL[3]	BENEFICIAL/LOW	
			MODERATE
Recreation and Tourism	Construction: LOW/MODERATE[3]		
Recreation Facilities & Services	Operation: LOW/MODERATE	LOW/MODERATE	
Tourist Facilities & Services	BENEFICIAL	BENEFICIAL	BENEFICIAL

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

CHAPTER 3.0

DESCRIPTION OF THE AFFECTED ENVIRONMENT

PHYSICAL CONSIDERATIONS

3.1 SOILS AND GEOLOGY

This section describes the known geological and soil conditions within the proposed project vicinity. The information presented was gathered from existing literature resources, previously recorded results of drilling and sampling programs, and additional data and information acquired specifically for the proposed project.

The City of Seward sits on a small alluvial fan which extends into the northwest corner of Resurrection Bay (Figure 2-1). This fan is approximately 0.5 miles wide in the east-west dimension and 1.25 miles long in the north-south dimension. The proposed project will be located adjacent to the waterfront along the southern edge of the alluvial fan.

3.1.1 Geological Setting

Bedrock: Bedrock underlying the Seward area consists predominantly of graywacke and phyllite. In the mountains immediately west, graywacke deposits are predominate below the 1,000 foot elevation, while phyllite predominates above this level. The local graywacke is generally fine to medium grained, has a medium to dark gray color, and is slightly metamorphosed. These graywacke formations are generally tens to hundreds of feet thick in the Seward area (Lemke, 1967). The bedrock originated as sedimentary deposits during the Jurassic and late Cretaceous age, and they were subsequently deformed and partially metamorphosed during the post-Palecocene (Payne, 1955). Events of uplift, erosion, and glaciation have since covered these bedrock formations with fluvial and glacial deposits at lower elevations.

Structural Geology: Seward is positioned on the main axis of the Chugach Mountains geosyncline. This feature is aligned in a north-south direction. Although no major fault lines have been identified in the Seward area, the topography of the region suggests that the valley system extending north to Kenai Lake and south into Resurrection Bay is least partially fault controlled (Lemke, 1967). Surveys made after the 1964 earthquake identified numerous small shear zones and small faults in the Seward area.

Surficial Geology: Most of the downtown portion of the City of Seward is built upon the alluvial fan of Lowell Creek, a feature which extends into the northwest corner of Resurrection Bay. This fan is approximately 1.25 miles long and 0.5 miles wide. Its maximum elevation of 130 feet is found at the mouth of the Lowell Creek canyon. Drilling performed after the 1964 earthquake suggests that these Lowell Creek deposits average about 100 feet thick, with considerably thicker segments (exceeding 300 feet) found near the Seward end of the tongue (Shannon and Wilson, 1964).

These alluvial deposits are interlayered with marine sediments along the eastern edge of the fan. Both the alluvial and marine deposits are believed to rest on a layer of compacted glacial till material. These till deposits, in turn, probably rest on a graywacke bedrock foundation which is more than 1,000 feet deep (Lemke, 1967).

Resurrection Bay: Resurrection Bay is a glacial fjord, approximately 18 miles long and varying from 2 to 5 miles wide, extending southward from the mouth of the Resurrection River. The sides and bottom of the bay are generally quite steep, with nearshore depths increasing quickly to a maximum depth of nearly 1,000 feet. The depth of the fjord in the vicinity of Seward is approximately 500 feet.

3.1.2 Review of Existing Geotechnical Data

A number of geotechnical investigations have been performed in the Seward area since the 1964 earthquake. These investigations have primarily centered around three areas: 1) the downtown area, 2) the northwest corner of Resurrection Bay, and 3) the Fourth of July Creek area along the eastern shore of the Bay directly across from Seward.

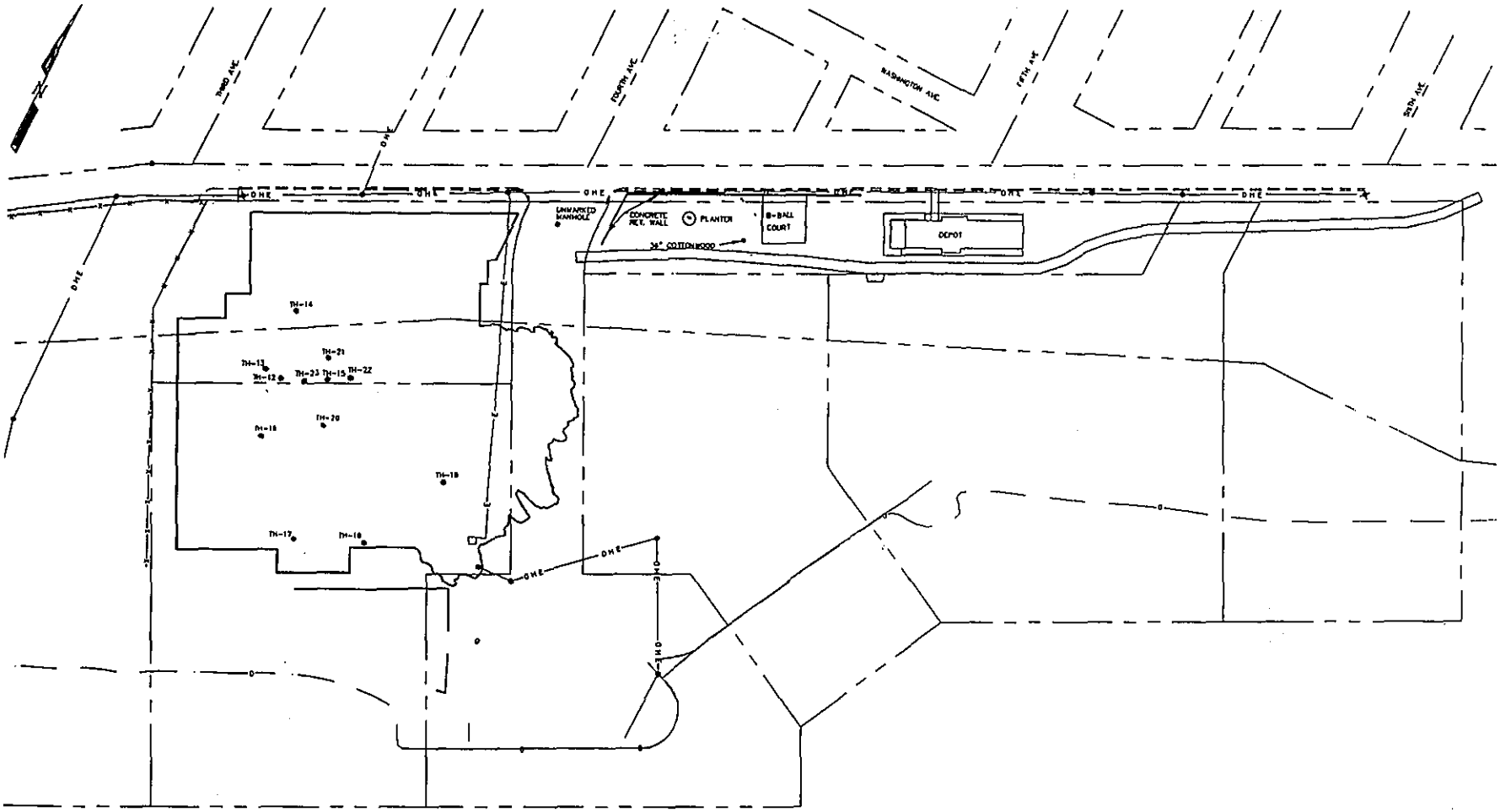
Between September 30 and October 6, 1993, eleven test holes were drilled by PN&D to examine subsurface conditions at selected locations beneath the proposed project site. Figure 3-1 shows the locations of the eleven test holes and the relation of those holes to a footprint of the proposed facility.

Test hole drilling was limited to 3 areas along the portion of the Seward waterfront: 1) Tract 3 - a fenced yard located immediately to the northwest of the ferry dock and currently leased from the City of Seward by Northern Stevedoring; 2) Tract 2 - an open parking area located immediately south and west of the Seward Youth/Teen Center; and 3) the northeast corner of the IMS property in Tract 1.

Previous drilling projects in the Seward area have found that the Lowell Creek fan is composed of alluvial deposits consisting of gravels, sands and silts (PN&D, 1993). This was confirmed by PN&D during their 1993 on-site drilling program. The relative amounts of gravel, sand, and silt in the soil varied continuously with depth in each of the 11 test holes. Different compositional layers graded into one another almost continuously. The gradations reflect alluvial conditions under which the Lowell Creek fan was deposited.

Soils throughout the test holes were well- to poorly-graded and generally composed of gravel, sand, and silt. Occasional layers of cobbles or large gravels were encountered in some of the holes but such deposits were not common.

None of the test holes were deep enough to encounter the glacial deposits or bedrock formations which are believed to underlie the proposed project site. PN&D's drilling program encountered only coarse-grained, unconsolidated alluvial sediments of the Lowell Creek fan. Soil density at the site varied with gravel content. Virtually all of the soils encountered during the drilling were coarse-grained and cohesionless. No layers of clay were found and only a few, very thin layers of silt or very fine-grained sand were encountered.



GEOTECHNICAL TEST HOLE LOCATIONS

Job No. 28347-002-160

DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 3-1

3.1.3 Earthquake Considerations

A critical factor that must be incorporated into any structural design in Southcentral Alaska is the effect of seismic activity on the structure. The proposed site lies within the Uniform Building Code Seismic Zone 4 and a significant number of small active faults are located within the region. In the geotechnical literature review performed by PN&D (1993), a summary of the recorded earthquake activity occurring within 100 nautical miles of Seward was developed. The summary confirmed the fact that Seward is in a seismically active area.

The 1964 earthquake had a devastating effect on the City of Seward. Damage was sustained from ground shaking, surface ground rupture, liquefaction and later spreading, and seismically-induced slope instabilities. Additional damage was sustained from tsunamis (seismically-induced sea waves). The eastern waterfront of Seward also experienced substantial submarine landsliding. Post-earthquake aerial photographs show that a considerable mass of land slid into the Bay along the entire eastern waterfront, terminating to the south at the far eastern edge of the southern waterfront area, very close to the proposed project site.

The southern and eastern waterfront areas were studied in detail following the earthquake. It was determined that the general slope angles along both waterfronts had not significantly changed as a result of the earthquake (Shannon & Wilson, 1964). Further study concluded that the waterfront areas were no more or less stable after the earthquake than they had been before. However, studies conducted by Kelly et. al. (PN&D, 1990) suggest that, following the 1964 earthquake, a tectonic subsidence occurred in the Seward area wherein the entire land mass dropped by approximately 3.5 feet.

Seward's southern waterfront in the vicinity of the proposed site appears to be more stable than Seward's eastern waterfront, since it did not experience landsliding during the 1964 earthquake. An explanation for this may be the presence of marine silts that have been found interlayered with the alluvial fan deposits along the eastern waterfront. These layers may act as shear planes during a seismic event. Borings performed by PN&D (1993), as well as earlier studies, have not shown such silt layers to be present along the southern waterfront.

As part of the PN&D (1993) geotechnical evaluation, the performance of existing structures at the proposed site was reviewed. There are several existing structures at the proposed site that were constructed on typical shallow spread footings as early as the 1940's. Both the old railroad depot and the Seward Youth/Teen Center are shown to exist in aerial photography taken prior to the 1964 earthquake. With the exception of the damage incurred during the earthquake as a result of tsunamis, the structures along the southern waterfront appear to have performed well with regard to foundation performance. Other buildings founded on conventional spread footings and constructed within the last 10-15 years, such as the existing IMS facility, also appear to be performing well.

3.2 HYDROLOGY AND WATER QUALITY

This section summarizes the existing hydrology and water quality in the project vicinity. Consideration was given to the existing surface and groundwater conditions, as well as existing marine conditions.

3.2.1 Surface Water Conditions

The proposed site slopes in a southerly direction toward the shoreline; therefore, surface water runoff flows from north to south across the site. Portions of this runoff appear to drain into manholes and storm drains along the south boundary of the site, and portions appear to drain off site toward the east.

Peak surface water runoff from a 10-year storm event at this site is about 2 cubic feet per second (cfs), while peak runoff for a 100-year storm event at this site is about 3 cfs. There are no significant ditches or other surface water diversions on the site; however, portions of Seward's storm water drainage system flow beneath the site and empty into Resurrection Bay (Environmental Services, 1989).

3.2.2 Groundwater Conditions

Groundwater is the sole source of drinking water in Seward. Municipal wells are located in the unconsolidated soils beneath Seward. Limited data about well locations and aquifer characteristics is available. Data from several wells located less than two miles north of the proposed site suggest that at least two aquifers exist, one approximately 60 feet below ground surface and the other about 200 feet deep (NORTECH, 1993).

Groundwater at the site varies from a minimum of 10 feet to a maximum of 16 feet below the surface, with an average depth of about 13.5 feet. In general, the depth to groundwater increased with distance from the shoreline.

A summary of the measured depths to the groundwater table at the proposed site is shown below in Table 3-1. Well point locations are shown on Figure 3-1 (PN&D, 1993). As shown on Table 3-1, the highest after-drilling groundwater table elevation reached was in TH-11, where the groundwater attained an elevation of about +16.5 feet MLLW.

It was not possible to measure the depth of the groundwater table in 4 of the 11 drilling test holes, due to slumping of the test hole walls; however, it was noted that, in all cases, the groundwater level rose above the level recorded while drilling. That increase in the water table elevation varied from a minimum of 2.5 feet to a maximum of 12.5 feet, with an average of about 7.5 feet. The 12.5-foot rise in the water table (experienced in TH-6) resulted in groundwater coming within 2.5 feet of the ground surface. This equated to a groundwater table elevation of about +16.0 feet MLLW at that elevation.

Although the salinity of the groundwater has not been measured, it was assumed by PN&D that seawater intrusion occurs to some extent near the waterfront. Therefore, groundwater elevations at the proposed project site likely fluctuate with tidal variations. Earlier investigations by Harding Lawson Associates

(1985), found that groundwater levels in two wells drilled along Seward's eastern waterfront fluctuated with the tide.

TABLE 3-1
SUMMARY OF GROUNDWATER TABLE (GWT) MEASUREMENTS

Test Hole Number	Test Hole Elevation	Depth of GWT While Drilling	Elevation of GWT While Drilling	Depth of GWT After Drilling	Elevation of GWT After Drilling
TH-1B	15.0	+13.0	+2.0	+9.5	+5.5
TH-2	14.5	+10.0	+4.5	unknown	unknown
TH-3	15.0	+10.0	+5.0	+4.0	+11.0
TH-4	15.5	+11.0	+4.5	unknown	unknown
TH-5	18.0	+13.5	+4.5	+11.0	+7.0
TH-6	18.5	+15.0	+3.5	+2.5	+16.0
TH-7	19.0	+14.5	+4.5	unknown	unknown
TH-8	22.0	+13.5	+8.5	unknown	unknown
TH-9	22.0	+16.0	+6.0	+8.5	+13.5
TH-10	17.5	+14.0	+3.5	+3.5	+14.0
TH-11	21.5	+16.0	+5.5	+5.0	+16.5

Source: PN&D, 1993.
Note: Dimensions are in feet. Elevation datum is MLLW.

Due to the site's historical use prior to the 1964 earthquake, there is a potential for contamination of the soils and groundwater at the proposed site. Leaks and spills from fuel and chemical storage tanks and drums, as well as the destruction and loss of many fuel storage tanks in the area as a result of the 1964 earthquake suggest the possibility of contamination from petroleum hydrocarbons and other hazardous substances. However, a Phase I Site Assessment completed by NORTECH, Inc. (Appendix D) in 1993 found no significant contamination at the site (PN&D, 1993).

A potential source of freshwater for fish genetics studies has been identified in a spring located approximately 2,500 feet south of the proposed project on Lowell Point Road.

3.2.3 Marine Conditions

Resurrection Bay is a fjord estuary approximately 18 miles long, 2-5 miles wide, and oriented in a north-south direction. An inner basin, 1000 feet deep, is separated from the outer reaches of the fjord by a sill at approximately the 600-foot depth located at Caines Head. The outer fjord is approximately 820 feet deep and opens directly into the Gulf of Alaska. The hydrography, circulation patterns, and biological

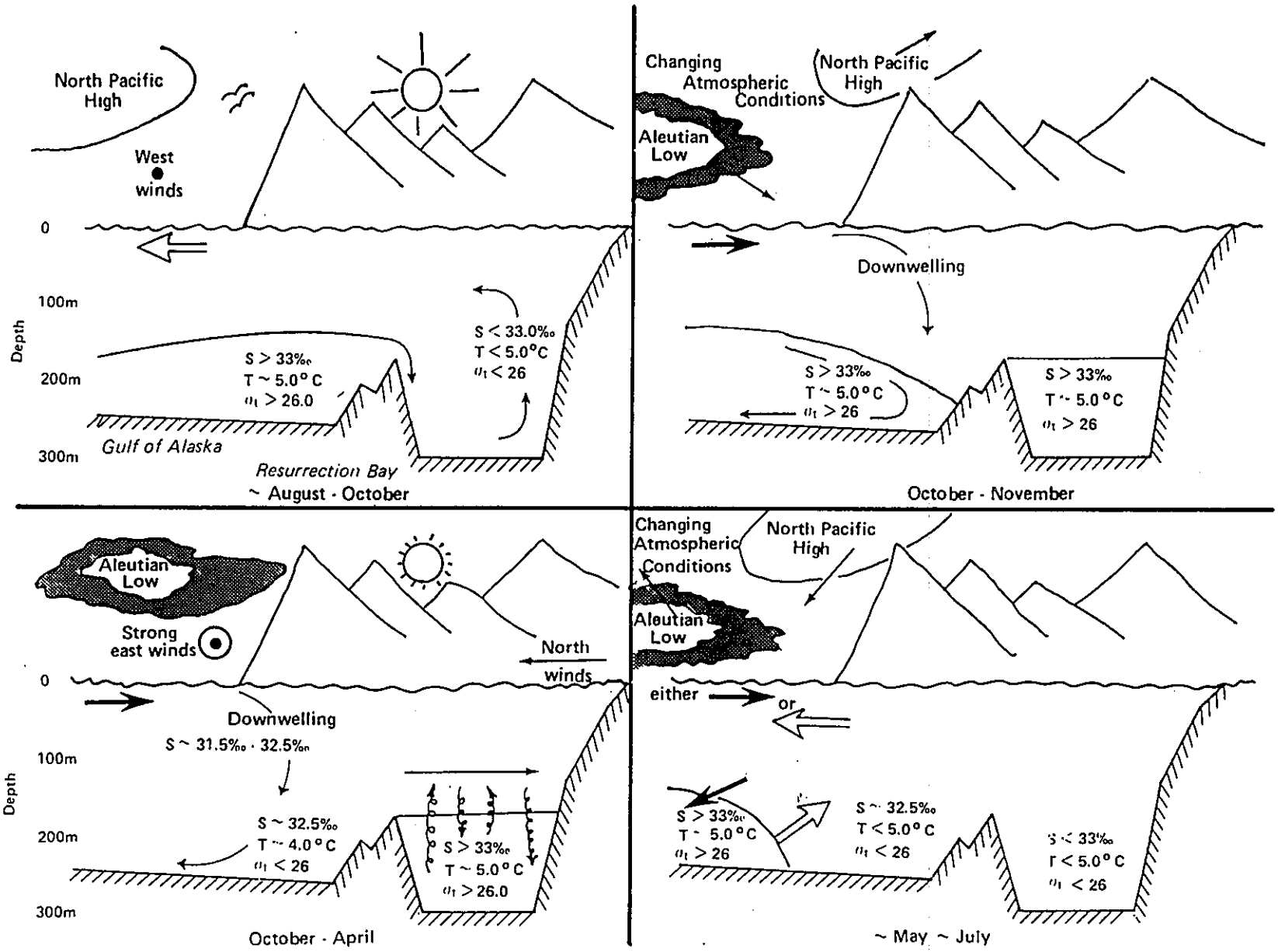
productivity of fjord estuaries are not well understood as they are relatively recent geologic features. Seasonal and spatial variations of salinity and temperature (which determine the density of water) and circulation patterns within fjords are dependant upon the regional climate, marine water sources, local topography, and differences in freshwater inputs. Biological productivity is controlled by available light conditions and the supply of nutrients, such as nitrogen, phosphorus, and silicon, to the euphotic zone where plant growth occurs.

To better understand the marine conditions of Resurrection Bay, research cruises where conducted in Resurrection Bay at approximately monthly intervals between November 1972 and May 1975 by scientists from the UAF IMS (Heggie et al., 1977). The published results of the 24 cruises are summarized below and focus on the hydrography, nutrient chemistry, and biological productivity of Resurrection Bay.

The water column of Resurrection Bay becomes stratified during the summer months because of the addition of less dense freshwater into the surface waters of the bay. Freshwater is added to the outer reaches of the fjord from Bear Glacier, and at the head of the fjord primarily from Resurrection River; Tonsina River and Fourth of July Creek, both within close proximity to the project area, also provide freshwater to the fjord. Resurrection River, approximately 2 miles west of the project area, discharges between 32 cfs and 1,600 cfs of freshwater into the bay, averaging about 360 cfs. During the winter months when freshwater runoff is reduced, the water column approaches a homogeneous condition where only a slight stratification is present. Surface waters in winter, however, still flow predominately seaward, due to the persistent north winds during that period.

The exchange of deep water between the Gulf of Alaska and Resurrection Bay occurs primarily during August through October, and is a direct result of the advection of more dense water up onto the continental shelf. The exchange of water takes place principally below the 500 foot depth. The relatively dense water is advected horizontally over a sill and into the deeper, inner fjord basin (close to the head of the bay) via gravitational displacement, and sinks to displace the resident water in the deeper basin. Over a 35 day period during September and October 1973, the transport of deep water through the basin was sufficient to replace the basin volume about five times over. The rapid change in atmospheric conditions over the Gulf of Alaska around November drives the more dense summer water mass out of the bay. The water that settled over the sill in the inner basin during the summer remains isolated for the winter, exchanging with the less dense winter waters above the sill, predominantly via vertical eddy mixing. Advective exchange of waters over the sill begin again around May or June. This sequence of advective exchange during the late summer months and diffusive exchange during the winter months was observed in all three years of the IMS study. Figure 3-2 provides a schematic illustration of the seasonal exchange of water in Resurrection Bay.

Nutrients: Concentrations of nitrate, phosphate, and silicate are depleted in the surface water column throughout the summer months. Such depletion is due to autotrophic processes in the euphotic zone, which convert dissolved inorganic nitrate, phosphate, silicate, and ammonia into particulate organic material. Conversely, concentrations of nitrate, phosphate, and silicate increase in the winter surface waters because of decreased uptake by plants, and resupply, by vertical mixing processes, from deeper waters of the fjord.



SOURCE: Heggie, et. al., 1977.

SCHEMATIC REPRESENTATION OF THE WATER CIRCULATION IN RESURRECTION BAY

Job No. 28347-002-160
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IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 3-2

Concentrations of nitrate, phosphate, and silicate generally decrease throughout the deep fjord waters during the winter months. Erratic variations between the depth and temporal profiles of nutrient concentrations have been observed in the deep water between the outer and inner fjord. Although concentrations of nutrients generally decreased through the winter months in the intermediate and deep waters, concentrations in the very bottom waters increased or approximated a steady state. This suggests that a nutrient flux occurs between the bottom sediments and the overlying water. The frequency of bottom nutrient renewal was sufficient to prevent anoxic conditions developing in the water column.

In September and October of 1993, water samples were collected in Resurrection Bay. Samples were collected from silty regions as well as areas relatively free of silt. Analysis of these samples showed that water quality in the vicinity of the proposed site is generally good to above average for typical nearshore coastal conditions. Nutrient data were not extensively collected by the 1972-75 IMS research team.

Productivity: Resurrection Bay exhibits a yearly cycle of productivity typical of other fjord systems in Alaska. The bulk of production, and highest productivity rate, occur during the longer daylight hours of summer. Productivity near the project site has ranged from 133 mg C yd^2/hr with a daily rate of 2124 mg C yd^2/d in June, to 2.4 mg C yd^2/hr with a daily rate of 9.5 mg C yd^2/d in January. Annual net productivity weighted on an hours of sunlight base is estimated at approximately 273 g C yd^2. Primary productivity is sometimes limited by nitrate-nitrogen supply.

Tides: The diurnal tidal range at the Port of Seward is approximately 10.5 feet. Extreme high and low tides occur during January and July and range from -0.3 feet to +15.0 feet MLLW. As a result of tectonic subsidence in the Seward area after the 1964 earthquake, tides reach farther up the beaches and peak 3.5 feet higher. At the existing ferry dock, the pre-quake dock elevation of +21.75 feet was lowered to +18.25 feet (PN&D, 1990). Another report containing design criteria for the Lowell Point Marina (PN&D, 1990) tabulated tidal datums. The estimated highest tide was +14.4 feet. Mean higher high water was found to be 10.5 feet while mean tide level was at 5.4 feet. The maximum tidal current at the mouth of Resurrection Bay is approximately 4 knots, while tidal currents at the head of the bay are approximately 1 knot.

Waves: In 1990, a wave hindcast study was performed for the proposed project site (PN&D, 1990). Previously, 10 years of wind records from the Seward Regional Airport were analyzed statistically by the U.S. Army COE. Wind speeds and durations for various recurrence intervals from the directions of interest were estimated. These data were examined by PN&D and appropriate adjustments made to account for the non-constant coefficient of drag, air-sea temperature differences, and other relevant factors.

Site-specific hindcasts were made using the Joint North Sea Wave Project and the Sverdrup-Monk/Bretschneider methods to estimate the significant unrefracted, deep-water wave height and period pertaining to the site. Table 3-2 summarizes the results of these hindcasts.

TABLE 3-2
WAVE HINDCASTS

Method	Fetch (mi)	50-Year Significant Wave Height (ft)	Period (sec)
Joint North Sea Wave Project	13.0	7.0	5.2
Sverdrup-Monk/Bretschneider	6.4	6.8	5.3

Source: PN&D, 1990.

The two methods show fairly close agreement. The hindcasts indicate the anticipated size of waves in deep water; however, the wave will undergo transformations as it moves from deep to shallow water. Depending on the orientation of the bottom contours, a wave can either increase or decrease in height as it approaches shore due to refraction and shoaling.

A computer model of the region provides the most accurate means of assessing the quantitative effects of these wave transformations. The Seward area shoreline and immediate offshore sea bottom contours were digitized. Waves with periods of 5 and 6 seconds were computer modelled to determine their refracted heights as they approached the proposed project site from deep water (PN&D, 1990). Table 3-3 shows the results of this modeling. Since it is expected that the critical direction of waves approaching the site will be from the southeast, wave heights are estimated to be between six and seven feet.

TABLE 3-3
ESTIMATED REFRACTED WAVE HEIGHTS

Period (sec)	Tide	Estimated Height (ft)	Approach Angle
Wind from South 30-foot Depth			
5	High Low	5.7 2.3	80 50
6	High Low	2.5 3.0	35 35
Wind from South 60-foot Depth			
5	High Low	5.0 2.3	15 10
6	High Low	5.0 4.5	15 10
Wind from Southeast 30-foot Depth			
5	High Low	7.0 6.0	40 40
6	High Low	6.0 7.0	45 45
Wind from Southeast 60-foot Depth			
5	High Low	9.0 9.0	35 35
6	High Low	8.5 8.5	35 35

Source: PN&D, 1990.

3.3 AIR QUALITY

This section presents existing air quality conditions in the project vicinity. Information was gathered from existing literature resources.

3.3.1 Climate

Seward has a maritime coastal climate with precipitation typically ranging between 65-75 inches per year. The mean annual temperature is 43°Fahrenheit (F), with a winter average of 30°F and a summer average of 54°F (NORTECH, 1993). Although precipitation in the Seward area is extensive, the port remains ice free all year, accumulations of snow and ice along the shoreline seldom become navigational hazards (Kelly et al., 1974). The first snow of the year generally falls in late October and early November; but it normally melts off until December. In January and February, the snow can be expected to reach depths of 14 to 24 inches or more. The last measurable snowfall of the season usually occurs in April, with the ground free of snow by the end of that month. Although the snow cover undergoes considerable melting, refreezing, and icing during winter months, there are several occasions of blowing and drifting snow each winter in Seward.

The wind pattern in the Seward area is both predictable and dependable (Kelly et al., 1974). The bay is oriented in the north-south direction with steep mountains along its east and west shores. Prevailing winds generally blow from the north during the winter months and from the south during the summer months. In spring and fall months, when the prevailing wind directions shift slightly to the east or west, winds from the southwest are blocked by the bordering mountains. Winds from the southeast blow directly into Seward. Wind speeds of 25 miles per hour or higher occur on an average of 2 or 3 days in each of the months from October to March, about 1 day in April and September, and less than once in the summer months. The highest winds occur during the winter months. The highest wind on record, as of the study by Kelly et al. (1974), was a north wind in January 1952, recorded in Seward at 64 miles per hour with gusts to 74 miles per hour.

Fog is observed on an average of 1 or 2 days in each of the winter months, increasing through the spring and summer months to a maximum 8 to 10 days per month in August and September.

3.3.2 Air Quality in Resurrection Bay

Section 20 of the Alaska Air Quality Control Regulations (18 AAC 50), entitled Ambient Air Quality Standards, regulates ambient air quality in the State of Alaska. The following parameters are regulated by these regulations: Inhalable Particulate Matter (PM_{10}); sulfur oxides; carbon monoxide; ozone; nitrogen dioxide; reduced sulfur compounds; lead; and ammonia. Currently, no ambient air quality data exists for the Seward area. However, the existing air quality in the Seward area is considered to be relatively pristine, with concentrations of regulated air pollutants expected to be far less than the maxima allowed by the National Ambient Air Quality Standards and the State Air Quality Standards. Potential

sources of air pollutants in the area include a coal transfer dock, dust from local area gravel roads, and a fish processing plant. Vehicle and vessel emissions, particularly in the summer months, may add to ambient levels.

3.4 NOISE

3.4.1 Characteristics of Noise Propagation and Attenuation

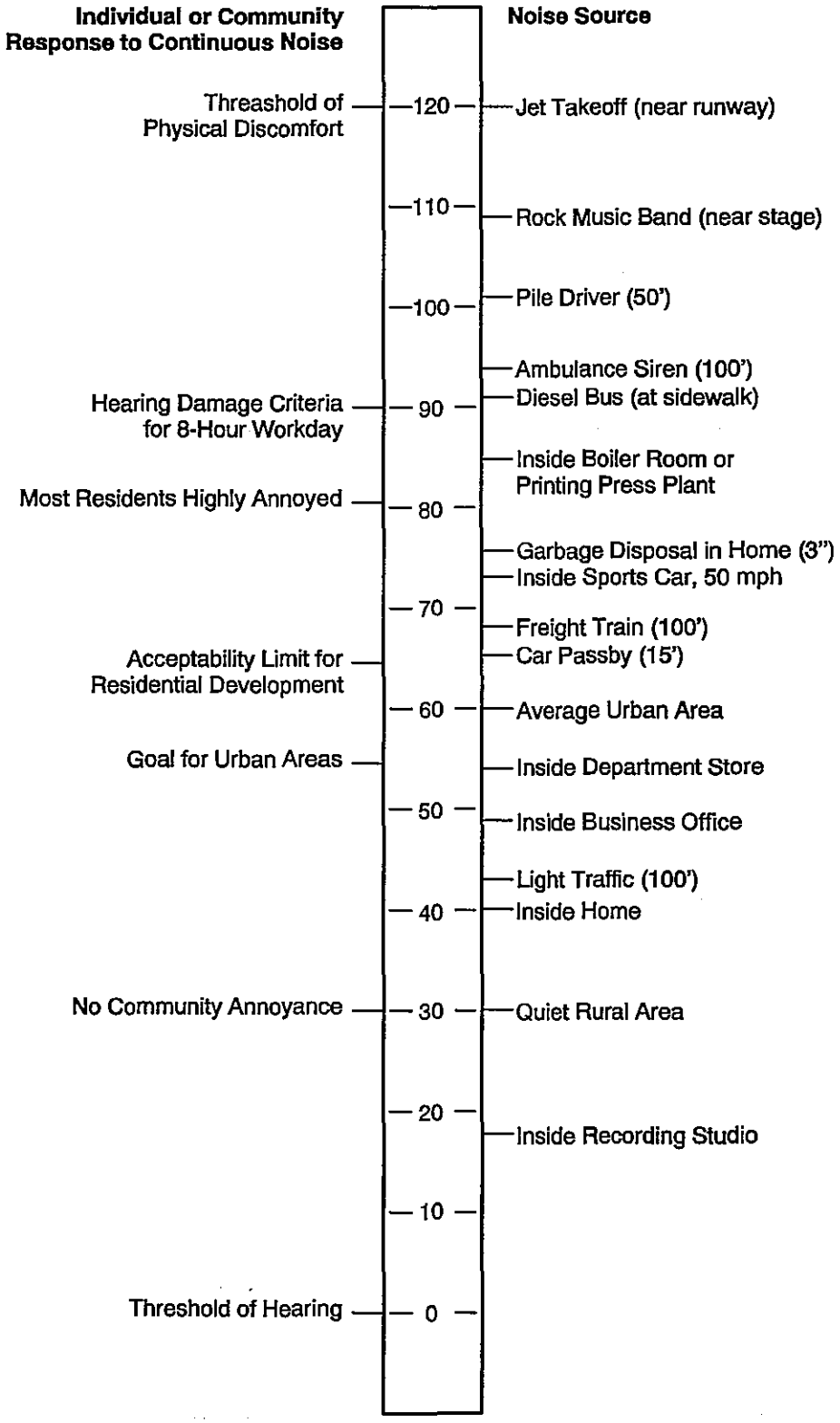
Ambient noise can be generated by a number of noise sources, including mobile sources, such as automobiles, trucks, trains and airplanes; and stationary sources such as construction-sites, machinery, or industrial operations. Often "background" noise sources can contribute substantially to an ambient noise environment; background noise sources can include birds chirping, an occasional vehicle passing by, a television or radio, or leaves rustling in the wind. These background sources can determine the ambient noise environment in areas not dominated by a single major noise source.

Sound is measured in decibels (dB), a logarithmic relation between pressures caused by a given sound and a standard sound pressure. The human ear is not equally sensitive to all frequencies in the sound spectrum; thus it is standard practice to represent sound levels using an "A-weighted" scale that takes into effect the way human ears perceive sounds. A-weighted sound levels are noted as dBA. Because sound levels at a single location can vary over time (e.g., morning rush-hour traffic is considerably louder than traffic at 1:00 a.m.), individual sound level measurements taken at a site over a given time period are averaged and expressed as the average sound level, or L. (The term "L" is derived from the "average equivalent sound level.") Figure 3-3 presents typical average sound levels encountered in selected indoor and outdoor environments, and typical human responses for various noise levels.

3.4.2 Existing Noise Conditions

Existing noise levels were not measured in the vicinity of the proposed project. Existing noise levels are considered to be low to moderate and variable over time (below 65 dBA during daylight hours and below 45 dBA during nighttime hours). Background noise levels can be primarily attributed to traffic volumes along local roadways; traffic to and from the ferry dock during times when the ferry calls in Seward; transient vessels docking at the ferry terminal; and routine activities associated with ongoing operations at the existing IMS facility and NSHC. Existing noise levels within the proposed project vicinity are likely to increase during the summer months when an increased number of tourists and scheduled events occur in Seward. During the summer months, the small campground facility on the eastern edge of the proposed project area will also contribute to a small increase in background noise levels caused by camping enthusiasts.

Sound Levels in Decibels (dBA)



Source: U.S. DOT Federal Highway Administration
Federal Aid Highway Program Manual,
Vol. 7, Chapter 7

AVERAGE SOUND LEVELS MEASURED IN DECIBELS

Job No. 28347-002-160
DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 3-3

3.5 WILDLIFE RESOURCES

Information provided in this section on fish and wildlife potentially occurring in the vicinity of Seward was gathered from existing literature resources, wildlife information requests from appropriate Trustee agencies, personal communications with wildlife agency specialists, and from communications with area residents.

3.5.1 Fisheries

Nearshore fishes of Resurrection Bay include five anadromous fish species of eastern Pacific salmon adults and juveniles: coho (Onchorhynchus kisutch), chum (O. keta), chinook (O. tschawytscha), pink (O. gorbusca), and sockeye (O. nerka). Other nearshore anadromous species include: Dolly Varden (Salvelinus malma); steelhead (O. mykiss); eulechon smelt (Thaleichthys pacificus); and three-spine sticklebacks (Gastrosteus aculeatus). Saltwater fish species in the nearshore area adjacent to the proposed facility include: walleye pollock (Theragra chalcogramma); gray or Pacific cod (Gadus macrocephalus); Pacific tom cod (Microgadus proximus); kelp and whitespotted greenling (Hexigrammos decagrammus, H. stelleri); yellowfin (Limanda aspera); rock sole (Lepidopsetta bialineata); starry flounder (Platichthys stellatus); Pacific herring (Clupea harengus); and sculpins (family Cottidae). Common intertidal species include cresent gunnels (Pholis leata) and fourhorn sculpin (Myoxocephalus quadracornis).

Resurrection Bay supports one of the largest marine sport fisheries in Alaska (Mills, 1990). Historically, the fishery has targeted coho salmon during the months of July through September. Incidental catches of chum, pink, sockeye, and chinook salmon occur in this fishery as well, although they generally do not represent a significant contribution. Coho, chum, pink, and sockeye salmon spawning grounds are numerous along the Resurrection River, Salmon Creek, and other small streams at the head of Resurrection Bay (ADF&G, 1993). Chinook salmon spawning grounds also are present in the general area.

Coho and sockeye salmon rearing areas are located approximately three miles north of Seward up the Resurrection River. Fourth of July Creek, approximately three miles across the bay from Seward, and Tonsina Creek, approximately 4 miles south of Seward, are also anadromous fish streams (ADF&G, 1993).

In recent years, halibut (Hippoglossus stenolepis), lingcod (Ophiodon elongatus), and several species of rockfish (Sebastes spp.) have been increasingly targeted by the Seward private and charter sport fishing fleets in Resurrection Bay (Vincent-Lang, 1991).

The Small Boat Harbor and adjacent intertidal and subtidal waters are utilized as spawning substrate for Pacific herring in the spring. Herring larvae drift in the nearshore zone for 6-8 weeks (Gleason, 1974). After the larvae have changed into juveniles, they begin to form into schools, and migrate offshore into deep water by late fall (USCOE, 1982).

There are no anadromous fish streams in the immediate vicinity of the proposed project, but a "terminal fishery" for salmon has been initiated in a small stream just west of the site. This stream doesn't support a natural run of salmon, but fry have been imprinted to the stream and return as adults to the release site even though there is nowhere to spawn.

3.5.2 Birds

The avifauna of the Seward area is typical of coastal Sitka Spruce/Western Hemlock forest and marine nearshore communities which are adjacent to the Gulf of Alaska. Over 192 species of birds have been documented in various habitats around Resurrection Bay (Andrews et al., 1988). Major groups of birds which occur in the vicinity of the proposed project include: upland forest birds; raptors; marine oriented species such as waterfowl and shorebirds; and the neritic and pelagic seabirds which use the waters of Resurrection Bay.

Resident upland forest birds common to this region include species such as the Black-capped Chickadee, Chestnut-backed Chickadee, Red-breasted Nuthatch, Pine Grosbeak, Pine Siskins, and several species of woodpeckers.

Resurrection Bay is ice-free and has relatively mild winter temperatures which provides wintering habitat for waterfowl and seabird species. Common sea ducks found in this area include Barrows and common goldeneye, surf scoters, common and red-breasted merganser, and harlequin ducks (West, 1994). The Steller's eider, a threatened species, winters in small numbers in Resurrection Bay (see Section 3.5.5, Threatened and Endangered Species). Seabirds found in the nearshore waters include the glaucous-winged gulls, common murre, pigeon guillimot, and marbled murrelets. Other marine- oriented species found in the vicinity include song sparrows and rock sandpipers, both of which winter in the area.

Breeding habitat for waterfowl and shorebirds is limited in this region, causing many of the winter residents to move to inland habitats for the breeding season. Many of the seabirds also leave the area for isolated breeding colonies in the Gulf of Alaska.

The most abundant raptor resident and breeder in the Seward area, and a species common to the proposed site, is the bald eagle. As many as 70 eagles winter in the surrounding area, although only a few actually nest in the immediate vicinity (American Birds, 1993). The closest bald eagle nest is located approximately 6 miles south of the proposed project location on the western shoreline of Resurrection Bay (USFWS, 1991). Bald eagles are a common sight around Seward and can be seen perched in the general area of the proposed facility.

3.5.3 Terrestrial Mammals

Terrestrial mammals in the vicinity of Seward are basically the same as those found in other areas of the Kenai Peninsula and include the following species: black bear (Ursus americanus); brown-grizzly bear (Ursus arctos); moose (Alces alces); mountain goat (Oreamnos americanus); wolf (Canis lupis); coyote (Canis latrans); beaver (Castor canadensis); lynx (Lynx canadensis); snowshoe hare (Lepus americanus);

red fox (Vulpes vulpes); marten (Martes americanus); red squirrel (Tamiascurius hudsonicus); ground squirrel (Spermophilus parryii); wolverine (Gulo gulo); mink (Mustela vison); weasel (Mustela erminea); hoary marmot (Marmota caligata); little brown bat (Myotis lucifugus); land otter (Lutra canadensis); and mice, pika, and lemmings (ADF&G, 1973; ADF&G, 1985; Selkregg, 1974). Dall sheep (Ovis dalli); caribou (Rangifer tarandus granti); and Sitka black-tailed deer (Odocoileus hemionus sitkensis) are also found in the Kenai Peninsula/Prince William Sound region, although they are unlikely to be in the vicinity of the project area. While a wide variety of terrestrial mammals inhabit the hills, mountains, shorelines, and drainages around Seward, few mammals, with the exception of burrowing rodents, are expected to occur in the project area. Below are brief descriptions of the more conspicuous species occasionally seen within the Seward city limits.

Moose are present in the general vicinity of Seward year-round and are most abundant in areas that include alder, willow, and aspen. Fall and winter concentrations are located in the low-lying areas of the Resurrection River and Salmon Creek drainage areas, approximately 3 miles north of Seward. Moose will occasionally wander into Seward to browse on vegetable gardens and areas landscaped with mountain ash and other preferred browse species.

Black bears are relatively abundant in the Seward area, although they are unlikely to be affected by shoreline development near the ferry dock. They prefer open forested areas along the coast and within the Resurrection River drainage area, but may be found from sea level to alpine areas. Black bears are opportunistic when it comes to matters of food. In spring, freshly sprouted green vegetation is a major food source. In summer, black bears feed on salmon in the Resurrection River, Salmon Creek, and Fourth of July Creek drainages and along the coast. Berries are an important late summer/fall food source. Attracted by garbage, black bears occasionally venture into human-inhabited areas of Seward, usually in the spring. Several black bears have been shot and killed in Seward in defense of life and property in recent years (B. Anderson, personnel communication, 1994). Few brown/grizzly bears are found in the area and they are restricted primarily to the Resurrection River drainage.

Mountain goats inhabit the steep upper slopes of mountains in the area, particularly along the west side of Resurrection Bay. Their primary range during the spring and summer months is on alpine and subalpine slopes. As winter approaches, they migrate to rocky areas at lower elevations where they can forage for exposed vegetation. Mountain goats are frequently seen along these steep cliffs by Seward-based wildlife viewing charter boats on their way to Kenai Fjords National Park.

Very few terrestrial mammals live in the area of the proposed facility due to its urban setting. The only species which may occasionally use this area would be small rodents, the little brown bat, and the red squirrel.

3.5.4 Marine Mammals

The waters of Resurrection Bay and along the Gulf coast support a variety of marine mammals. The most common species occurring in the Seward area are the sea otter (Enhydra lutra); harbor seal (Phoca vitulina); and Steller sea lion (Eumetopias jubata). Less common visitors are the harbor porpoise (Phocoena phocoena) and Dall porpoise (Phocoenoides dalli). Whales occasionally sighted in Resurrection Bay include: killer (Orcinus orca); humpback (Magaptera novaeangliar); minke (Balaenoptera acutorostrata); gray (Eschrichtius robustus); and finback whales (Balaenoptera borealis). Sei, blue, and sperm whales have been sighted in the northern Gulf of Alaska, although they are unlikely to occur in the project area. The more common marine mammals of Resurrection Bay likely to inhabit the nearshore waters off Seward are discussed below. The Steller sea lion, and the gray and humpback whales, are discussed below in Section 3.5.5 Threatened and Endangered Species.

Sea otters are found in a variety of habitats such as estuaries, mudflats, fjords, eelgrass meadows, and subtidal kelp forests (Dames & Moore, 1977). A high quality, abundant food supply and clean, uncontaminated water are the two most important habitat requirements for the sea otter, both of which are provided in Resurrection Bay. Sea otters generally feed on a variety of benthic invertebrates; preferring clams, crabs, octopuses, and mussels. Small groups and single individuals are common in Resurrection Bay and the Small Boat Harbor adjacent to Seward. Local wildlife-viewing charter boats often pass in close proximity to habituated individuals outside the Small Boat Harbor.

Harbor seals occupy virtually all coastal areas in the Southcentral region of Alaska. They are typically found where water depths are less than 30 fathoms (ADF&G, 1976). Harbor seals are opportunistic feeders in nearshore shallow waters and are commonly seen around the Small Boat Harbor. Herring and outmigrating salmon smolts schooling in the area provide a food source for local populations.

3.5.5 Threatened and Endangered Species

In accordance with the Endangered Species Act of 1972, as amended, a Section 7 consultation was initiated with the NMFS and the FWS regarding threatened and endangered species present in the vicinity of the proposed project. Letters of response from both agencies are included in Appendix A and the information is summarized below.

NMFS acknowledges the occurrence of the threatened Steller sea lion along the offshore borders of the project area. Although they can be seen in Resurrection Bay, the sea lions seldom enter the shoreline waters, nor do they have haulouts or breeding rookeries on, or near, the terrestrial project area. Sea lions prey on off-bottom schooling fish species such as pollock, herring, and cod. Herring and salmon, sometimes plentiful around the Seward Small Boat Harbor, coupled with the availability of sportfish carcass waste discarded at the harbor, sometimes attract individuals and/or small groups of Steller sea lions into the area.

NMFS states that it is unlikely that construction of the proposed project, or placement of intertidal animals within the project area, would adversely impact the species. Sea lions may be attracted to the

tide pool, a part of the proposed project, if prey species such as octopus, sea otters, or harbor seals are likewise attracted there. "However, such attraction to naturally occurring prey species would not adversely affect the Steller sea lions" (NMFS, Appendix A).

The MMPA and Endangered Species Act prohibit the harassment of Steller sea lions. Public access to the intertidal viewing area would be controlled and supervised by accompanying facility staff during operating hours; staff would advise the public of legal guidelines. The design of the rock wall of the habitat area would prohibit public access during off hours.

Gray whales migrate along the Gulf of Alaska coast and may be found in the outer parts of Resurrection Bay, not near the proposed project. The gray whale was officially removed from the endangered species list on June 16, 1994. Humpback whales, an endangered species, reside primarily in the western portion of Prince William Sound in spring, summer, and fall. The humpback is therefore an infrequent visitor to Resurrection Bay.

FWS has determined that no threatened or endangered species are present in the proposed project area. A candidate species occurring infrequently in the project area is the Steller's eider (Polysticta stelleri). FWS believes that the Steller's eiders in Resurrection Bay would not be impacted by construction or operation of the proposed project (USFWS, Appendix A).

Consultation will need to be reinitiated should proposed project plans change or new information becomes available that alters the basis of the conclusions of NMFS and MFS.

3.5.6 Environmentally Sensitive Areas

The nearshore waters of the Seward area are important spawning habitat for Pacific herring and are used as a migratory area by outmigrating salmon smolts and returning adults. Several large cottonwood trees along the coastline in Seward are frequently used by resident Bald Eagles for roosting and should be preserved. There are no other sensitive terrestrial areas that would be impacted by the proposed action.

Kenai Fjords National Park lies approximately 2.5 miles west of the City of Seward, the Chugach National Forest boundary is 6 miles away to the north, and several State Marine Parks are located in Resurrection Bay. These areas are managed to protect wildlife, wildlife habitat and/or recreational opportunities, and wilderness values. These areas are discussed further in Section 3.11 Recreation and Tourism.

3.6 VEGETATION, WETLANDS, AND HABITAT

The following section provides information gathered from existing literature resources, state and federal agency sources, communications with local residents, and limited site verification.

3.6.1 Terrestrial

Seward and Resurrection Bay are located within the coastal Sitka Spruce/Western Hemlock forest community which occurs on moist sites throughout southeast Alaska and in a narrow band along the coast in Southcentral Alaska to Kodiak Island. The Sitka spruce (Picea sitchensis) and western hemlock (Tsuga heterophyla) are the dominate species, with cottonwood (balsam poplar) (Populus balsamifera) and Sitka alder (Alnus sinuata) as common deciduous species. The proposed project site is developed, with parking lots or buildings, and much of the site has been filled. It is sparsely vegetated by a few small Sitka spruce, some large cottonwood trees, and pioneer species such as Sitka alder. Several common species of grasses in the area include bluejoint reed grass (Calamagrostis canadensis), red fescue (Festuca rubra), and beach rye (Elymus arenaria). Forbs such as fireweed (Epilobium angustifolium), beach pea (Letharia marintema), and yarrow (Achillia borealis) are common in the area.

3.6.2 Wetlands and Aquatic Habitats

Wetlands in the general Seward area are primarily associated with poorly drained areas of the river floodplain at the head of Resurrection Bay. A large wetland area is located west of the harbor and is an important wildlife viewing area.

Since the proposed site is located on well-drained soil and much of the area is presently developed with fill material and buildings or docks, no wetland habitat occurs on the site (USFWS, 1984). Aquatic habitats adjacent to the site include permanently flooded, open water esturarian habitats, and low energy, regularly flooded intertidal areas.

The intertidal zone in the vicinity of the proposed facility is primarily gravel/cobble and armor stone with epifaunal species. It is very sparsely vegetated with small amounts of rockweed (Fucus gardeneri), sea lettuce (Monostroma ulva, Halisocion glomerata, Porphyra spp.), and small amounts of filamentous green algae. The mid- to lower-intertidal zone has a considerable percent cover of a filamentous brown algae (Pilayella spp.). Scattered kelps (Laminaria spp.) are attached to boulders and rubble at the lower tide levels. In rocky areas where there is a stable substrate for attached organisms, barnacles (Semibalanus balanoides and Balanus glandula), littorine snails, (Littorina sitkana and L. scutulata), and limpits (Lottia pelta and L. paradigitalis) occur in low numbers. Blue mussels (Mytilus trossulus) are abundant in the mid- to lower-intertidal zone, especially in the spaces between the armor stones.

In most gravel/cobble habitats similar to one on the project site, invertebrate fauna is generally limited to gammarid amphipods and the isopods Pentidotea woesenenskii and Gnoremosphaeroma oregonense. Small hermits crabs (Pagurus spp.) are also a common inhabitant of this community type.

3.7 VISUAL/AESTHETICS

3.7.1 Regional Context

Seward lies between Prince William Sound and Cook Inlet on the Kenai Peninsula at the north end of Resurrection Bay. Half of the population of Alaska lies within a three hour drive from Seward. The name Resurrection Bay is translated from the Russian name, Voskrensenka Gavan. In 1792, the Russians built a shipyard in the Bay. Seward was the historic gateway to Alaska's interior during the gold rush and the opening of the Territory.

Today, Seward is the gateway to Kenai Fjords National Park, 580,000 acres of icefield, active glaciers, and fjordlands. Beyond the mouth of Resurrection Bay rise Chiswell and Pye Islands of the Alaska Maritime Wildlife Refuge, breeding rookeries for Steller sea lions and northern seabirds. Sea otter colonies swim in Resurrection Bay and the outer coastal bays along with whales, seals, fishes, and marine invertebrates.

3.7.2 Town, Site, and Waterfront Context

The proposed project site is adjacent to the UAF IMS Seward Marine Center campus on the southern edge of Seward, facing Resurrection Bay. The historic beginnings of the Iditarod Trail and the Alaska Railroad, both of which have their tidewater trail and railheads in Seward, are near the proposed project site.

The City of Seward has identified the property as the site for the proposed project and has made the land available to SAAMS. The shoreline site is suitable as a sealife study and education center; and the proposed project would provide a key urban planning role for Seward. The recent growth of Seward has been predominantly at its northern end, with the construction of the port facilities, the Small Boat Harbor and Marina, the Kenai Fjords Visitor's Center, and the attendant retail and commercial businesses that serve the tourist industry. Seward's waterfront is heavily used for RV and tent camping during the summer months, particularly during the Silver Salmon Derby in August.

3.7.3 Existing Character

The proposed site is currently occupied by the Northern Stevedoring Warehouse, a welding shop, the Youth/Teen Center, and the Municipal Dock. The dock serves the Alaska Marine Highway System as the landing for the M/V *Tustumena*, as well as other commercial marine interests. The original depot building for the Alaska Railroad is located adjacent to the proposed project site, having been moved from its original location in 1917. It currently serves as the ticket office for the Alaska Marine Highway system. The existing terminus of the railroad is at the northern end of the town near the Small Boat Harbor. The Ladies Park and a very popular, city-owned RV park and campground (part of Waterfront Park) are located to the north and east of the site, respectively.

The present on-the-ground character of the proposed site is that of an industrial waterfront. It is unordered and disturbed, and contains the remains of old docks, wharfs, industrial structures, and existing industrial and historic structures with little architectural cohesiveness. The proposed site and the intertidal zone still contain debris from the structures and docks which were destroyed as a result of the 1964 earthquake. This disturbed landscape contrasts greatly with the natural beauty of its location within Resurrection Bay. The Bay and the surrounding, often snow-covered mountains provide a setting that is unsurpassed for its beauty and magnificence.

3.8 ARCHAEOLOGICAL AND HISTORIC RESOURCES

Section 106 of the NHPA requires the lead Federal Agency for a federally assisted, permitted, or licensed undertaking to take into account the effects of the undertaking on properties included in or eligible for the National Register of Historic Places. Further, Section 106 requires consultation with the SHPO and provides for the Advisory Council on Historic Preservation to comment. Consultation with the SHPO is underway. The Section 106 review is being conducted in parallel with preparation of the EIS, and it will be completed prior to issuance of the ROD on the proposed action. There are six basic steps to the process as outlined in 36 CFR 800.

1. The lead Federal agency first determines the area of potential effect (APE) of the undertaking.

2. The agency makes efforts to identify potentially historic properties for NRHP eligibility.

3. The agency evaluates those properties for NRHP eligibility in consultation with the SHPO.

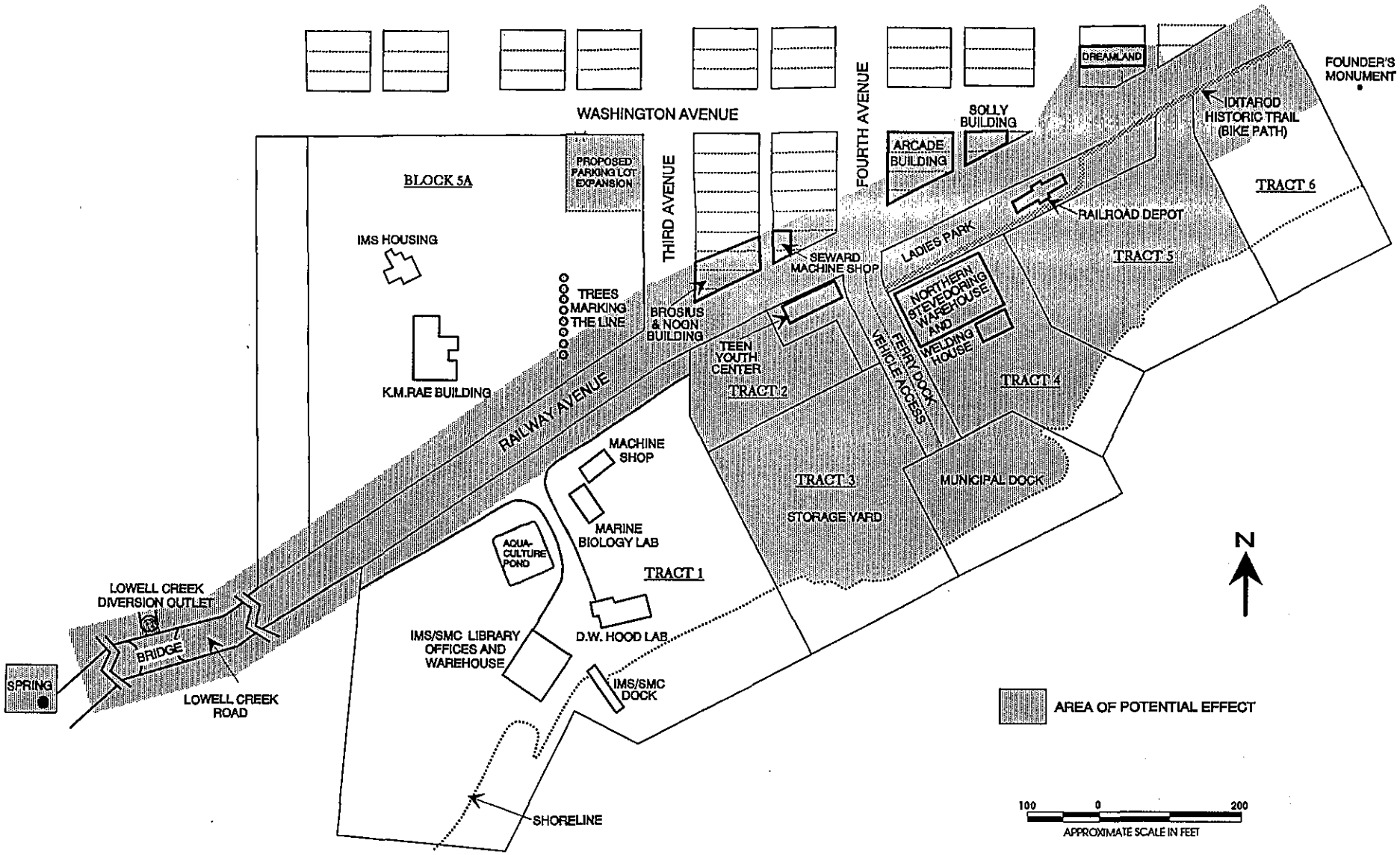
4. The agency assesses the projects effect on each eligible property in consultation with the SHPO.

5. If properties are adversely affected, the agency consults with the SHPO, the Advisory Council on Historic Preservation, and interested parties on actions to be taken to minimize the effects.

6. The agreed upon actions are incorporated into a MOA which legally obligates the agency to take action.

A MOA also may be developed when effects on historic properties cannot be fully determined prior to approval. At this time, a conceptual design of the proposed project has been evaluated. Because final design will not be fully known at the time of project approval, a MOA is being developed to assure protection of the historic resources in the area of potential effect.

The area of potential effect of the proposed action is shown on Figure 3-4. Correspondence between the DOI and SHPO is contained in Appendix A.



AREA OF POTENTIAL EFFECT

Job No. 28347-002-160

DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 3-4

This section presents a brief history of Seward, followed by a discussion of archaeological and historic resources in the vicinity of the proposed project based upon the City of Seward's Phase I Historic Preservation Plan, an archaeological resource survey, and an historic structure inventory prepared as part of the Section 106 process. Reports of the latter two investigations can be found in Appendix B.

3.8.1 History of Seward

Pre-European Contact: Like other parts of coastal Alaska, the coastal and marine resources of Seward have supported human use for several thousand years. In pre-historic and historic times, Resurrection Bay was the site of several Unikagmiut settlements. Historical records show that nearly all the settlements were abandoned by the 1880 U.S. Census, with the exception of a village of 32 called Yalik in Yalik Bay south of Seward. This site was abandoned by 1890. It is possible that there was some pre-European contact use of the proposed project site, although any evidence of such use has not yet been discovered.

European Exploration and Settlement: The first European contact came through Russian exploration and colonization of Alaska. It is reported that Alexander Baranov entered the site he named Resurrection Bay on Easter Sunday of 1792. Other Europeans also explored the area; Portlock and Dixon of the British Royal Navy charted Resurrection Bay as St. Andrews Bay during 1786-87.

After the purchase of Alaska by the United States, early settlers arrived in Resurrection Bay in the 1880's. A route to Cook Inlet gold fields was established in the area in 1895. A small U.S. Geological Survey exploration party landed at Resurrection Bay in May of 1898, and mapped the area, including the trails to Turnagain Arm and Eagle River. Their reports, including descriptions of agricultural and mineral potential to the north, influenced development of a railroad route to the interior and establishment of the Iditarod Trail. One thousand miles of trail were cleared and marked in 1910-1911; heavy use of the trail continued until the 1920's, when mining activities declined.

Seward was formally founded as a City in 1903 by a party from the steamer *Santa Ana* that included John and Frank Ballaine, founders of the Alaska Central Railroad. Seward was platted in 1905 and incorporated in 1912; many houses from this era are still standing in the city today, none in close proximity to the proposed project. The Ballaine brothers initiated construction of the Alaska Central Railroad in 1905 to provide access to interior coal fields, and built extensive docking and warehousing facilities at the foot of Fourth Avenue. By 1906, the railroad extended inland to mile 76; however, mineral rights to the coal were withdrawn and the railroad went bankrupt. In 1914, the federal government took over the project. Tracks to Anchorage were completed by 1918, with three trains a week running between the two towns. The railroad headquarters were moved to Anchorage in 1917; this move stimulated an economic down-turn in Seward which lasted into the 1930's. During this time, other small scale economic activities such as fish processing and lumber production were established.

World War II made a significant impact on Seward when the Army established Fort Raymond in 1941 and stationed nearly 3,500 personnel in Seward. A second fort, Fort McGilvray, was established at Caines Head, south of Seward on Resurrection Bay. Over $6 million in construction expenditures were

associated with these facilities. The camp facilities and gun emplacements were abruptly dismantled in March of 1944. Through the late 1940's and 1950's, the economy of Seward continued to experience cycles. The highway to Anchorage was completed in 1951, and the Alaska Marine Highway System started Seward service in 1960. During the 1950's most of Tracts 3 and 4 were filled in to allow for construction of the 4th Avenue Dock face as it is today. Old maps indicate buildings on pilings in this area; however, there are no records of what became of these buildings (K. Martin, personal communication, 1994). The 1964 Good Friday Earthquake and resultant tsunamis devastated the coastal areas of Seward. The railroad dock and tracks leading to it, the Standard Oil Tank Farm, other coastal properties, and many boats were lost to the waters of Resurrection Bay. The destruction of the waterfront resulted in the diversion of many goods coming into Seward from both Anchorage and Whittier. Seward's role as a rail port facility decreased, and economic stagnation followed.

Throughout the late 1960's, the 1970's, and mid-1980's, the economy diversified with the location of several public and private facilities in Seward. These included the new Small Boat Harbor, the Alaska Vocational Technical Center, the IMS Seward Marine Center, the Spring Creek Correctional Facility, the Suneel Coal Facility, a shipyard, saw mill, National Park Service Facility for the Kenai Fjords National Park, visitor industry, and several fish processors. Seward was affected by the 1989 *Exxon Valdez* oil spill, as it served as a logistical support base for oil spill response and cleanup activities. Commercial fishing and tourism in Seward were impacted by the spill; and nearby areas outside Resurrection Bay, particularly Kenai Fjords National Park, were oiled to some degree. During the last few years, summer tourism in Seward has grown significantly, particularly with the increase in cruise ship dockings that occurred in 1993.

3.8.2 Archaeological Resources

The AHRS lists no archaeological sites on, or in the vicinity of the proposed project. Given the history and pre-history of the Resurrection Bay area, there is a potential for finding archaeological and historical resources in the general area. During the 1950's, however, fill material was placed on most of Tracts 3 and 4. Section 106 consultation with the SHPO indicated a need to conduct a field investigation. The SHPO indicated that the area of fill would not require a pre-construction reconnaissance survey. An archaeological survey focused on an area of potential effect that included roughly a 900 by 100 foot strip of unfilled land along the south side of Railway Avenue, a proposed expansion of the existing IMS parking lot adjacent to the Rae Building, and the route of a possible water line from a spring south of the project area along Lowell Point Road. A comparison of historic maps showed that this is the only portion of the proposed project site along the waterfront that is not composed of fill. The survey of the strip of land along the south side of Railway Avenue revealed no archaeological or historic remains.

The survey of the proposed parking lot expansion revealed a building footprint near the corner of Washington Street and Third Avenue. This shallow depression marks the former site of a structure that was roughly 25 feet wide and 80 feet long. Conversation with long-time Seward resident Pat Williams (M. Yarborough and P. Williams, personal communication, 1994) and review of old maps indicate that this was the location of the Alaska Transfer Company stable. No archaeological resources or historic remains were found at this site, and this site is not considered eligible for inclusion on the NRHP.

A survey of the spring to be used as a freshwater source and the existing right-of-way along Railway Avenue indicated that both areas were relatively disturbed. No archaeological resources or historic remains were found in this area.

Appendix B contains a report of the results of the archaeological survey.

3.8.3 Historic Resources

In 1992, the City of Seward applied to the SHPO, and was granted designation as a Certified Local Government for historic preservation; the city established and assigned duties to the Historic Preservation Commission, and prepared a Phase I Historic Preservation Plan. The Historic Preservation Plan includes Resource Data (a history of Seward), Historical Site Inventory Summaries, Non-Resource Data, and Recommendations for Action. There are 177 historical sites identified in the plan inventory. The plan indicates concern that Seward is facing major changes, and that Seward needs to ensure that its historic resources are protected. The area in the immediate vicinity of the proposed project is listed as a particular concern due to potential implications of the Alaska SeaLife Center (City of Seward, 1993b).

A historic preservation consultant spent five days in Seward, photographing existing buildings, reviewing archival photographs at the local museum and local library, and talking with knowledgeable individuals about building histories and contexts (See Appendix B for the results of this investigation). On the south side of Railway Avenue six properties were identified: 1) Alaska Railroad Depot; 2) Iditarod Trail Mile 0; 3) Ladies/Hoben's Park; 4) Teen/Youth Center building; 5) Northern Stevedoring Handling Company warehouse; and 6) Northern Stevedoring welding shop. On the north side of Railway Avenue seven properties are in immediate sight of the proposed marine center: 7) Dreamland Bowling Alley; 8) Solly Building; 9) Arcade Building; 10) Seward Machine Shop; 11) Brosius-Noon Building; 12) The Line; and 13) the Lowell Creek Flood Control Facility. The area north of Washington Street across from the proposed expansion of the IMS Rae Building parking lot was not inventoried because it was not considered part of the area potentially affected, primarily because the proposed parking lot expansion is an expansion of an existing use; and no buildings would be constructed there.

Sites on or Eligible for Inclusion on the National Register of Historic Places: The City of Seward has 8 sites that are currently on, or are eligible for inclusion on, the National Register of Historic Places (NRHP). In addition, there are other historic sites and groups of sites in Seward which may be eligible for inclusion on the NRHP, but have not been formally evaluated. An evaluation of the sites within the area of potential effect of the proposed project was conducted as part of NHPA Section 106 compliance. Three of the sites previously identified as on the NRHP, shown on Figure 3-4, are located in the immediate vicinity of the proposed project on Railway Avenue and Lowell Point Road. For each site discussed below, the corresponding NRHP (NHR), Alaska Heritage Resource Survey (AHRS), and Seward Historic Preservation Plan (HPP) designation numbers are included in the description. Sites on or eligible for inclusion on the NRHP include:

- Iditarod Historic Trail (NHT78) - The start of the historic Iditarod Trail, where newcomers and their gear stepped off the steamer to begin their Alaskan adventure, was

located in the 400 block of Railway Avenue just north of the proposed site. Current uses in the area include a park and bike trail. The Iditarod Trail is a National Historic Trail, afforded the same protection as a property on the NRHP. However, although a commemorative sign and dogsled are installed near the ferry dock, no physical evidence of Mile 0 remains in the waterfront area. In addition, the 1986 Iditarod Trail Management Plan developed by the Bureau of Land Management gave the City of Seward license to designate conveniently accessible routes as part of the hiking trail and the commemorative sign and dogsled reflect that policy. There is also an Iditarod Mile 0 marker at the Jessie Lee Home elsewhere in Seward.

- Alaska Railroad Depot (NHR87, AHRS/SEW 01, HPP 168) - The original Alaska Railroad Depot building is also located in the 500 block of Railway Avenue, north of the site. It is currently being used as a ticket office for the Alaska Marine Highway System. The building was constructed in 1917 and moved to its present location in 1928. It is a classic example of Craftsman Bungalow architecture and is on the NRHP.

- Lowell Creek Flood Control Facility (NHR77, AHRS/SEW 011, HPP 159) - The Lowell Creek Flood Control Facility consists of a diversion dam, tunnel, and outlet flume built between 1937 and 1940 as the first water control project completed by the Army Corps of Engineers in Alaska. The outlet flume enters Resurrection Bay just upslope from the small bridge where Railway Avenue turns into Lowell Point Road, southwest of the University of Alaska buildings. The facility was entered on the NRHP in 1977.

In addition, the historic structure inventory has identified two additional properties as being potentially eligible for inclusion on the NRHP. These include:

- Ladies/Hoben's Park (HPP 168) - Ladies Park, also known as Nile Park or Hoben's Park, is a maintained landscape just west of the Railroad Depot. It was developed by the city in the mid-1920's as a pleasant waiting place for passengers transitting from steamers to the train. It is likely eligible to the NRHP as a designed landscape, significant for its association with local businessman Harry Hoben and its role in local recreation and transportation.

- Seward Machine Shop (HPP 165) - The Seward Marine Shop was built in 1915 on the north side of Railway Avenue between Third and Fourth Avenues. It was used as a machine shop for several decades and is still known as the Seward Machine Shop. It is likely eligible to the NRHP as a building significant for its association with local business and manufacturing, and its association with local businessman Charles Lechner, Sr.

Other Potential Historic Resources Assessed: The City of Seward currently has 37 sites listed on the Alaska Heritage Resource Survey (AHRS), which include the NRHP sites. The AHRS was established to include all historic sites, regardless of land ownership and means of protection, pursuant to the Alaska Historic Preservation Act, Alaska Statute 41-35. There are 177 Seward historic sites identified in the

Historic Preservation Plan (HPP) inventory, including those on the NHRP and AHRS lists. In addition to the sites discussed above, the following sites are in the vicinity of the proposed project and were assessed for potential eligibility for inclusion on the NRHP.

- Brosius Noon Building (AHRS/SEW-151, HPP 164) - This historic building is located across from the proposed site at 302 Railway Avenue. Currently the site houses the Seaview Plaza. The Brosius-Noon Building was first begun in 1906, at the corner of Third Avenue and Railway Avenue, and grew to comprise three historic buildings. It was used as a lumber store and woodworking shop by local businessman Cal Brosius. The complex was judged eligible to the NRHP in 1983, but subsequent renovation was so substantial as to negate its eligibility, in the opinion of the SHPO, in 1985. It continues to be ineligible to the NRHP, due to lack of architectural integrity.

- Dreamland Bowling Alley (AHRS/SEW-303, HPP 110) - The Dreamland Bowling Alley is located at the corner of Fifth Avenue and Railway Avenue, almost across from the Railroad Depot. It was originally built in about 1914 as the Arctic Brotherhood Hall, and has served as a basketball gymnasium, dancehall, automotive garage, military theater, and bowling alley. It is likely ineligible to the NRHP due to lack of architectural integrity.

- Solly Building (AHRS/SEW-209, HPP 176) - The Solly Building was built in 1909 as an office and apartment building, and continues to serve that function. It is located on the north side of Railway Avenue across from the Alaska Railroad Depot. It is likely ineligible to the National Register of Historic Places due to lack of architectural integrity.

- Arcade Building (HPP 166) - The Arcade Building is a multiple dwelling unit building located north of the proposed project at 400 Railway Avenue. It was built in about 1943 to replace a substantial building of the same name that was destroyed in the town fire of 1941. It is likely ineligible to the NRHP due to lack of significance.

- Founders Land Site (HPP 169) - A small concrete monument commemorating the 1903 landing of the Steamship *Santa Ana*. It is located northeast of the proposed project site on the 600 block of Railway Avenue. It is currently in an area being used as an outdoor park/RV camping area. As a commemorative monument that has been relocated from its original site, it is likely ineligible to the NRHP due to lack of significance.

- The Line - Between 1914 and 1943, prostitution was an accepted and controlled institution in Seward, confined to Alley B, between First and Second Avenues on Railway Avenue. Although no structures remain, Seward's red light district is fondly remembered and still marked with a line of trees near the northwest corner of Second Avenue and Railway Avenue. It is likely ineligible to the NRHP.

- Youth/Teen Center Building - The Youth/Teen Center Building is located just west of the ferry ramp entrance, facing Railway Avenue, and was moved there in about 1942 from a prior location just offshore on pilings. It was used by the railroad as a shop to repair jitneys -- small electric tractors that pulled flatcars of baggage from the steamers to the trains. It is likely ineligible to the NRHP, due to lack of significance and lack of architectural integrity.

- Northern Stevedoring Warehouse - The Northern Stevedoring Handling Company warehouse is a large metal warehouse east of the ferry ramp entrance, and was built there around 1970. It is likely ineligible to the NRHP due to lack of significance.

- Northern Stevedoring Welding Shop - The Northern Stevedoring Handling Company welding shop is a pre-fabricated metal building east of the ferry ramp entrance, and was built there about 1980. It is likely ineligible to the NRHP due to lack of significance.

- Structures North of Washington Street - Several buildings north of Washington Street, overlooking the IMS Rae Building and parking lot to the south may witness an expansion of that parking lot if the proposed project is approved. The buildings were not evaluated for NRHP eligibility because the proposed parking expansion would be an expansion of an existing use; and no building would be constructed there.

3.9 LAND AND SHORELINE USE

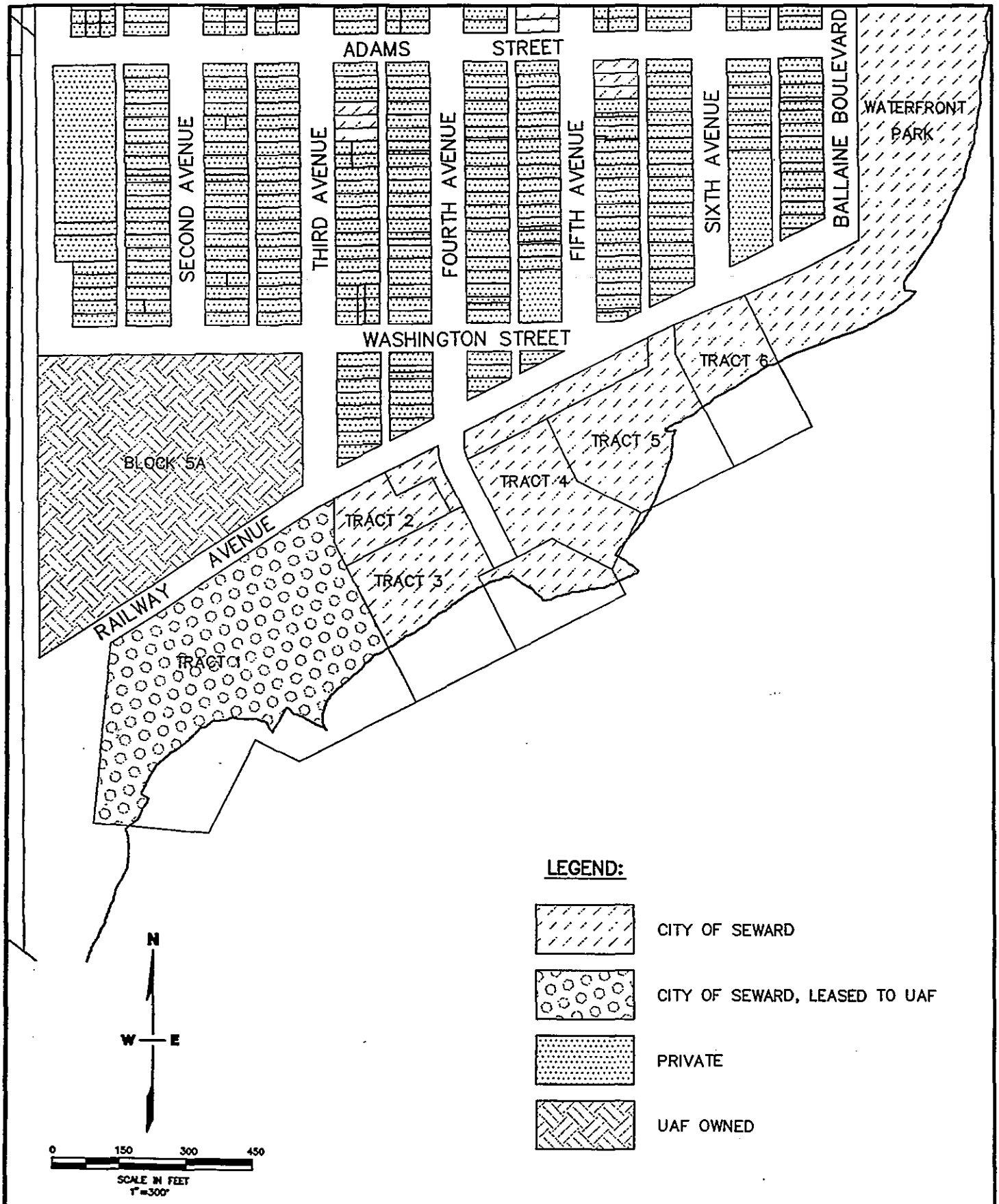
The following section summarizes the existing ownership status and land use of the proposed project site and vicinity, and applicable land use regulations. Information was obtained from a literature search, agency contacts, the Seward Comprehensive Plan, Kenai Peninsula Borough offices, and local contacts.

3.9.1 Land Ownership

The proposed project would be located on Tracts 2, 3, 4, 5 and 6 of the Alaskan Tideland Survey 174 and former Alaskan Railroad land which are owned by the City of Seward (Figure 3-5). The tracts are part of an unrecorded survey made for lease purposes. The survey contains six tracts, an accessway to the Municipal Dock, and a parcel for the old Alaska Railroad Depot. Tracts 2, 3, 4, 5, 6, and the dock accessway have been identified by the Seward City Council for use by SAAMS for the proposed project.

Tract 1 is currently being leased by the UAF for a portion of the existing IMS facilities. This lease agreement between UAF and the City of Seward would not be affected by the proposed project. The remainder of the existing IMS facilities are located north of Railway Avenue on a separate parcel owned by UAF (Block 5A, Oceanview Subdivision Addition No. 1, Figure 3-5).

Tracts 2 (the location of the Youth/Teen Center), 5, and 6 are city-owned and not leased. Tracts 3 and 4 were leased from the city by NSHC in 1979. The lease expires in 1999 and the city has notified NSHC that the lease will not be extended.



Filename: FIG3-05.DWG

EXISTING LAND OWNERSHIP

Job No. 28347-002-160

DAMES & MOORE

IMS PROPOSED INFRASTRUCTURE PROJECT
SEWARD, ALASKA
FIGURE 3-5

Properties directly north of the project area, across Railway Avenue, are privately owned and lie within Seward's central business district. To the east is additional city-owned property that is part of Waterfront Park.

The state established a "Directors Line" in Resurrection Bay within the city limits and transferred title of the state tidelands inside this boundary to Seward. The Directors Line lies parallel to and approximately 800 feet from the shoreline. The uplands area above the 1965 mean high water line (MHWL), originally owned by the Alaska Railroad, was withdrawn as part of federal construction of the railroad in 1917, and the land was transferred to Seward by the Alaska Railroad. The 1965 MHWL is approximately 100 feet south of Railway Avenue through Tracts 1, 2, 3, 4, and 5. In Tract 6, the 1965 MHWL begins at about 100 feet on the west boundary and extends to about 200 feet from Railway Avenue on the east side of the tract.

3.9.2 Existing Land Use

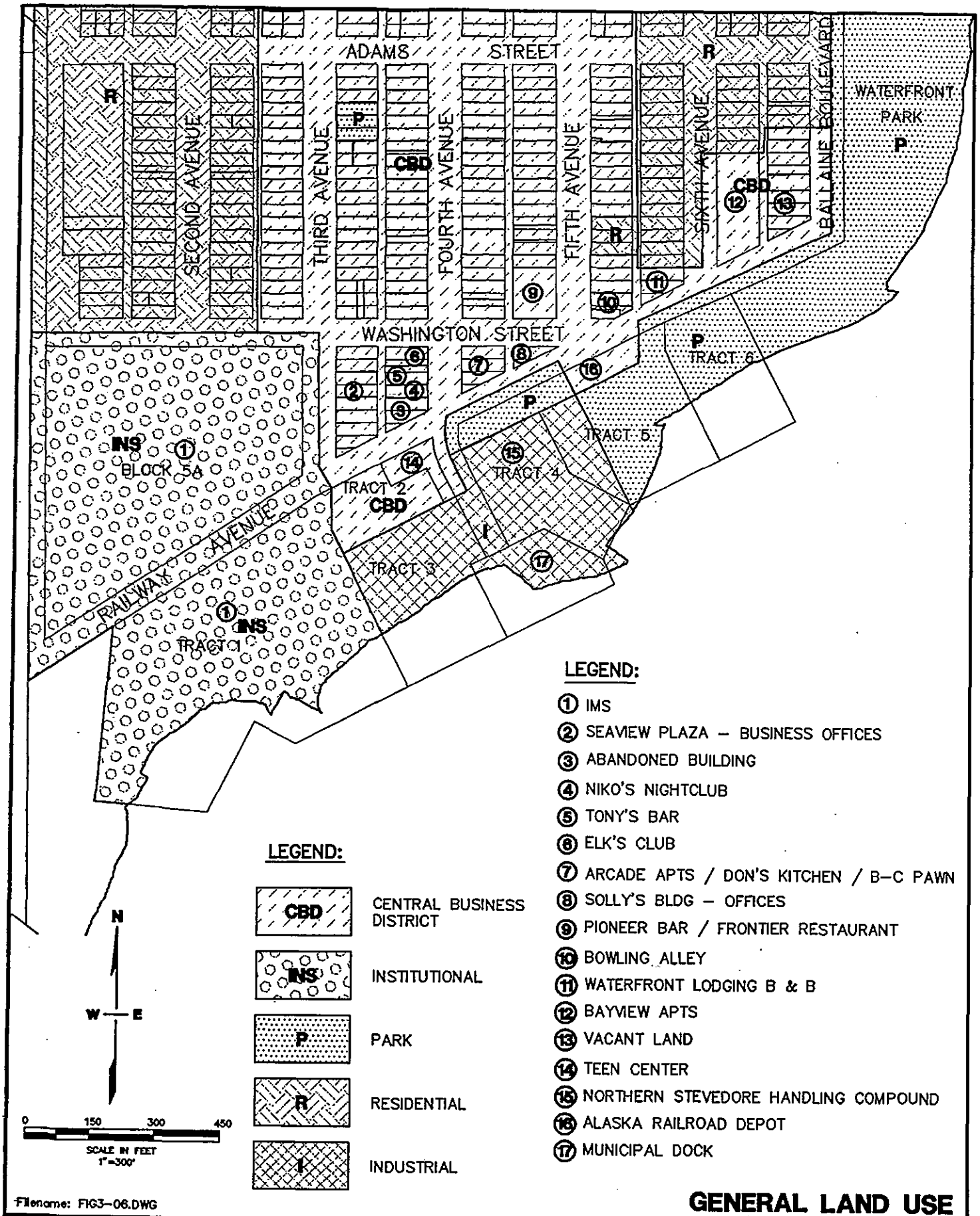
The proposed project is to be located on the west side of Resurrection Bay within the Seward city limits. The site, adjacent to the existing IMS Seward Marine Center and south of Railway Avenue, is located along the south shore of the original Seward Townsite. Figure 3-6 presents the land uses in the project vicinity.

USS 1116: Block 5A, Oceanview Subdivision, Addition No. 1, is owned and occupied by the IMS Seward Marine Center. The site contains staff housing for visiting researchers, the K.M. Rae Public Education Building, and facility parking. This is the only portion of the IMS Seward Marine Center on the north side of Railway Avenue.

Seward Waterfront Survey Area: Much of this area, consisting of Tracts 1 through 6, was used extensively by the Alaska Railroad as a rail yard for over 50 years. The area contained numerous railroad tracks, switches, buildings, and unloading facilities. Extensive fill was placed over major portions of the area in the 1950's, and the 1964 earthquake resulted in extensive damage to this area.

Tract 1:

This tract is the primary site of the existing IMS Seward Marine Center. The tract contains the aquaculture pond; machine shop; marine biology laboratory (1,450 sq.ft.); the D.W. Hood Laboratory (4,000 sq.ft.); a dock for the R/V *Alpha Helix*; a warehouse; and the IMS library and offices (Figure 2-2). Parking is available for staff members and visitors. A small concrete bulkhead is located on the tidelands offshore of this tract, as well as a sewer and storm drain outfall. The laboratory's life support system outfall reportedly extends approximately 450 feet offshore to state tidelands. An overhead electric line serves the site and a transmission line traverses the site along Railway Avenue. Several city sewer lines and other abandoned pipes and railroad tracks cross the site below the surface grade. An underground fuel storage tank is reportedly located east of the machine shop, although no evidence has been found documenting the installation or existence of the tank (PN&D, 1993).



Filename: FIG3-06.DWG

GENERAL LAND USE

Job No. 28347-002-160

DAMES & MOORE

IMS PROPOSED INFRASTRUCTURE PROJECT
SEWARD, ALASKA
FIGURE 3-6

Tract 2:

This tract accommodates the Seward Youth/Teen Center building, approximately 16 feet by 40 feet in size (Figure 2-2). This city-owned structure is located in the northeast portion of the tract immediately adjacent to Railway Avenue. A small fuel oil storage tank is located behind the building. A portion of the tract is currently being used as a city parking facility. The tract is bordered on the east side by an unofficial extension of Fourth Avenue used for ferry traffic. A city sewer line reportedly crosses the tract on its north side and an abandoned rail track is on the south side of the tract.

Tract 3:

This is a fenced storage area currently leased to the NSHC. The area is being used to store fishing nets, crab pots, and other marine gear. A buried electric line that services the ferry dock crosses the tract from north to south along the east side. Several partially buried rail tracks are on the tract.

An unofficial extension of Fourth Avenue provides access to what is known as the Municipal Dock. The dock is used by a variety of vessels, including the state ferry M/V *Tustumena*, which uses the dock to embark passengers and vehicles. Fishing vessels, tugs, freighters, and other boats have used this dock for many years. The east side of the dock and adjoining sheet pile wall are popular fishing areas.

Tract 4:

This tract is occupied by two buildings owned by NSHC on city-leased land, a 180-foot by 100-foot warehouse and a smaller 80-foot by 40-foot shed. The warehouse has been in operation since 1979 and offers storage for marine services, primarily fishing gear and some drilling equipment storage for the Atlantic Richfield Company (ARCO). A city sewer line cuts across a small portion of the northeast corner of the tract and an overhead electric line serves the tract from the dock area. A sheet pile wall fronts the water on the southeast part of the tract.

Tracts 5 and 6:

These tracts are vacant of structures except for an underground sewer line which crosses the northern portions of the tracts, and a bicycle path along Railway Avenue. The tracts are currently used as the city's Iditarod camping area of the Waterfront Park.

Adjoining Land Uses: The area to the west and south of the IMS facilities is a forested hillside too steep to be developed. Railway Avenue runs along the foot of the hillside. The land on the shore side of Railway Avenue is a cobble and rock beach and is considered unsuitable for development without fill and riprap.

The area to the east and north along the shoreline is used for a variety of park activities. The area south of Railway Avenue adjoining Tract 6 is a popular parking area for RVs that is part of the Waterfront Park. Campers in this area have a view of Resurrection Bay and easy access to the downtown core area.

An unnumbered city-owned tract along Railway Avenue is occupied by Ladies Park and the Old Alaska Railroad Depot. The depot building is on the NRHP, and is currently used by the Alaska Marine Highway System as a ferry ticket and operations office. A small basketball court, planter, and concrete retaining wall are on the west end of the tract. A short bike path extends along the tract behind the depot from the Fourth Avenue extension to the east. This tract is designated as a city park, locally known as "Ladies Park", and is the site of the start of the original Iditarod Trail. The Seward community Christmas tree is placed in the center of the Fourth Avenue Extension between Ladies Park and the Youth/Teen Center.

Seward's main business area is located north of Railway Avenue. It contains many important public facilities including the City Hall, post office, fire hall, and city shops. These are located several blocks north of the proposed project site. Fourth Avenue serves as Seward's main street with the heaviest concentration of large buildings and commercial uses; additional commercial buildings are located on the southern portions of Third and Fifth Avenues. The area north of the central business district, west of Third Avenue, and east of Sixth Avenue is predominantly residential.

Material Sources: Both gravel and shot rock for riprap are proposed to be extracted from one of five sites. Site one is a Kenai Borough owned quarry located in the far north west quadrant of the city (see Figure 2-8). The site has been surveyed as ASLS 80-112. Site two is privately held land (Afognak Logging Incorporated) near Japanese Creek, slightly to the south and closer to the developed areas of the city. This is the only site within the city limits. The third site is a city-owned pit located on Lowell Canyon Road. The fourth site is a state owned quarry to the south of the city at Lowell Point. The fifth potential site is a city-owned quarry just east of the SMIC on the east side of Resurrection Bay.

Site One, Kenai Borough Quarry

The site consists of about 80 acres of borough-owned land adjacent to a borough owned and operated landfill transfer site. It was an active rock source in the mid 1980s for a retaining wall in the river. The site is adjacent to the city limits and no city land use controls apply. It is zoned Resource Extraction by the borough. This land use category allows Natural Resource Extraction as a permitted use. No residential or commercial uses are within a fourth of a mile of this area. Access to the new extraction area would be through the borough transfer site. Diamond Boulevard is the primary access and connects the area to the Seward Highway through Forest Acres Subdivision. About 50 acres of the site are in the braided channel of the Resurrection River and another 30 acres are upland area with the availability of shot rock. Land use in the immediate area is predominantly light industrial and vacant.

Site Two, Japanese Creek

This site is owned by Afognak Logging, Inc. and is the only one of the five sites privately owned. The parcel is about 80 acres in total size and is zoned Resource Management and Single Family Residential by the city. The Resource Management land use category allows natural resource extraction as a conditional use (City of Seward municipal code 15.10.225). The site is currently undeveloped. An area to the east is platted into residential lots as the Forest Acres Subdivision. Much of this subdivision is not

developed on the west side. The nearest residences (two) are at the corner of Maple and Ash Streets. Lots along Pine and Oak Streets are not developed, nor are the streets constructed. Ash Street is a paved road to the junction of Cedar Street. It then becomes a good gravel road to the last houses on the corner of Maple and Ash, but is a sub-standard trail beyond this junction. Most of the remaining portions of Forest Acres is developed with good quality residential units. Access to the extraction site would be by Ash Street off of Diamond Boulevard.

Site Three, Lowell Canyon Road

This site is located to the west of the proposed project up Lowell Canyon Road. It is owned by the City of Seward and is currently being used as a source of construction material.

Site Four, Lowell Point

This site consists of approximately three acres and is an inactive state material site occasionally used for maintenance of the Lowell Point Road. It was originally established during the construction of the Seward Small Boat Harbor in the mid-1960s. The site is outside of the city limits of Seward and the land

use is administered by the Kenai Peninsula Borough. The site is not classified by the borough, but the state identifies it as a material source.

Site Five, East Bay

This site is located east of the SMIC on the east side of Resurrection Bay. It consists of material left over from site preparation and stockpiled by the city. The site is owned by the City of Seward, which has priority use of the material stockpiled there.

Freshwater Source and Pipeline: A proposed freshwater source is a spring located in USS 1806, about one quarter mile south of the proposed project site along the Lowell Point Road. It was once used by the Anderson Seafood Company as a source of non-glacial water. Water would be transported to the project site via an underground pipeline which would run within the existing city utility corridor to the northwest corner of the proposed project site. Alternative sources of freshwater could be from one or more wells drilled on the existing IMS property north of the Rae Building or surface water (Lowell Creek).

3.9.3 Land Use Regulations

The City of Seward is a home rule municipality. Seward was first incorporated as a city in June 1912. It is located within the Kenai Peninsula Borough regional government. Under Alaska state law Title 29, Seward has adopted a charter that provides for the governing structure, functions, and services. Seward may adopt any powers not prohibited by its charter or forbidden specifically by state law. The Alaska Constitution establishes a policy of strong self-government and Seward has chosen to maximize its independence.

The basis for city land use regulation is the Seward Comprehensive Plan, which is updated regularly. The latest plan update of the 1985 plan was adopted in 1990. The plan, "Seward 2010", is intended to promote improvements in the quality of life in Seward over a 20 year period. It contains both advisory and binding elements; the advisory elements are the goals, issues, and actions specified in the plan; and the binding element is the land use plan. Further, it states that the land use plan is "a legal document which must be adhered to and which can only be revised by amendment". The plan, audits, updates and amendments, are approved by the Seward Planning Commission and City Council, and ratified by the Kenai Peninsula Borough Assembly.

Seward has a comprehensive range of land use controls to implement its land use planning efforts. The ordinances include zoning, platting, and building codes. The city platting is accomplished in conjunction with the Kenai Peninsula Borough.

Comprehensive Plan: The 1990 Comprehensive Plan update identifies issues important to the community; describes demographic, socioeconomic, and housing indicators; and lists issues, goals, and actions. The land use section of the Plan has policies on the following six types of land uses:

- Residential
- Industrial (I)
- Harbor
- Commercial
- Public and Institutional
- Resource Management

The land use map shows 13 different categories. These categories are closely related to the 13 zoning districts in the zoning code. The land use plan designates the following land use areas:

- Downtown Commercial
- Harbor Commercial
- Rural Residential
- Two-Family Residential
- Institutional
- Parks
- Urban Residential
- Auto-Oriented Commercial
- Industrial
- Single-Family Residential
- Multi-Family Residential
- Office/Residential
- Resource Management

The land use plan identifies as a goal that "there is a need to continue to provide adequate land area for public and institutional uses". A specific concern is to "continue to encourage IMS, Alaska Vocational Technical Center, Alaska Railroad, the Army and Air Force Military Recreation Camps, and other large institutional land owners to prepare long range development plans for their properties so that such plans can be incorporated into city plans". Another concern is that the city should "consider the designation of additional park and recreational areas in conjunction with the completion of a Parks and Recreation Master Plan."

Concerns listed in the land use plan regarding community appearance, economic development, transportation facilities, and public facilities and services address development near the IMS site or development on the site. The plan expresses the following:

- Supports development of a new Municipal Dock at the same or an alternate location;
- Supports efforts to develop the IMS parking lot for RV parking;
- Supports construction of a multi-purpose trail from the park near the IMS site along the waterfront to connect with the Small Boat Harbor and Forest Acres;
- States need for property that is suitable for a new Youth/Teen Center; and
- Proposes to encourage development of commercial facilities west of Fourth Avenue and the private development or redevelopment of one story structures to the east of Fourth Avenue.

The need to remove industrial uses in the project vicinity as part of an effort to enhance the adjoining central business district resulted in notification by the city in 1990 that the lease to NSHC, due to expire in 1999, would not be extended. Recently, the Seward Port Marketing Department investigated alternative lease sites and incentives to clear the property. Negotiations are underway between the City of Seward, SAAMS, and NHSC regarding the alteration of the lease terms and relocation of the existing leaseholder.

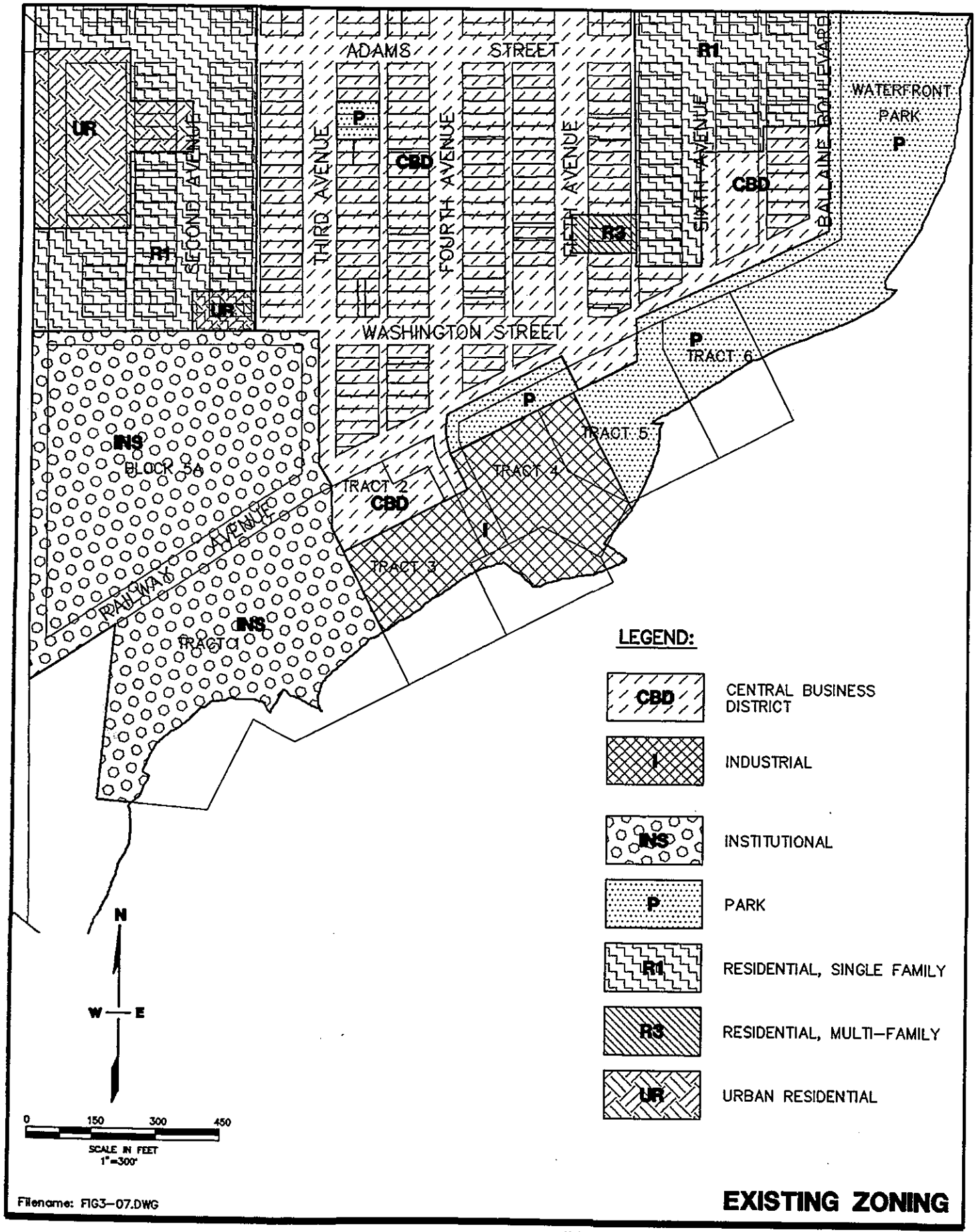
The flexibility needed to address future events is recognized in the Comprehensive Plan. It states that changing conditions in the future may necessitate modifications to planned actions or the introduction of additional actions to satisfy local needs.

Zoning: Title 15 - Planning and Land Use Regulations: The city zoning ordinance follows a traditional model of land use controls used in many Alaska cities. The ordinance divides the city into 13 land use zones which have certain classes of uses. The ordinance provides a chart of potential use classes and zoning districts. Each use is indicated as one of the four following categories: prohibited, permitted outright, allowed by administrative permit, or allowed by conditional use permit. Administrative permits are issued by the city clerk and conditional use permits are subject to approval by the Planning Commission and can be appealed to the City Council.

Zoning On the Proposed Project Site

The proposed project site extends through three zoning districts (see Figure 3-7). Tract 2 is zoned CBD; Tracts 3 and 4, the Municipal Dock and its access road are zoned Industrial (I); and Tracts 5 and 6 are within the Park zone (P).

The area will need to be rezoned to accommodate the proposed project. Rezonings require public hearings and approval by both the Planning Commission and the City Council. None of the city zoning districts lists aquariums or marine research centers as a use category. Under section 15.30.130 of the city zoning code, unlisted uses may be allowed either outright, or by the CUP process. Ordinance 94-25 revised the zoning ordinance to include a category for major visitor attractions by conditional use permit.



Filename: FIG3-07.DWG

EXISTING ZONING

Job No. 28347-002-160

DAMES & MOORE

IMS PROPOSED INFRASTRUCTURE PROJECT
SEWARD, ALASKA
FIGURE 3-7

Tracts 3 and 4 will require rezoning from industrial to CBD, and Tracts 5 and 6 will require rezoning from park to CBD. The process to rezone these tracts was initiated and is currently before the City Council. For further discussion of the status of the CUP and Rezoning applications, see Chapter 4.2.9. Under the zoning ordinance, Seward has the ability to attach conditions and stipulations to approvals.

A request by SAAMS was submitted to the city to amend its Land Use Plan and to rezone Tracts 2, 3, 4, 5, and 6, plus the Municipal Dock and its accress road, to CBD. Ordinance No. 95-35 was introduced by the City Council on August 22, 1994 to grant the request by SAAMS to rezone Tracts 2, 3, 4, 5, and 6 to CBD. A public hearing was set for September 12, 1994, and, if action is taken by the Council at that time, the rezone will become effective on September 22, 1994.

SAAMS also applied for a CUP to develop a marine research and public education facility on Tracts 2 through 6 of the Seward Waterfront Tracts. The P&Z Commission has approved the CUP subject to 16 conditions, two of which are being appealed by SAAMS. Following are these 16 conditions.

1) Provide for P&Z review and approval, a more refined visitor and employee parking plan showing landscaping, on-site, off-site, and street parking as well as bus loading zones.

2) Determine whether or not Railway Avenue should be widened to include a center turn lane or bus loading zones indented off the right-of-way to address traffic concerns.

3) P&Z review and approval of dimension plans including exterior design, color, and appearance.

4) Extend the bike/pedestrian pathway across to the west side of the SAAMS property site.

5) Provide for public access to the beach and sheet pile fishing area immediately east of the Municipal Dock.

6) Provide public restrooms in the plaza area in addition to those inside the facility.

7) Provide a permanent planted community Christmas tree in the plaza area which is visible from Fourth Avenue.

8) Project lighting shall complement or blend in with downtown historic public lighting.

9) Provide public drinking fountains in the plaza area.

10) Future expansion plans shall be subject to P&Z review and approval.

11) On-site electric utilities will be underground and overhead power lines along Railway Avenue in front of the project will be placed underground.

12) There will be no construction housing allowed on-site except for one night watchman.

13) An informational and directional site plan will be developed and approved by the city regarding how to move traffic to and from the site.

14) The property will be replatted to eliminate internal lot lines and applicant will bear the cost of platting.

15) Submittal of written agreement for the use of the off-site parking by land owner for the life of the SeaLife Center.

16) Archaeological monitoring during all excavations.

The two conditions being appealed by SAAMS are conditions 6 and 7.

Zoning On Adjacent Lands

Three zoning districts abut the proposed project site. To the west of Tract 1 is a steep hillside zoned Resource Management. This zoning district is intended for undeveloped lands that do not have adequate public services and utilities for uses that may be appropriate in another district. It is a holding zone for lands which are also unsuitable for development because of environmental considerations.

The area immediately west of the railroad depot, and land east of the proposed project site is zoned Park. This designation extends north along the shoreline to the Small Boat Harbor. The Park district is intended to designate park, recreation, and commemorative property owned by the city, state, or federal governments. Only uses that are compatible with recreation and public purposes are allowed in this district. The railroad depot land and lots across Railway Avenue Blocks 3, 4, and 8 are zoned CBD. This district is defined by its very intense land uses and is intended to provide convenient, attractive, concentrated commercial development. This is the main retail, financial, and professional service area for Seward. The regulations encourage compact businesses that are mutually beneficial and encourage walk-in customers. The CBD zone extends from Tract 2 north for four blocks to Jefferson Street between Third and Fifth Avenues. Within the city center, however, between Railway Avenue to Jefferson Street, and from Third Avenue to Fifth Avenue, are several isolated multi-family (R3) zones and a park.

Zoning and Parking

The Seward zoning ordinance contains a comprehensive section on parking requirements correlated to specific uses (Seward Municipal Code 15.10.215). This lists each use and sets a standard associated to the size or a specific characteristic of the use. This is a conventional approach followed by many municipalities. No use listed exactly describes the type of use by the proposed project. As an unlisted use, the off-street parking requirements may be established by the administrator based upon existing, similar uses. The parking requirements of the code require a site plan, street access, and certain improvements such as lighting and surfacing.

Coastal Management: The Kenai Peninsula Borough Coastal Management Plan (KPBCMP) applies to all subject uses within the boundary of the borough coastal area as defined in the plan. Most of the City of Seward and all of the proposed project site lie within the KPBCMP area. The Kenai Peninsula Borough is the local coordinating agency for reviews of actions needing a coastal consistency recommendation or determination. Proposed actions are reviewed against the approved policies of the KPBCMP and the standards of the Alaska Coastal Management Program. The proposed project would require a coastal consistency review coordinated by the state.

Platting: Title 20 - Kenai Peninsula Borough Platting: City code does not allow construction of buildings across property lines, even if the adjoining properties are in common ownership. An engineered drawing or survey of the proposed project site has not been recorded and therefore is not an official plat of land with the necessary city and borough approvals. The proposed project would require replatting the project site. The platting ordinance, administered by the Kenai Peninsula Borough, is a two-step process requiring a preliminary and final plat submitted to the City Planning Commission for review. The city has 49 days to respond and make recommendations.

Building Codes: Title 12 - Building and Construction: Seward has adopted the Uniform Codes for construction as published by the International Conference of Building Officials. These codes consist of the Uniform Building Code, Uniform Fire Code, Uniform Plumbing Code, etc. Sections of these codes are also statutory requirements by the State of Alaska for some construction. The city has assumed inspection for compliance with the engineering and design standards. They have adopted construction criteria for a snow load of 60 pounds per square foot, maximum wind speeds of 100 mph, and a designated seismic zone 4. Other modifications to the Uniform Codes have been made to address specific needs of the local city fire and engineering departments.

Municipal Lands: Title 7 - Public Property: Seward has adopted codes that regulate the acquisition and disposal of public real property; the use of parks, open space and campgrounds; and established special rules that govern ports and harbors. The terms of the codes govern both long-term and short-term leases, as well as sale of public real property. The ordinance requires a public hearing and notice prior to the disposition of public property. The city is required to make an appraisal of the fair market value of the property unless waived by the City Council. The property must be sold or leased for not less than the fair market value unless the City Council finds that the public interest will be served by charging less. The terms of the sale or lease must be made public and approved by the City Council. The ordinance provides a method for negotiated dispositions as long as certain procedures are followed. Negotiations are underway between the City of Seward and SAAMS regarding a potential lease arrangement for the proposed project.

3.10 SOCIOECONOMICS

3.10.1 Local Economy

During the past fifteen years, the city and residents of Seward have taken major steps to build a more diverse local economy. A summary of Seward's economic highlights was presented in the city's 1994 annual financial report. Excerpts are included below.

Seward was established in 1903 as the terminus of the (then) Alaska Central Railway. Its location was carefully chosen for its attributes as a year-round, ice-free port. The world class harbor characteristics of Resurrection Bay established the town economically and still drive the economic base for the community. Seward is currently the only town in Alaska with an ice-free, deep-draft harbor with road and rail service to interior Alaska.

Seward's people and its physical assets have created a much more diversified economy than exists in many other coastal communities in Alaska. Considerable effort has been spent to create and encourage private investment and year-round jobs in Seward. Diversification efforts are succeeding with Seward's economic base, which is focused around seven primary economic activities: fishing, tourism, bulk transportation, ship repair services, forest products, education, and government. Seward's efforts to increase economic activity and year-round jobs have resulted in over 300 new jobs and over $125 million of new construction over the last fifteen years. While avoiding tax increases, Seward has been able to maintain existing government service levels as increased revenues have been acquired from user fees, service fees, and payments for public property leases.

A major factor in local economic development was the opening of the state's first maximum security prison in March 1988. As operations of the Spring Creek Correctional Center began in May of the same year, 206 jobs were created to serve the Center's population of 439 inmates. Full capacity employment was attained in November 1988, providing much needed year-round employment to augment the primarily seasonal economy of the area. The facility was financed and constructed by the City of Seward and is being leased by the State of Alaska under a long-term lease agreement signed in October 1985.

Another cornerstone of Seward's efforts to increase full time jobs, private investment, and economic activity, has been the creation of the SMIC. This area contains over 80 acres of prime marine industrial land that Seward is developing for long-term lease to companies needing marine dependent or marine related developable land. Seward has invested over $40 million of state grant and local monies to create this prime industrial development area. The SMIC is the only dedicated marine industrial center in Southcentral Alaska.

In addition to developing industrial land for lease, Seward sponsored the construction of two major ship-lift facilities to provide emergency and normal maintenance repairs to large vessels operating in Alaskan waters. It is the only significant operating ship repair and dry-dock facility in Alaska. The ship repair industry is rapidly growing, with over 600 large boats lifted and repaired to date, and over $5 million per year of gross ship repair billings. New ship repair companies continue to express interest in

establishing operations in Seward, utilizing the city's ship-lifting equipment. Seward's 250-ton travelift, installed in 1990, continues to bring in additional revenues and provides boat owners dry storage and repair options, either by the owner or by several repair businesses available in Seward.

A cargo dock (SMIC North Dock) was completed in 1988. This dock and barge ramp have since been heavily utilized for log unloading, ship mooring, and cargo transfer. Construction of this facility was financed with a combination of state grants and $2.1 million of city general obligation bonds. A SMIC ground lease was negotiated in 1989 with Inlet Fisheries for development of a commercial fish processing facility, where fish are now received and frozen. As part of the lease, the company constructed a dock adjacent to its waterfront plant which was then sold to Seward for $1. This dock and additional dolphins have assisted harbor and port operations in meeting the increased demand for mooring while gaining revenues for the City Harbor Enterprise Fund.

In 1988, Seward executed a long-term ground lease with Chugach Alaska Corporation for construction and operation of a $20 million timber mill which began operations in January 1990. The state-of-the-art mill, which yearly produces 25 million board feet (MMBF) of export and domestic dimension lumber and wood chips, employs over 130 people in timber processing and export. During the summer of 1990, Chugach Alaska constructed a conveyor dock for the purpose of loading ships with wood chips for export to Pacific Rim industries dependent upon wood by-products. The Seward mill is now operating under the name of Seward Forest Products, Inc., a joint venture consisting of Chugach Alaska Corporation, Young & Morgan, and Citifor Corporation (a Chinese forest products company). Mill operations are currently on standby until additional sources of logs are found in southcentral Alaska.

Suneel Alaska, Inc.'s coal terminal continues its operations of receiving coal in Seward from interior mines with expectations to include the future Wishbone Hill coal owned by the Japanese firm of Idemitsu Kosan, and the exporting of this resource to the Far East. With coal resources transported to Seward by the Alaska Railroad, Suneel Alaska, Inc. generates millions of dollars in economic activity in Seward and throughout the Railbelt.

In the summer of 1990, Pacific Telecom Cable, Inc. commenced its project of installing the first direct fiber optic cable between the United States and Japan. The North Pacific Cable project is a joint venture with Pacific Telecom Cable, Inc., International Digital Communications Inc. of Japan, and Cable and Wireless of the United Kingdom. The new cable was landed at Seward and provides fiber optic capabilities to Alaska. Applications of the cable include voice, data, facsimile, video, and enhanced value-added services for financial institutions, corporate users with large traffic volumes, manufacturers, and government agency networks. The Seward terminal has been extended to Anchorage, where connections are available to all other areas of Alaska. Cable repair operations have added considerable monies to Seward's economy.

Seasonal tourism, sport fishing, and commercial fishing have generated increased economic activity. Industry analysts established a visitor activity level of nearly 300,000 visitors during 1993. Seward is a popular one-day trip from Anchorage, due in part to Exit Glacier, Kenai Fjords National Park, and the

scenic qualities of the area in general. An indicator of the success of the tourism industry is the establishment and continuation of seven-day-per-week passenger service to Seward from Anchorage by the Alaska Railroad during the summer months.

Because of the increase in marine and tourist activity, Seward's Small Boat Harbor is heavily utilized and in need of expansion. Plans to develop harbor facilities on the east side of Resurrection Bay have been proposed.

After considerable effort from the City of Seward and other development agencies, Princess Tours, Inc. and Regency, Inc. decided to move all "across the gulf" cruise tours to the Port of Seward starting in May of 1993. During 1994, this has amounted to over 90 ship calls to Seward, with over 100,000 additional passengers and crew passing through town.

3.10.2 Demographics

The 1990 Census enumerated 2,699 people in Seward, which ranked Seward as 19th in size among all Alaska cities. Another 1,238 people lived in the outlying areas of Seward in 1990, for a total of 3,937 area residents. This number includes residents south of the city limits in the Lowell Point Road area near

Spruce Creek, residents east of the city limits along Nash Road, and residents north of the city limits along the Seward Highway.

Table 3-4 shows the 1980 and 1990 gender and age characteristics for Seward, as well as the percentage changes for these characteristics.

From 1980 to 1992, Seward's population increased approximately 10 to 20 percent every four years, as shown in Table 3-5. One component of the large jump in total population during this 12 year period was the opening of the state correctional institution in 1988, which has added approximately 425 inmates to the City of Seward's population count (City of Seward, 1994a).

As in many coastal communities in Alaska, the non-resident population of the Seward area increases several-fold in summer. This is due primarily to the influx of fish processing workers, recreational visitors, campers, and day tourists from cruise ships. Official seasonal population figures are not collected for Seward, and are not reflected in the population figures shown in Table 3-5.

Employment: Average annual employment in Seward increased fairly steadily from 1980 to 1992, as shown in Table 3-6. Average annual wage and salary employment in Seward was 2,039 people employed in 1992. For the first 3 quarters of 1993, the average employment per quarter was slightly higher, at 2,113 people employed. In the first 6 months of 1993, approximately 115 new jobs were filled in Seward. The majority of these jobs were in services, with additional hires in manufacturing, construction, and transportation. Approximately 73 jobs were lost in the first half of 1993, primarily trade jobs, with some losses in government, and in financial, insurance, and real estate as well (Figure 3-8).

TABLE 3-4
SEWARD GENDER AND AGE CHARACTERISTICS
1980 AND 1990

	1980	1990	% CHANGE
TOTAL	1,863	2,699	44.9
Male	1,022	1,593	55.9
Female	841	1,106	31.5
AGE			
0-4	128	205	60.2
5-14	231	341	47.6
15-19	160	135	-15.6
20-24	232	210	-9.5
25-34	400	611	52.8
35-44	221	563	154.8
45-54	186	282	51.6
55-59	85	79	-7.1
60-64	76	104	36.8
65+	144	139	17.4

Source: U.S. Bureau of the Census, 1981 and 1991.

TABLE 3-5
HISTORIC POPULATION OF THE CITY OF SEWARD

Year	Population
1903	83
1920	652
1940	949
1960	1,891
1980	1,873
1982	1,839
1983	1,883
1984	2,038
1985	2,152
1986	2,072
1987	N/A
1988	2,463
1989	2,829
1990	2,699
1991	2,806
1992	2,704

Source: Alaska Department of Labor, 1980-1992.
Note: The Alaska Department of Labor did not publish population estimates in 1987.

TABLE 3-6
AVERAGE ANNUAL WAGE AND SALARY EMPLOYMENT
CITY OF SEWARD

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Total Industries	1,019	1,102	1,175	1,078	1,172	1,232	1,229	1,234	1,190	1,801	1,753	1,851	2,039
Mining	*	*	*	*	*	*	*	*	*	*	*	*	*
Construction	32	29	19	43	62	32	68	101	56	58	63	54	20
Manufacturing	243	316	278	183	169	171	139	157	179	239	312	334	238
Transportation	45	48	73	46	96	138	98	60	84	213	106	118	128
Trade	141	132	147	142	146	175	202	212	173	281	266	323	377
Finance	17	20	20	19	22	23	22	21	21	20	20	21	22
Services and Miscellaneous	175	169	200	197	204	242	226	205	212	190	223	242	283
Agriculture, Fish, Forest	*	*	*	*	*	*	*	*	*	*	*	*	*
Government	337	346	375	385	413	433	441	420	530	637	626	568	618
Federal	34	31	33	35	42	39	52	37	45	44	46	48	50
State	194	203	222	216	230	241	220	208	311	421	416	369	378
Local	109	112	121	134	141	154	169	175	174	172	164	170	190

Source: Alaska Department of Labor, Research and Analysis Section.
* Non-Disclosable

Table 3-7 shows payrolls and average wages by industry for 1992. Government employment is very important in Seward's economy, particularly state government. This includes the state prison, the Alaska Marine Highway System, and the Alaska Railroad. The pie charts in Figures 3-9 and 3-10 indicate where Seward residents work and where their paychecks originate. Government employment is the most significant resource for Seward residents.

TABLE 3-7
PAYROLLS AND AVERAGE WAGES BY INDUSTRY IN SEWARD, 1992

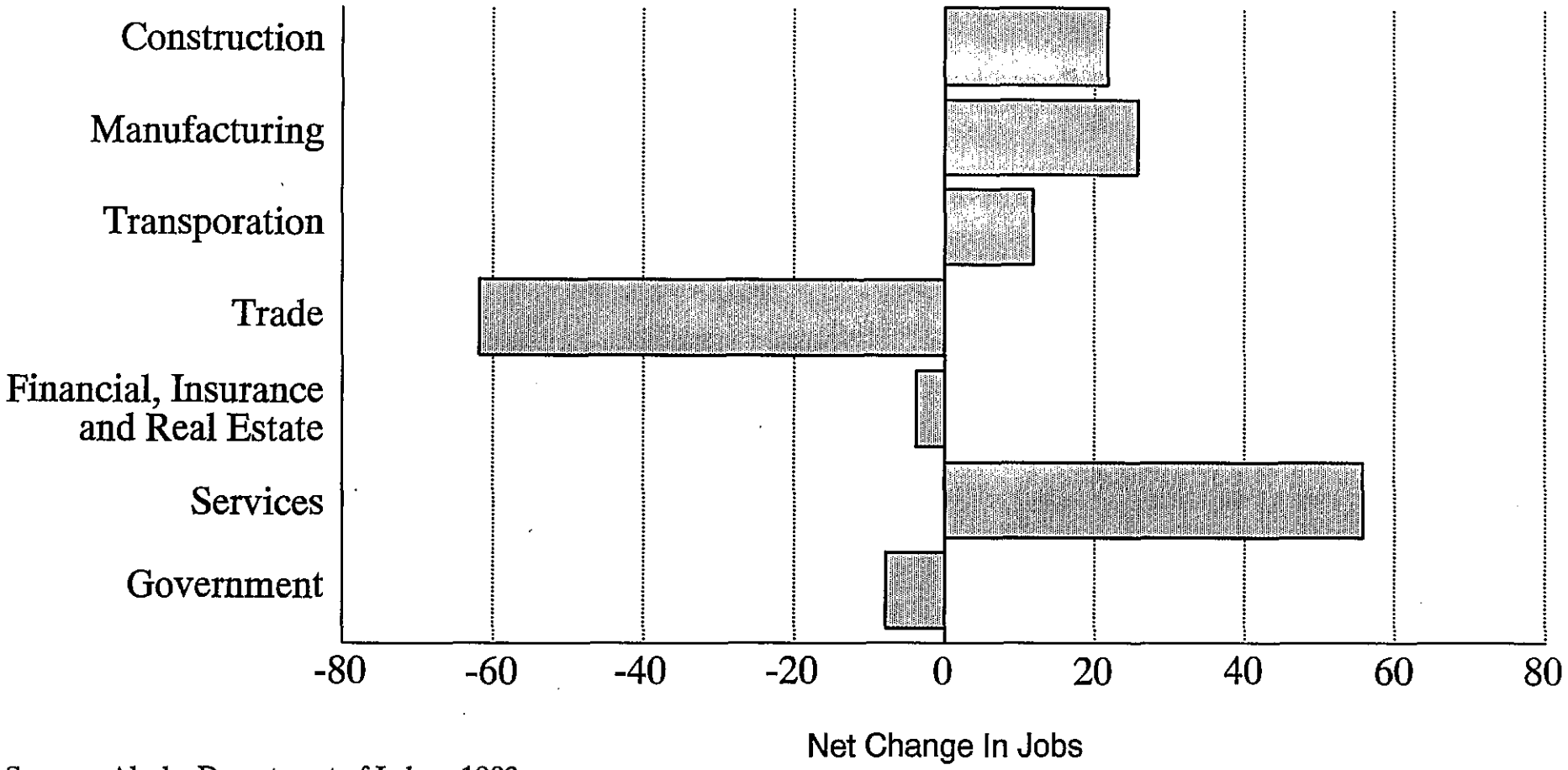
	1st Quarter Total Payroll	2nd Quarter Total Payroll	3rd Quarter Total Payroll	4th Quarter Total Payroll	1992 Total Payroll	Average Monthly Wages
Construction	111,739	113,783	223,843	215,556	664,931	2,748
Manufacturing	1,050,332	1,452,324	2,044,855	905,786	5,453,297	1,903
Transportation, Communication, Utilities	519,629	803,254	968,169	604,358	2,895,410	1,874
Wholesale Trade	846,613	644,878	593,430	470,816	2,555,737	3,163
Retail Trade	927,843	1,198,973	1,151,031	1,009,625	4,687,472	1,259
Finance, Insurance, Real Estate	93,641	104,043	97,109	97,534	392,327	1,458
Services	1,348,753	1,401,898	1,675,212	1,586,128	6,011,991	1,770
Government:						
Federal	328,221	380,635	405,412	389,865	1,504,123	2,490
State	3,921,574	3,956,617	4,216,354	4,155,992	16,250,537	3,911
Local	1,020,460	764,414	991,583	938,037	3,714,494	3,037

Source: Alaska Department of Labor, unpublished data, 1992.
Note: Data for Agriculture, Forestry, Fishing, and Mining are non-disclosable due to confidentiality laws.

Figure 3-11 shows the change in quarterly employment in eight sectors in 1990 and 1991. Summer increases in seafood processing (shown as manufacturing), retail trade, and transportation/ utilities account for much of the seasonal fluctuation. Due to these fluctuations, unemployment in Seward can be as high as 18.3 percent in winter and as low as 8.7 percent in summer. Table 3-8 depicts quarterly employment in Seward for 1990-1991. Employment was higher in the second and third quarters (April through September) of each year than the annual average employment for most categories and for the total industries.

Seward Employment Trends

First Half of 1993



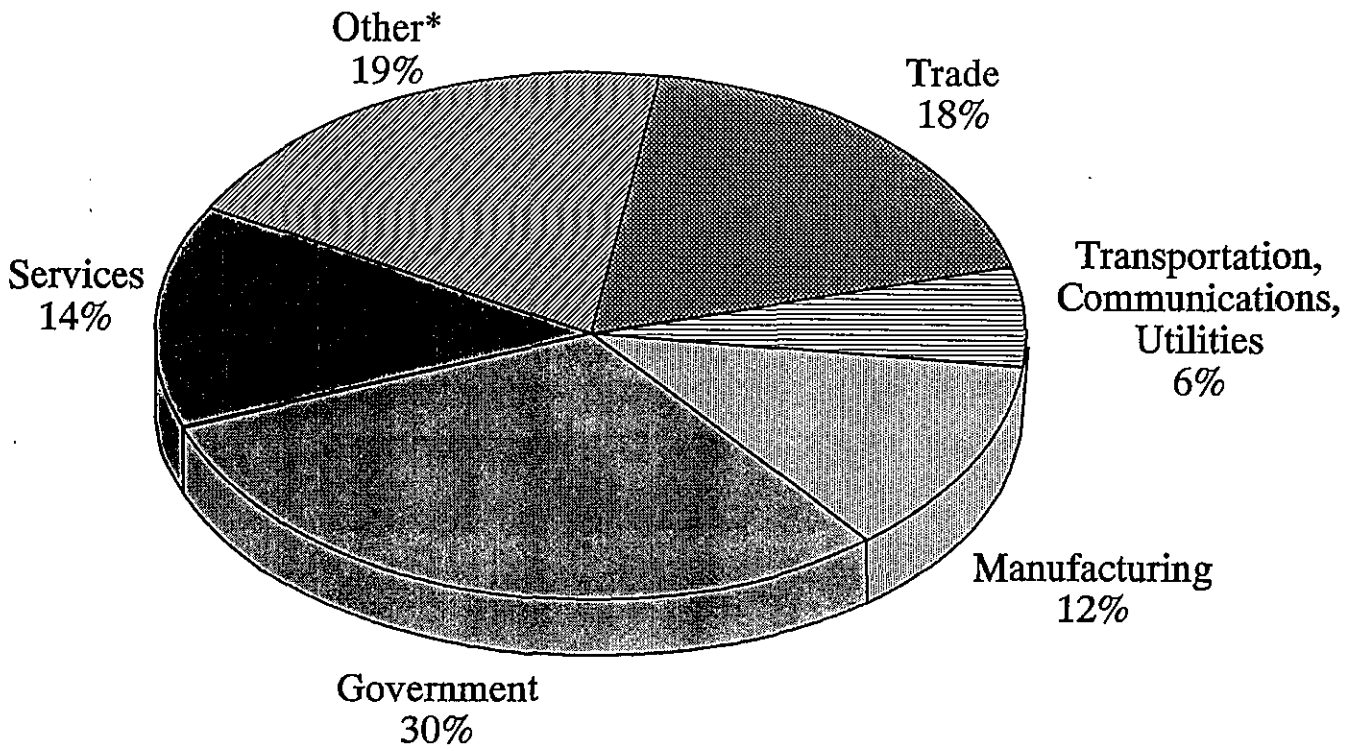
Source: Alaska Department of Labor, 1993.

SEWARD EMPLOYMENT TRENDS

Job No. 28347-002-160
DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 3-8

Where Seward Residents Work



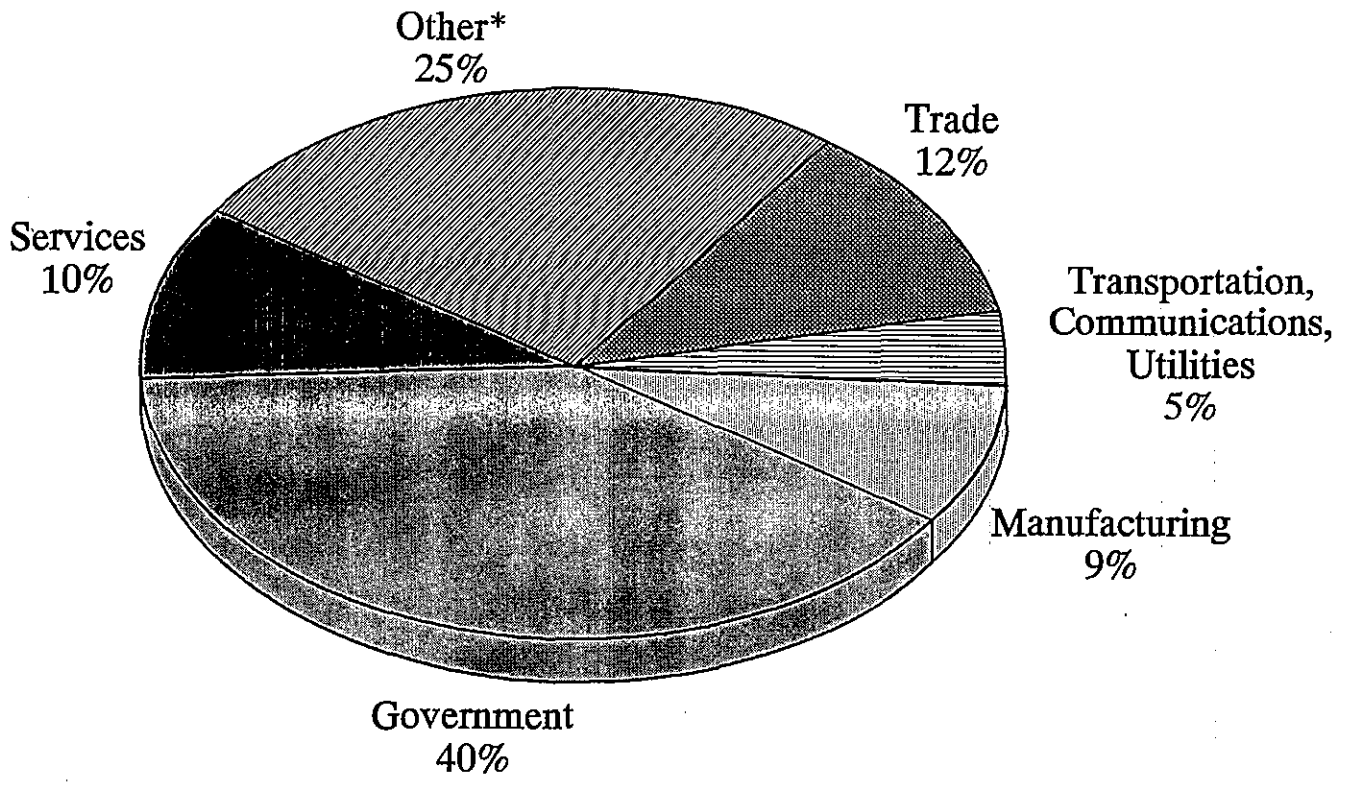
* Mining, Construction, Finance, Agriculture, Fish, and Forest
Source: Alaska Deptartment of Labor, Research and Analysis Section

WHERE SEWARD RESIDENTS WORK

Job No. 20347-002-160
DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 3-9

Where Seward Paychecks Come From

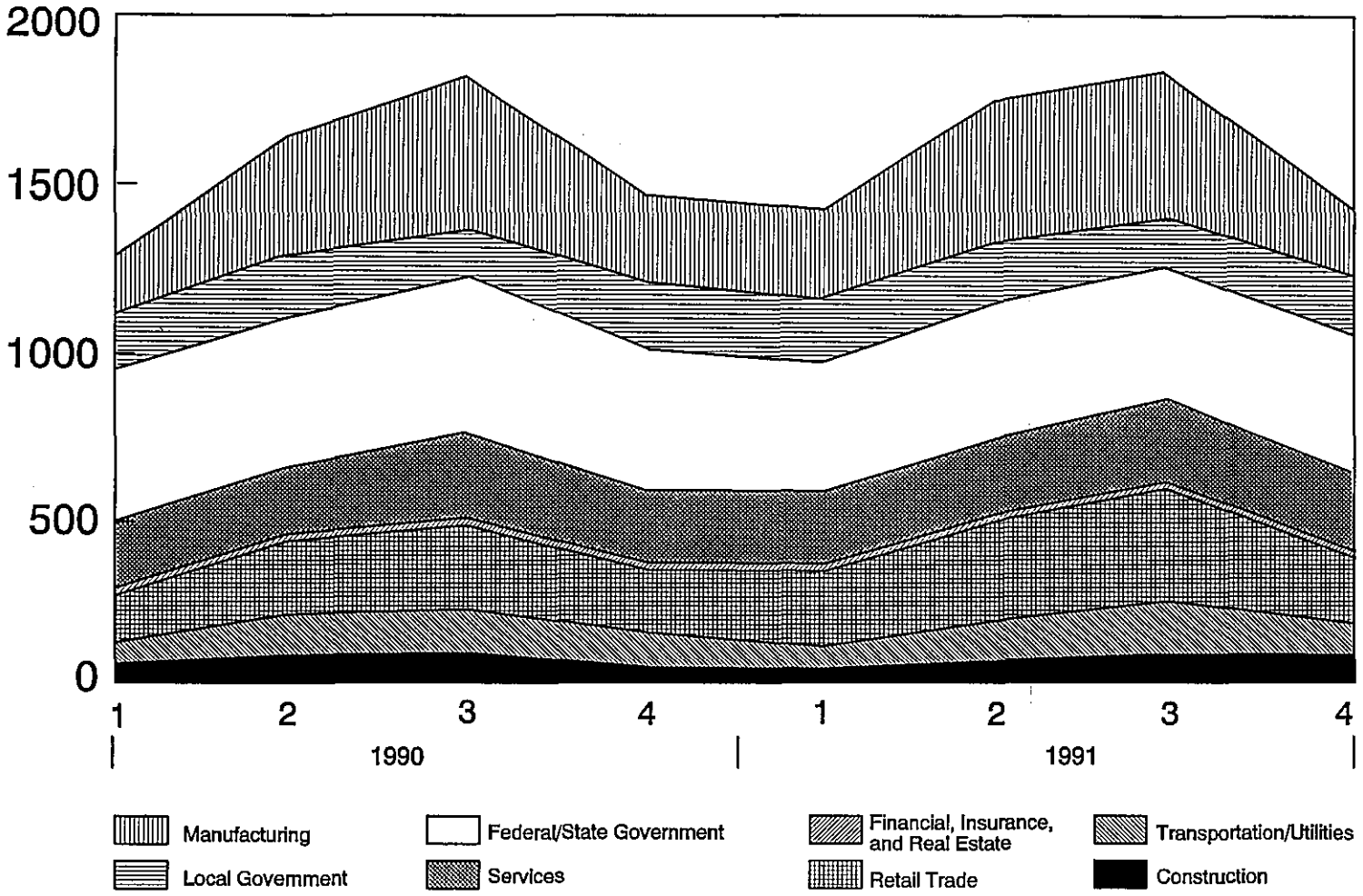


* Mining, Construction, Finance, Agriculture, Fish, and Forest
Source: Alaska Deptartment of Labor, Research and Analysis Section

WHERE SEWARD PAYCHECKS COME FROM

Job No. 20347-002-160
DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 3-10



CHANGE IN QUARTERLY EMPLOYMENT, 1990-1991

Job No. 28347-002-160
DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 3-11

TABLE 3-8
SEWARD QUARTERLY EMPLOYMENT
1990-1991

	YEAR/QUARTER				Annual	YEAR/QUARTER				Annual
Industry	90/1	90/2	90/3	90/4	Average	91/1	91/2	91/3	91/4	Average
Total Industries	1,477	1,858	2,042	1,634	1,753	1,656	1,996	2,101	1,649	1,851
Mining	0	0	0	0	0	0	0	0	0	0
Construction	41	75	86	50	63	39	55	72	48	54
Manufacturing	163	352	470	261	312	260	427	437	212	334
Transportation	66	113	136	110	106	79	131	165	97	118
Trade	202	305	323	233	266	270	353	384	285	323
Wholesale	51	72	61	52	59	51	57	57	64	57
Retail	151	233	262	181	207	219	296	327	221	266
Finance	20	21	20	19	20	19	20	23	21	21
Services, Miscellaneous	192	211	257	231	223	230	241	258	240	242
Agriculture, Fish, Forest	150	141	147	101	135	170	178	204	139	173
Government	643	641	603	629	629	589	591	558	607	586
Federal	43	49	51	41	46	40	49	53	48	48
State	428	415	418	401	416	364	369	362	381	369
Local	172	177	134	187	168	185	173	143	178	170

Source: Alaska Department of Labor, unpublished data, 1992.

Employment figures for the major employers in Seward are not routinely collected, but some of the employers in Seward with 20 or more employees are shown in Table 3-9.

Income: In 1990, household median income in Seward was $37,049, and per capita income was $16,615 (both figures are in 1989 dollars). Fourteen percent of the population lived below the poverty line (Alaska Department of Labor, 1991).

In 1992, as in the past, state government employees were paid the highest average monthly wages, and state government had the highest total payroll of all classifications of employers (as shown in Table 3-7). Retail trade workers were paid the lowest average monthly wages; the lowest total payroll was in the financial, insurance, and real estate industries.

TABLE 3-9
SEWARD EMPLOYERS WITH 20 OR MORE EMPLOYEES

NUMBER OF EMPLOYEES	EMPLOYER
65	Alaska Vocational Technical Center (M. Echard, pers. comm., 1994)
209	Spring Creek Correctional Institution (K. Martin, pers. comm., 1994)
89	City of Seward (City, 1994a)
23	University of Alaska - Institute for Marine Science (T. Smith, pers. comm., 1994)
20+	National Park Service (seasonal)
20+	Eagle Quality Center (Store)
20+	Harbor Enterprises (Fuel services)
20+	Northern Stevedoring and Handling Corp. (Longshore services)
50-350	Seward Fisheries / Icicle Seafoods (seasonal) (A. Green, pers. comm., 1994)
37	Seward Forest Products Co. Sawmill (B. Wright, pers. comm., 1994)
138	Seward General Hospital and Wesley Rehabilitation and Care Center, Inc. (R. Jones, pers. comm., 1994)

Source: City of Seward 1994b; and various officials, as noted.
Note: N/A indicates that figures had not been obtained by the time this document went to press.

3.10.3 Community Infrastructure and Service Characteristics

The City of Seward provides a full range of municipal services to its residents including utilities, public safety, education, and health services. A description of these services is provided in this section. Other city services related to transportation, the port and harbor, recreation, tourism, cultural, and historic resources are described in other sections of this EIS.

Utilities: Seward's current utility services are described below, including information on the providers, capacity, usage, rates, recent developments, and identified needs. A utility rate study was completed by R.W. Beck in 1993. The resulting proposed changes in rates were adopted by the City Council in June 1993. Current rates are presented in Table 3-10.

Water

The City of Seward provides water to its residents from a combination of groundwater sources and mountain surface supply. The groundwater sources supply water at 3,800 gpm while the surface water supplies water at 800 gpm. Total water reserves equal 620,000 gallons. Recent water consumption has averaged 1.2 million gpd. The City of Seward 2010 Comprehensive Plan identified in 1990 that water capacity was adequate at that time, "but the infrastructure is old and will eventually be in need of replacement" (City of Seward, 1990b).

Several measures have been taken by the City in recent years regarding water service, including the restriction of development in the Lowell Creek watershed area to protect the city's potable water supply, and the extension of water service to the SMIC. In addition, two new wells have been installed at Fort Raymond with one well upgraded.

TABLE 3-10
CURRENT UTILITY USER RATES AND SERVICE CHARACTERISTICS FOR CITY OF SEWARD

WATER	Residential	$24.10/month (Equivalent Residential Unit or ERU)
	Commercial/Industrial	Based on number of ERU, or if metered, a minimum of $12.00/month + $3.03/1,000 gallons for 1st 50,000 gallons.
	Size of Water Mains	6 to 14 inches
	Source	Wells and mountain surface
	Consumption	1,480,000 gallons daily average
SEWER	Residential	$34.00/month (ERU)
	Commercial/Industrial	Based on number of ERU, or if metered, a minimum of $29.00/month + $425/1,000 gallons for 1st 10,000 gal.
	Size of Water Mains	6 to 12 inches
	Treatment	Secondary Lagoon
ELECTRIC	Residential Meter Charge	15.00/month
	Commercial Meter Charge	$30.00/month
	Industrial Meter Charge	$100.00/month
	Residential Power Cost	$0.0917/kwh
	Commercial Power (<50 kw)	$0.1120/kwh
	Commercial Power (>50 kw)	$<200 kwh is $0.014/kwh each additional kwh $13/kw
	Industrial Power (>750 kw)	Demand Charge $0.0141/kwh $14.94/kwh Demand Charge
REFUSE	Residential	$10.85
	Commercial	$8.65/month minimum with quantity discounts based on number of pickups and containers

Source: City of Seward, 1994a.

Sewer

The Seward wastewater system serves the immediate city and, on a separate system, the Fourth of July Creek area. Outlying areas, including the airport and Cliff Addition, are not currently served by the system.

Current usage is approximately 700,000 gpd through the sewer main and pump station. The system has a capacity of twice that volume. Wastewater is treated at the Lowell Point wastewater treatment plant, located approximately one mile south of the central business district.

Electric

The City of Seward purchases most of its electrical power from Chugach Electric Association. Power is supplemented with five diesel generators. Total capacity for Seward is 10.5 megawatts (MW). Total consumption in 1993 was 50 million kilowatt hours (D. Calvert, personal communication, 1994). The electric utility service area extends north of the city limits to approximately Mile 24 of the Seward Highway.

Several improvements have been made to the city's electrical system in the past several years. The power system has been upgraded to include the 115 KV line from Mile 44 to Mile 25. The power line from mile 18 to mile 3 has also been upgraded to 115 KV capacity, however, that segment is energized only to 69 KV. Two additional power generators have been installed for emergency backup service. The comprehensive plan calls for upgrading of electrical distribution and underground burial of electrical corridors where possible.

Solid waste and recycling

Solid waste generated in Seward is collected by a contracted service, Jason Enterprises. The Seward landfill, located on the north edge of town, was closed in 1992 and replaced by a solid waste transfer facility located near Forest Acres Subdivision. The landfill closure and replacement facility was supported by a Kenai Peninsula Borough bond issue. Recyclable materials are collected by volunteer groups in Seward, and delivered to the Seward transfer facility for transport to a recycling facility in Anchorage.

Telephone

The local telephone utility is General Telephone Company (GTE) of Alaska. Long distance service is provided by ALASCOM and GCI. The system has a capacity of 10,000 lines, with over 2,300 lines currently in service (City of Seward, 1994a). Minimum monthly rates are $12.55 for residential and $17.70 for commercial customers.

Fuel supply

Home heating fuel is available from Marathon Fuel and Shoreside Petroleum. Current costs per gallon are approximately $1.11 for #2 heating oil at a bulk rate. Propane is also available at approximately $37.00 per 100 pound cylinder refill, or $1.32 per gallon, bulk rate (City of Seward, 1994a).

Housing: In 1990, the total number of housing units in Seward was 1,010. The majority are single-family detached units. Most households are occupied by families, or are group quarters. The vacancy rate for all housing in Seward was 12 percent in 1990 (Table 3-11).

TABLE 3-11
SEWARD HOUSING CHARACTERISTICS FOR 1990

TOTAL HOUSING UNITS 1,010			
OCCUPANCY		**HOUSING VALUE** (Owner Occupied Units)	
Occupied Housing Units	886	Less than $50,000	22
Owner Occupied	420	$50,000 - $99,000	201
Renter Occupied	466	$100,000 - $149,000	103
Vacant Housing Units	124	$150,000 - $199,000	28
UNITS IN STRUCTURE	1010	$200,000 - $299,000	9
1 Unit Detached	542	$300,000 or more	1
1 Unit Attached	32	Median Value	$92,400
2 - 4 Units	154	**RENTAL RATES**	
5 - 9 Units	120	Less than $250.00	73
10 or more Units	120	$250.00 - $499	198
Mobile Home, Trailer	42	$500 - $749.00	134
HOUSEHOLDS BY TYPE	886	$$750.00 - $999.00	25
Families	536	$1,000 or more	6
Married Couple	399	Median Rent	$434.00
Male Householder	31		
Female Householder	106		
Non-Family	350		
Persons per Household	2		
Persons Living in Group Quarters	511		

Source: U.S. Bureau of the Census, 1991.

The vacancy rate for rental units in early 1993 was 6.8 percent (Table 3-12). This is comparable to the vacancy rate for many coastal cities in Alaska, which was also less than 10 percent at that time. Median monthly rent in 1993 was $490.00, compared with $434.00 in 1990. This may indicate a decline in the supply or an increase in demand for rental units over the past few years.

TABLE 3-12
FIRST QUARTER 1993 STATISTICS FOR MULTI-FAMILY UNITS IN SEWARD

Median Rent	Vacancy Rate	Heat	Hot Water	Electric	Water	Sewage	Garbage Service	Furnished
$490.00	6.8 %	86.4 %	45.8 %	37.3 %	91.5 %	91.5 %	91.5 %	20.3 %

Source: Alaska Department of Labor, Research and Analysis, 1991.
Note: Survey of 59 units in Seward.

Approximately half of the owner-occupied housing units are valued in the range of $50,000 to $99,000. Only six percent of owner-occupied units are valued at less than $50,000 and only 10 percent are valued at $150,000 and higher, indicating a lower supply of units at the low and high ends of the market (Table 3-11). In multi-family housing, there is a low supply of the smallest and largest units. Over 50 percent of the 382 units are in the two bedroom category (Table 3-13).

TABLE 3-13
MULTI-FAMILY UNITS IN CITY OF SEWARD
BY NUMBER OF BEDROOMS

Efficiency	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5+ Bedroom	Total
12	134	195	37	4	0	382

Source: 1990 Census. Estimates based on specific samples of census data (Summary Tape File 3A adjusted by the Public Use Micro-Data Sample) derived by the Alaska Department of Labor.

Temporary housing is required for students of multi-day courses offered at the Alaska Vocational Technical Center. Temporary housing is also required for researchers doing work at the existing IMS facilities. Approximately 85 to 100 researchers per year are stationed at the existing IMS facility, for varying lengths of stay. Four two-bedroom apartments on the existing IMS property are owned by the University and made available to short-term researchers. Scientists stationed for longer terms must locate housing in Seward on their own. Additional need for temporary housing occurs when school groups visit Seward overnight from schools too distant to make the round trip in one day (T. Smith, personal communication, 1994).

During the summer, the influx of workers in the fishing industry and recreational visitors increase the demand for accommodations. Camping areas are provided for fish processing workers, and camping occurs in many unauthorized areas as well (D. Brosso, personal communication, 1994).

Approximately 800 building lots are currently available in the Seward area; however, a limiting factor for new housing is the shortage of affordable lots developed with city utilities. Lot prices generally range from $20,000 to $30,000, regardless of the level of utility service available. Given the current median income figures for Seward households, the price of purchasing a lot for development is out of reach for many would-be home buyers. Therefore, lots in this price range are not eligible for subsidized financing.

School System and Education: Seward's public schools are operated by the Kenai Peninsula Borough. These include Seward Elementary School, with a current enrollment of 483 students in pre-school through sixth grade; and Seward Junior/Senior High School, with an enrollment of 354 students in grades seven through twelve (Kenai Peninsula Borough School District, 1994).

A new elementary school with 22 classrooms opened in 1990 and has a capacity of 500 students, 17 more students than are currently enrolled. The high school has 38 classrooms and a rated capacity of 700, but an actual capacity of 650, or 296 students more than are currently enrolled.

Twenty-two teachers are employed at the elementary school, resulting in a teacher-to-student ratio of 1:23. Twenty-eight teachers are employed at the junior/senior high school with a teacher-to-student ratio of 1:13 (City of Seward, 1994a). Seward Public Schools do not currently offer curriculum or programs in marine science or fisheries (M. Fleming, personal communication, 1994).

Educational attainment among Seward's population of 25 years and older is as follows: 88 percent are high school graduates and 15 percent are college graduates. Various educational resources outside the public schools are available to Seward residents. The IMS Seward Marine Center supports the K.M. Rae Building visitor center which houses exhibits on the marine environment and sponsors lectures and educational programs for the public. The K. M. Rae Building is open from Memorial Day through Labor Day, with special events scheduled occasionally during the year. The UAF also offers college courses in Seward. Seward's comprehensive plan calls for increasing the number of courses offered, and the location of a University of Alaska campus in Seward by, or before, the year 2000.

The Alaska Vocational Technical School offers training in nautical skills, fisheries technology, first aid, office occupations, food services, oil technology, forestry skills, and other vocational areas. Campus facilities include classrooms, a dorm, a student service center, and parking.

The Kenai Fjords National Park Visitor Center is open all year, offering environmental education through lectures and programs for the public.

Health and Social Services: Health and social services in Seward revolve around the two largest medical facilities in town, the Seward General Hospital and the Wesley Rehabilitation and Care Center. The hospital, owned by the city and supported in part by sales tax revenues, is a 32-bed facility providing general acute care through its emergency room, intensive care unit, and a coronary care unit. Ancillary services include a laboratory with a pathologist providing standard diagnostic services, radiological and

fiber optic diagnostics, obstetrical care, and physical therapy. All physicians on staff at the hospital are trained in Advanced Cardiac Life Support and Advanced Trauma Life Support. Their specialty care services are augmented by visiting doctors from Anchorage.

Seward's comprehensive plan identified improvement of medical facilities as a top priority in the near future, including the need for a new hospital or significant hospital improvements. Primary concerns are for outpatient services, emergency services, trauma services, and lab expansion. Seward has requested $9 million from the Alaska Legislature for these improvements. The hospital is currently recruiting for another physician, and construction is funded and scheduled for new emergency and trauma rooms. One goal of the hospital is to consolidate all local health providers into a single health services facility for greater operating efficiency.

The Wesley Rehabilitation and Care Center is a 66-bed, specialized sub-acute rehabilitation center with extended care, therapy, and nursing home services. The only other rehabilitation unit in Alaska is located at Providence Hospital in Anchorage. Wesley receives patients referred from around the state for long-term rehabilitation, post trauma therapy, and counseling. The Wesley Center is owned by the United Methodist Church and has limited funds.

Several additional health services are provided locally. Three physicians and two physician's assistants practice at the Resurrection Bay Health Center Clinic, which is owned and operated by Seward General Hospital. The Northstar Clinic serves Seward's Alaska Native population, supervised by one of the hospital's physicians. Other health care professionals include 2 dentists with 4 assistants; an optometrist, who visits Seward from Kenai; and a public health nurse who provides well baby care. The Seward Life Action Council offers mental health counseling and crisis intervention services. Two ambulance services operate in the Seward area --the Seward Volunteer Ambulance Service and the Bear Creek Ambulance Service. The latter also provides service to the communities of Cooper's Landing and Hope.

Seward health providers maintain close connections to Anchorage services, particularly Providence Hospital. Medivac helicopter service and fixed-wing emergency transport are available from Seward. Medical staff also work closely with rescue teams from the U.S. Coast Guard and Forest Service.

The demand for health and social services increases in the summer months in Seward, particularly for tourism-related minor injuries and emergency care. The hospital gears up for this by adding more physicians during the peak periods in July and August (R. Jones, personal communication, 1994)

Police, Fire, and Emergency Services: The City of Seward has developed its police operations on the assumption that if a major event, such as an earthquake, were to occur, three days could pass before assistance is available from outside sources. The police department has a 24-hour dispatch center with state-of-the-art communications, including: 911 service with monitors to display in-caller information; phones for the hearing impaired; marine VHF; emergency Citizens Band radios; and civil defense phones. Vehicles include five police cars and one animal control vehicle. Facilities and services include: the police station, built in 1964; a 14-inmate jail; vehicle registration; driver licensing; animal licensing and control; and school drug awareness programs.

Demand for police protection in the central business district is mainly attributed to thefts, alcohol-related crimes, trespassing, and domestic violence; all of which increase in summer months with the increased population and activity. The biggest problem is parking during summer weekends when the population can rise from 3,000 to 9,000. Peak visitation numbers occur during the two biggest events of the summer--the Fourth of July/Mount Marathon Race weekend, and the Silver Salmon Derby which starts the second Saturday in August and runs for nine days (D. Brosso, personal communication 1994).

Fire department capabilities include: two fire stations; four 1,250 to 1,500 gpm pump trucks with booster tanks; one reserve pumper; and two rescue/utility trucks. There are two hydrant systems on the city side of the bay and one on the east side of the bay. Staffing in the city service area consists of a full-time fire chief, deputy, and 28 volunteers. The Bear Creek Fire Service Area operates for the outlying areas near Seward under the auspices of the Kenai Peninsula Borough. Twenty volunteers support this station.

In recent years, Seward has improved its capability to receive alarms and dispatch responses to provide water and to fight fires. These improvements may result in an improved rating of overall fire protection service when the system is reviewed by the Insurance Services Office in the next year or two. Improved Insurance Services Offices ratings can reduce insurance premiums for commercial facilities. There is room for improvement in the fire station, however, for safety purposes and space, and for training capability. The Fire Department believes their coverage is adequate, and good for an Alaska community. Water supply and pressure in the vicinity of the IMS facility is more than sufficient to meet current demands (J. Gage, personal communication 1994).

The Seward Volunteer Ambulance Corps provides emergency medical services, with 18 trained volunteers. Two Type-1 Advance Support Ambulances are in service. The Bear Creek Fire Service Area has 14 Emergency Medical Technician volunteers, a dive rescue team, and search and rescue response capability (City of Seward, 1994a).

3.10.4 Seward Fiscal Characteristics

Revenue Characteristics: Table 3-14 presents revenue and expenditure characteristics for the City of Seward for fiscal year 1993, which ended June 30, 1993. Revenues and expenditures are presented under general funds, special funds, capital projects, and total funds. Totals for 1992 are presented for comparison. The major sources of revenues are taxes, followed by charges for services and intergovernmental transfers. Those three sources were primary in 1992 as well. In 1993, however, taxes and intergovernmental transfer revenues decreased while charges for services increased. Other revenue sources which increased included assessments, fines, and bails.

Of the total tax revenues, sales tax revenues were $1,286,358, comprising half of the total, and property taxes were $515,286, comprising 20 percent of the total. Principal taxpayers are shown in Table 3-15. In 1993, sales taxes were levied by the city (3 percent) and also by the Kenai Peninsula Borough (2 percent). Property taxes were levied by the city (3.0 mils) and the Borough (8.55 mils). Total property

TABLE 3-14
REVENUES, EXPENDITURES, OTHER FINANCING SOURCES AND CHANGES IN FUND BALANCE
1992 AND 1993

	General	Special Revenue	Capitol Projects	Total 1993	Total 1992
Revenues					
Taxes	$2,509,708	-	-	$2,509,708	$2,627,050
Assessments	32,573	-	-	32,573	6,505
Licenses/Permits	64,025	-	-	64,025	74,005
Intergovernmental	983,759	372,742	38,824	1,395,325	1,618,209
Charges for Services	2,384,723	-	-	2,384,723	1,879,663
Fines/Bails	41,892	-	-	41,892	18,158
Interest	236,986	-	-	236,986	245,872
Miscellaneous	47,862	2,848	110	50,820	133,784
Total Revenues	6,301,528	375,590	38,934	6,716,052	6,603,246
Expenditures					
General Government	1,779,085	247,547	-	2,026,632	2,207,372
Public Safety	1,682,176	-	-	1,682,176	1,674,732
Public Works	689,209	-	-	689,209	692,653
Parks/Recreation	471,045	-	-	471,045	493,106
Library	184,274	16,801	-	201,075	208,215
Capitol Outlay	-	-	203,008	203,008	799,308
Debt Service	367,509	-	-	367,509	345,265
Total Expenditures	5,173,298	264,348	203,008	5,640,654	6,420,651
Excess of Revenues over Expenditures	1,128,230	111,242	(164,074)	1,075,398	182,595
Other Financing Sources					
Operating transfers from other funds	3,195	5,570	511,598	520,363	78,718
Operating transfers to other funds	(954,168)	(113,866)	(178,195)	(1,246,229)	(666,108)
Net other financing sources	(950,973)	(108,296)	333,403	(725,866)	(587,390)
Excess of revenues and other financing sources over expenditures and other financing uses	177,257	2,946	169,329	349,532	(404,795)
Fund balances at beginning of year	2,831,247	3,792	67,795	2,902,834	3,350,629
Residual equity transfers from other funds	-	-	-	-	100
Residual equity transfers to other funds	(42,637)	-	-	(42,637)	(43,100)
Fund balances at end of year	2,965,867	6,738	237,124	3,209,729	2,902,834

Source: City of Seward Comprehensive Annual Financial Report for Fiscal Year Ended June 30, 1993.
Notes from Financial Report: "The General Fund is the general operating fund of the City...the Special Revenue Funds are used to account for dedicated revenues derived from such sources as state grants, specific City operations and other sources."

valuation in 1993 was $170,311,500, of which $111,378,100 was real property and $58,933,400 was personal property. A substantial amount of tax exempt property is located in Seward, including the existing IMS facilities.

TABLE 3-15
CITY OF SEWARD PRINCIPAL TAXPAYERS
JUNE 30, 1993

Taxpayer	Type of Business	91/92 Assessed Valuation	Percent of Total Assessed Valuation
Seward Forest Products	Sawmill	$14,327,180	8.65
Seward Fisheries	Seafood Processing	7,214,156	4.35
Suneel Alaska Corp.	Coal Export	6,842,050	4.13
Anderson Tug & Barge	Tug & Barge Service	3,901,164	2.35
Kenai Fjords Tours	Boat Tours	2,221,503	1.34
New Seward Hotel	Hotel	2,156,305	1.30
Eagle Quality Center	Grocery Store	1,891,867	1.14
General Telephone of Alaska	Telecommunications	1,691,220	1.02
Breeze Inn	Hotel/Restaurant	1,655,782	1.00
Afognak Logging	Construction	1,613,583	0.97

Source: City of Seward, 1994 and Kenai Peninsula Borough.
Note: Figures include real and personal property.

City Expenditure Characteristics: The primary expenditure categories are general government, public safety, public works, parks and recreation, public library, capital outlay, and debt service (Table 3-14). Of total expenditures, general government and public safety comprise 36 percent and 30 percent respectively. In 1993, Seward ran a total excess of revenues over expenditures of $1,075,398, an increase of 489 percent from 1992. The total of fund balances also increased to $3,209,729, a jump of 10 percent from 1992.

In addition to the General Fund, the city manages certain services using Enterprise Fund Accounts. In 1993, these services were utilities (electric, water, sewer, and refuse), harbor and port related services, the Seward General Hospital, and the grain terminal. The funds are operated with the intent that the costs of public services be recovered through user charges. Periodically, revenues earned in an enterprise fund may be spent for capital maintenance, public policy, management controls, accountability, or other purposes. (City of Seward, 1994b).

Two other types of funds exist: Special Revenue Funds and Capital Projects Funds. Special Revenue Funds account for city expenditures of dedicated or restricted revenue sources such as grants and revenue sharing. In 1993, these funds were allocated for the following programs:

- Drug Awareness Rehabilitation Program
- Prison Library
- Historic Preservation Plan
- Spring Creek Correctional Center
- Police Fund
- Summer Youth Employment and Training Program
- Litter Control
- Day Care Assistance
- Interlibrary Cooperation Grant
- State Revenue Sharing
- Public Library

Capital Projects Funds are established for revenues and expenditures used to acquire permanent assets. Capital Projects Funds in 1993 were allocated for the following projects.

- Senior Citizens Center
- Streets and Sidewalks
- Library Handicapped Access
- Jail Sprinkler
- Bike Path
- Hospital Fire Alarm System
- City Hall Elevator
- Waterfront Improvement
- Underground Storage Tanks
- Capital Acquisition Fund
- Hospital Boiler

3.10.5 Social Environment/Quality of Life

As a community, Seward has taken many deliberate steps to retain and improve the quality of life enjoyed by residents and visitors. Investments in city services and infrastructure, educational and economic opportunity, health and social services, housing, recreation, and cultural and historic assets have been described above. Many of these efforts and investments have resulted from comprehensive planning by the citizens and officials of Seward. The goal of Seward's comprehensive plan, completed in 1985, was to make Seward a better place to live and work. The plan states:

> "Because most of its development took place after the 1950's, Seward retains its historic small town scale and flavor. Well-kept older homes line paved streets; downtown stores are concentrated within easy walking distance of each other; larger commercial and industrial development is isolated from residential areas; and the city shows few of the awkward growing pains of haphazard development found elsewhere in the Borough. The challenge for Seward is to retain these unique qualities, while accommodating the growth in business services, public facilities, and housing which most residents have long awaited."

The 1985 comprehensive plan identified numerous priority tasks for Seward. Five years later, over 60 significant tasks had been accomplished. In 1990, the comprehensive plan was updated and additional community goals were identified. The purpose of this plan was also to enhance the quality of life in Seward during the ensuing 20 years. The comprehensive plan describes aspects of the "successful Seward of 2010";

> "A city known for its high standards of community appearance...for its healthy and diverse economy...which has thoughtfully planned the development of land within the community...which is extremely accessible with modern air, marine, rail and highway access to and from points

throughout the world...with a full range of educational opportunities...with a full range of modern public facilities and services...with a government that operates efficiently and is responsive to the desires of its residents."

In 1993 and 1994, additional efforts have been made to identify community needs and preferences, and to translate them into action. Two annual City of Seward Community Surveys have been conducted to seek public ratings and input on city services, improvement projects, and likes/dislikes about life in Seward. An additional initiative in 1994 is the Seward Partnership Meeting, intended to form a vision of Seward for the year 2003, the city's centennial. Specific projects will be pursued during the next 10 years.

These plans and surveys reveal factors of the quality of life in Seward. While these factors may be expressed differently by different participants, certain factors are repeated frequently. Positive factors about the quality of life in Seward, as expressed by its residents, include the following:

- Pristine natural resources
- Recreational opportunities
- Low crime rates
- No traffic lights or parking meters
- Slow pace of life
- High quality public services
- Cultural variety
- Highway and boat accessibility
- Small town community atmosphere
- Less congestion than other towns
- Good place to raise children
- Business and job opportunities
- Heritage and history

Certain negative factors about the quality of life in Seward have been identified repeatedly by its residents. They include the following:

- Poor climate
- Drug and alcohol abuse
- Lack of shopping options
- Lack of cultural activities
- Lack of parking
- Cost of local government and services
- Need for beautification of public and private property
- Shortage of full-time, year-round employment
- Isolation from other towns
- High living expenses
- High taxes
- Influx of tourists and crowding
- Lack of housing options

3.11 RECREATION AND TOURISM

3.11.1 Introduction

The City of Seward is one of Alaska's foremost recreation and tourism attractions. Located at the western end of Prince William Sound, the city offers a combination of scenery, diverse recreation and tourism activities, and excellent transportation access. The Chugach Mountains and Prince William

Sound create a scenic natural setting. Resurrection Bay is popular for many different types of boating and fishing activities. Special annual events such as the Mt. Marathon run on the Fourth of July and the Seward Silver Salmon Derby in August bring large numbers of visitors to town each year. Seward's proximity to Kenai Fjords National Park, Chugach National Forest, the Alaska Maritime National Wildlife Refuge, and Caines Head State Park provide additional attractions for visitors.

Seward's Small Boat Harbor is one of four serving the population of southcentral Alaska, and has a waiting list for slip space. In addition to being the southern terminus of both the Seward Highway and the Alaska Railroad, Seward receives weekly ferry service through the Alaska Marine Highway System, and is an increasingly popular stop for cruise ships visiting Alaska waters.

Popular outdoor recreation activities include various forms of boating, fishing, and camping. The majority of use occurs during the summer months, but continues throughout the year. The City of Seward provides and operates several recreation facilities around town that include campgrounds, day-use areas, playgrounds, ball fields, and shoreline fishing access.

Tourism is an important element of Seward's economy. In addition to sight-seeing, several fishing and other marine charters operate out of Seward. Commercial tour operators such as Princess Tours, Holland America/West Tours, and Regency Cruise Lines include Seward as part of their itinerary, taking advantage of highway, railroad, ferry, tour bus, and cruise ship connections.

3.11.2 Recreation Activities and Facilities

Boating: Seward is one of four major recreational boating centers in Southcentral Alaska, along with Homer, Valdez and Whittier. The Seward Small Boat Harbor, with boat slips and launch facilities, and the attractions of Resurrection Bay are major factors in boating popularity. Recreational boating includes motorized vessels, sailboats, and smaller non-motorized craft such as sea kayaks. The majority of boating activity originates in the vicinity of the Seward Small Boat Harbor and, to a lesser extent, at the Fourth of July Creek facilities off of Nash Road. Popular boating activities include fishing and general excursions in Resurrection Bay, and travel to areas further out, such as the Alaska Maritime National Wildlife Refuge and Aialik Bay in Kenai Fjords National Park. The majority of recreation boating activities occur during the summer months, with increased activity during the Seward Silver Salmon Derby in early August.

The City of Seward operates the Small Boat Harbor at the northwest end of Resurrection Bay. It has slips for 650 vessels of varying lengths: there is up to an 8-year waiting list for slip space. There have been discussions regarding the development of an additional harbor complex; a private boat harbor facility has been proposed for an area to the east, off of Nash Road.

Fishing: Fishing is a major recreational activity in Seward. Stocks include silver, pink, and king salmon, halibut, dolly varden, rockfish and ling cod. Much of the fishing activity occurs from boats, particularly for silver salmon, halibut, and rockfish. Boat-based salmon fishing begins in outer Resurrection Bay as salmon begin showing up, and moves closer towards Seward as the run progresses.

The Seward shoreline offers excellent access for shore-based fishing, particularly for silver salmon. Popular shoreline fishing areas include the Waterfront Park south of the ball fields, and in the vicinity of the proposed project site from Founders Monument to the west side of the Municipal Dock. Three Seward festivals are centered on fishing; the Seward Silver Salmon Derby, the King Salmon Derby, and the Seward Halibut Tournament.

Camping: Due to the high number of visitors to Seward during the summer, tent and RV camping occurs at several locations within the city limits (Figure 3-12). RV and tent camping occurs at the eastern end of the project site in the vicinity of the Seward Founders Monument at the Iditarod Campground. Camping is also allowed in other areas of Waterfront Park (Marathon, Resurrection North and South) which lies between the proposed project site and the Small Boat Harbor. Other camping areas include Forest Acres Park, and the Spring Creek area on Nash Road across Resurrection Bay.

Table 3-16 shows capacity and other characteristics for the ten municipal campgrounds. The Iditarod Campground, which includes a portion of the proposed project site, accounts for approximately 13 percent of municipal RV campground space, and 13 percent of estimated annual camper use in Seward. This is a popular location due to its waterfront location. The three largest municipal campgrounds are located to the north of the proposed project site along the Waterfront Park. Municipal campgrounds are at capacity during peak use periods such as Fourth of July and the Seward Silver Salmon Derby; spaces are usually available during the rest of the summer season (K. Sturdy, personal communication, 1994).

TABLE 3-16
CAPACITY AND CHARACTERISTICS OF CITY CAMPGROUNDS

Campground	RVs	Tents	Estimated campers per season[1]	Port-a-Potties	Picnic Tables	Percent of RVs	Percent of Campers per Season
Waterfront Park							
Marathon	100	10	5,400	3	4	17	18
Resurrection North	130	15	4,500	3	6	22.3	15
Resurrection South	130	15	4,800	3	6	22.3	16
Iditarod	75	0	3,900	3	2	12.9	13
Tent Area	0	75	3,900	0	5	0	13
Spring Creek	20	50	1,500	2	0	3.4	5
Forest Acres	30	50	1,500	1	1	5.2	5
Seaview	90	10	4,500	3	4	15.5	15
Grassy Knoll	7	35	*	0	0	1.2	N/A
City Total	**582**	**260**	**30,000**	**18**	**28**	**100**	**100**

Source: City of Seward, 1994f.

[1] Calculated as number of spaces occupied.

In addition to municipal facilities, both the U.S. Air Force and U.S. Army operate recreation facilities within city limits that are available for use by military personnel and their dependents. Camping is allowed at these facilities. A private operator provides 40 RV spaces near the Small Boat Harbor. Private operators also provide RV and tent camping at Millers Landing and north of town along the Seward Highway.

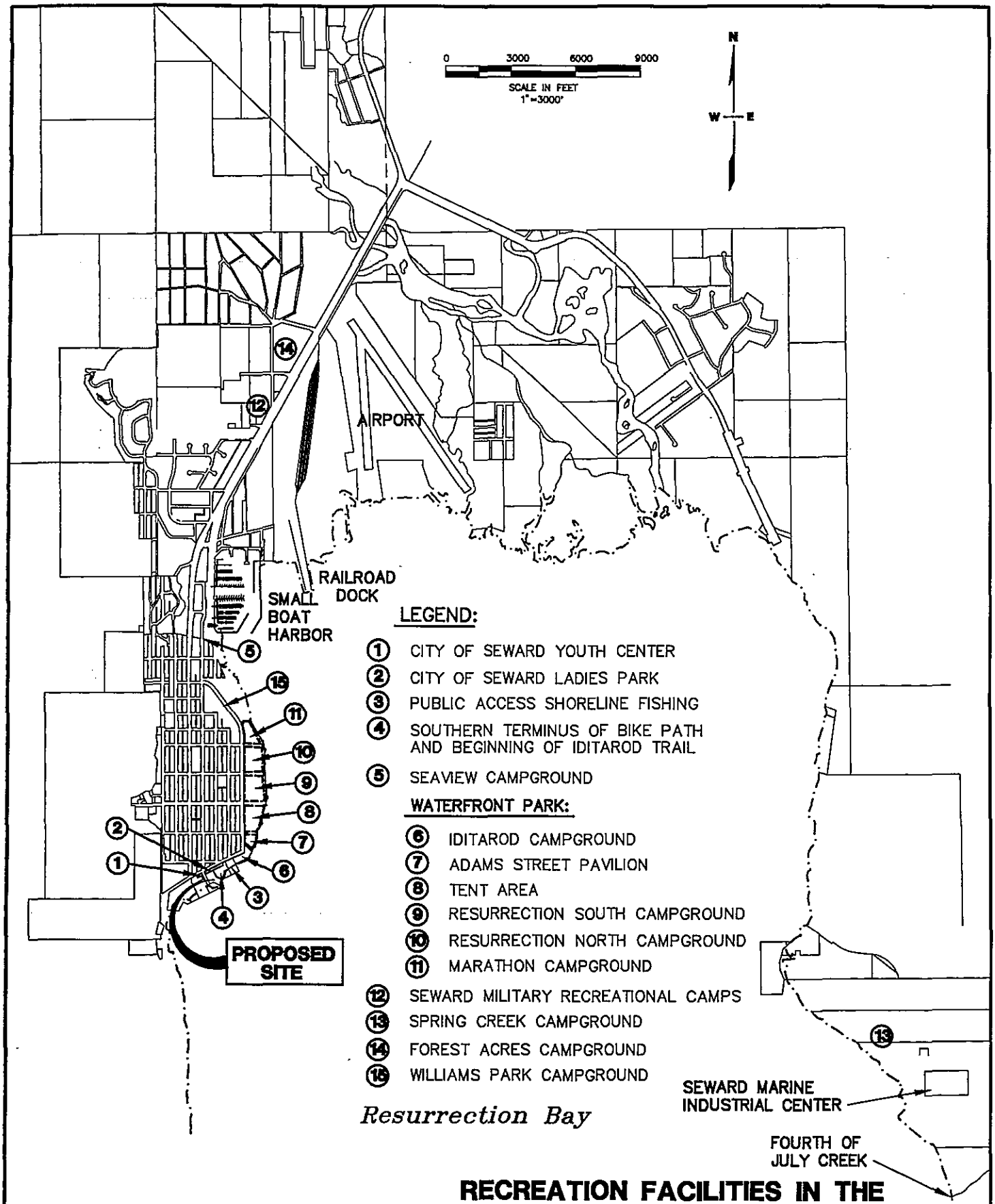
Day Use: General day use recreation activities include picnics, ball games, use of bike paths, and parks. There are several facilities in Seward where these activities occur, although many are concentrated along the shoreline between the Small Boat Harbor and the proposed project site (Figure 3-12). Both residents and non-residents participate in these activities. Recreation facilities in the vicinity of the proposed project site include the Ladies Park (also known as Hoben's Park, Niles Park, and Iditarod Park), and the southern terminus of a bike path that extends north along Waterfront Park to the Small Boat Harbor. The Adams Street and Wellington Pavilions are covered pavilions provided as part of Waterfront Park.

Special Events: Several special recreation/tourism events occur every summer in Seward that attract large numbers of visitors; the most well-known are the Mount Marathon run held on the Fourth of July and the Seward Silver Salmon Derby held in early August. Mount Marathon run activities are concentrated at the start/finish point in town and along the access area to the top of 3,022-foot Mount Marathon. Up to 200 entrants and thousands of spectators usually participate in the annual run.

The annual Seward Silver Salmon Derby usually begins the second Saturday of August and lasts nine days; 1993 was the Derby's 38th year of operation. Thousands of anglers participate in the Derby hoping to win prizes for the largest fish and for tagged fish. Prize money totals more than $50,000. Other organized events include the summer King Salmon Derby, the Halibut Tournament, and the Polar Bear Jump Off Festival in late winter.

Federal Lands and Facilities: The Chugach National Forest, one of two national forests in Alaska, borders Seward to the north and east. Several U.S. Forest Service campgrounds and trailheads are located along the Seward Highway between Seward and Anchorage. A ranger station is located in Seward.

Seward is considered the gateway to the 650,000 acre Kenai Fjords National Park. The park includes the Harding Icefield and several fjords to the southwest of Seward. Access to the park is provided at Exit Glacier (Mile 3.7 of the Seward Highway), through flight-seeing air charters, cruise ship stops, and marine charter excursions from Seward. A visitor center, ranger station, picnic area, and walk-in campground are located at Exit Glacier, which is only open during the summer. A second visitor center is located near the Small Boat Harbor next to the harbormaster's office. Annual visitation has been increasing during recent years, and over 200,000 visitors were recorded in 1993, which is a 57 percent increase from 1992 (Table 3-17).



RECREATION FACILITIES IN THE PROPOSED PROJECT VICINITY

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DAMES & MOORE

IMS PROPOSED INFRASTRUCTURE PROJECT
SEWARD, ALASKA
FIGURE 3-12

TABLE 3-17
KENAI FJORDS NATIONAL PARK VISITATION
1990 - 1993

Point of Entry	1990	1991	1992	1993
Exit Glacier	37,670	65,029	60,024	125,194
Seward Visitor Center	33,180	42,944	48,792	
Cruise Ships/Charter Boats	81,541	79,887	98,157	102,044

Source: National Park Service, 1994

In addition, portions of the Alaska Maritime National Wildlife Refuge are located within the southern end of Resurrection Bay, and include islands south of the bay, such as the Chiswell and Pye Islands. As with the Kenai Fjords National Park, half and full-day sightseeing tours traverse through or stop at portions of the Alaska Maritime National Wildlife Refuge.

The U.S. Air Force and U.S. Army operate the Seward Military Recreational Camps on 23 acres of land leased from the City of Seward. The camps are located on the west side of the Seward Highway between the entrance to the cemetery (Aspen Lane) on the south and Hemlock Street on the north. Air Force facilities consist of 12 mobile home trailers; four motel trailers; 32 RV spaces (22 with electrical hookups); 36 tent/campsite spaces; and an administrative complex (with dining hall, game room, laundry, and shop). Army facilities include 24 duplex units; a 40-bed wooden barracks; 46 RV sites (40 with electrical hookups); and 17 tent sites.

In 1989, visitation averaged 18,000 visitor days over three years at the Air Force facility, and 19,000 visitor days at the Army facility. Visitor days are calculated as 1 visitor present at the facility for part or all of one day, totalled on an annual basis.

State Facilities: Caines Head State Park consists of 6,000 acres located on the west side of Resurrection Bay, approximately 6 miles south of Seward. It is accessible only by boat or by a 4.5-mile trail that starts at Lowell Point. The park contains bunkers, gun emplacements, and other World War II facilities associated with Fort McGilvray. It is a popular destination for sea kayakers.

Municipal Facilities: As indicated in the previous section on recreation activities, the City of Seward operates several recreational facilities including campgrounds, day parks, and bike paths. Table 3-18 shows Seward Municipal Campground revenue and visitor nights. Camping areas are included in Waterfront Park, the block south of the harbor breakwater, Williams Park, SeaView, Forest Acres campground and the Spring Creek area within the SMIC across Resurrection Bay (Figure 3-12).

TABLE 3-18
SEWARD MUNICIPAL CAMPGROUND REVENUE AND VISITOR NIGHTS
1990 - 1993

Year/Month	Camper Nights	Revenue	Year/Month	Camper Nights	Revenue
1990			**1992**		
April	131	$ 655	April	337	$ 1,611
May	715	3,586	May	1,653	9,011
June	1,681	8,414	June	5,250	29,552
July	2,894	17,883	July	9,744	55,259
August	5,361	29,820	August	7,416	42,606
September	786	4,502	September	1,596	9,363
Totals	**11,568**	**$64,860**		**25,996**	**$147,402**
1991			**1993**		
April	0	$ 0	April	224	$ 1,156
May	1,076	5,703	May	2,129	12,210
June	3,350	18,907	June	5,659	32,482
July	6,897	40,667	July	11,227	64,958
August	7,271	42,233	August	7,994	46,116
September	915	6,282	September	1,810	10,502
Totals	**19,509**	**$113,792**		**29,043**	**$167,424**

Source: City of Seward, 1993.

3.11.3 Tourism Activities and Facilities

Seward receives visitors from three major sources; Alaskan residents, cruise ships, and non-resident/non-cruise ship visitors. Visitors arrive by highway, rail, ferry, and cruise ships. In 1993, approximately 150,000 Alaskan resident, 160,000 cruise ship, and 130,000 non-resident/non-cruise ship visitors came to Seward. All of the cruise ship and most of the Alaskan resident and non-resident/non-cruise ship visitation occurs between June 1 and September 15.

Organized Tours and Tour Companies: Several cruise ship tour companies operate from Seward or include it in their itineraries. The number of berths available and estimated schedules for cruise ships docking in Seward in 1994 are presented in Table 3-19. Dockings will occur every day except Tuesday with two to three ships docking each day from Friday through Monday. The estimated number of cruise ship visitors to Seward in 1994 is 173,102. Cruise ship dockings have increased from 13 in 1985 to an estimated 94 in 1994 (Table 3-20). A 90 percent increase occurred from 1992 to 1993 and another 50 percent increase (from 61 dockings in 1993 to 94 dockings) is estimated to occur in 1994.

TABLE 3-19
SEWARD CRUISE SHIP BERTHS AND ESTIMATED 1994 SCHEDULE

Vessel Name	Port Day	Number of Berths
Rotterdam	Sunday	20,052
Star Princess	Saturday	26,892
Sky Princess	Saturday	25,200
Fair Princess	Thursday	16,650
Universe	Monday	3,150
Golden Odyssey	Monday	3,030
Sagafjord	Wednesday and Saturday	21,852
Noordam	Sunday	21,852
New Amsterdam	Sunday	12,744
Regent Sea	Friday	17,280
Regent Star	Friday	N/A
Total	**94 Dockings**	**173,102**

Source: Thomas Martin and Associates, 1993.

Regency Cruise Lines moved their operations to Seward in May of 1994. As with other cruise lines, their cruise ships are part of a "circle tour," with passengers either starting or ending their cruise in Seward.

TABLE 3-20
CRUISE SHIP DOCKING IN SEWARD, 1985 - 1994

Year	Dockings	Year	Dockings
1985	13	1990	29
1986	21	1991	28
1987	18	1992	37
1988	31	1993	61
1989	27	1994 (est.)	94

Source: Seward Chamber of Commerce, 1994.

Alaska Sightseeing/Cruise West offers limited optional tours to the Kenai Peninsula. They primarily use smaller vessels for Prince William Sound cruises. Holland America includes Grayline and Westmark subsidiaries, and operates cruise ships that call on Seward. Like other cruise lines, they operate a "circle tour" with Seward as a start/end point with Grayline bus connections to Anchorage.

Princess Lines is one of the largest tour companies serving Alaska and has the largest presence in Seward and the Kenai Peninsula, including the Princess Lodge at Cooper Landing (Thomas Martin and Associates, 1993).

Federal Facilities: Federal facilities, both recreation- and tourism-oriented are discussed in Section 3.11.2.

State Facilities: The IMS Seward Marine Center operates a public education facility in the K.M. Rae Building. The facility has a gift shop and exhibit space that includes aquarium tanks with representative sealife. Lectures are occasionally offered in the auditorium. Initially, the education facility was operated every day from Memorial Day through the Labor Day Weekend; it is currently open to the public five days a week during the same period. It is not actively promoted other than through posters placed at various locations around town. Sales revenues from the gift shop go to UAF and are not subject to the city sales tax.

The facility is also available by appointment for visits during southcentral Alaska school field trips. These visits primarily occur during the spring in conjunction with other activities, such as low tide beach walks and visits to other nearby facilities. In 1993, 20 schools visited the facilities, future visitation is dependent on school budgets. Table 3-21 shows Rae Building visitation over the last three years.

TABLE 3-21
INSTITUTE OF MARINE SCIENCE K.M. RAE BUILDING VISITATION
1991 TO 1993

Year	Operating Season	Days Open	Visitors
1991	May 31-September 1	7 days/week	2,000
1992	May 31-September 1	6 days/week	7,000
1993	May 31-September 1	5 days/week	8,200

Source: Melanie Shumacher, Personal Communication, 1994.

Private Charters and Facilities: Lodging for visitors to Seward is provided by bed and breakfast operators and motels/hotels. There are currently 17 bed and breakfast establishments in Seward. They provide 37 units of lodging and approximately half are open year around. Seven hotel and motel establishments operate in Seward, providing 248 rooms year around. Two new hotels have been proposed to the city: the Sea Inn Hotel, with 42 beds, to be located across from the proposed project site; and the Sleep Inn, with 45 beds, to be located in the harbor area. In addition, 104 beds have been added to the existing Marina Motel.

Numerous sport fishing and marine charter companies operate out of Seward, providing half-day and full-day tours of Resurrection Bay, the Alaska Maritime National Wildlife Refuge, and the Kenai Fjords National Park. Charter companies that have operated in Seward in the past include: Kenai Fjords Tours, Mariah Charter and Tours, Seward Fishing Adventures, Quicksilver Charters, Major Marine Tours, Kenai Coastal Tours, Aurora Charters, Mackinaw Charters, Sablefish Charters, and Saltwater Safari Company.

Municipal/Local Facilities: There are two municipal or local facilities that cater to tourists--the City Museum and the Chamber of Commerce Information Cache. The Museum is located on the corner of Third Avenue and Jefferson Street and offers exhibits related to Seward's role in World War II, the 1964 Earthquake, and other historical events and figures. Visitor statistics indicate that the museum had 9,023 visitors in 1992 and 9,170 visitors in 1993. The Chamber of Commerce operates the "Railcar Seward" Information Cache at Third Avenue and Jefferson Avenue. Monthly visitor statistics have been kept for the months of May through September; annual totals were kept for 1988 - 1990. Visitation grew from 14,396 in 1988 to a peak in 1992 of 30,185, while 1993 visitation was 24,383. July is the normal peak visitor month (10,856 in 1992).

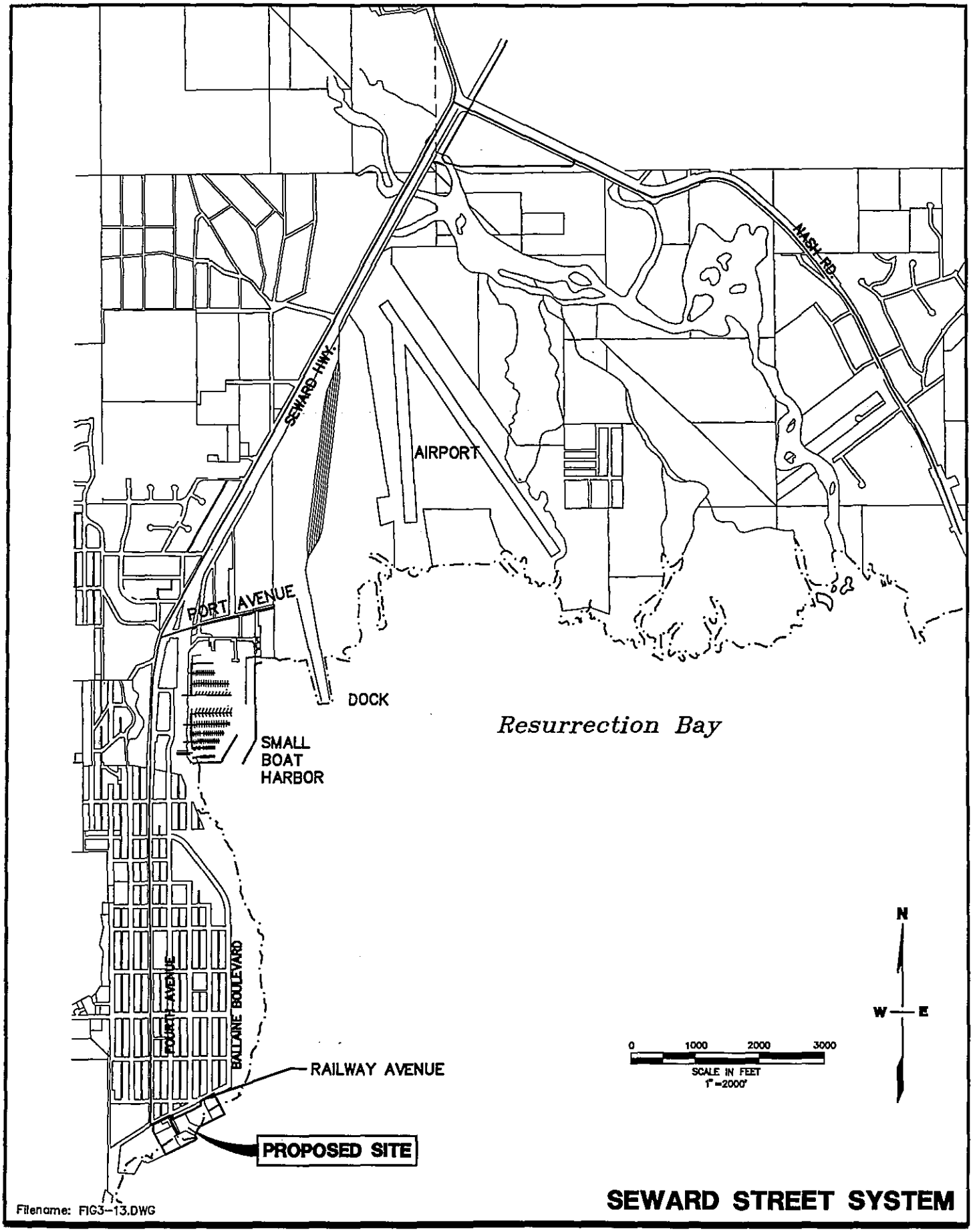
3.12 TRAFFIC AND TRANSPORTATION

This section describes the existing traffic, transportation, circulation, and parking conditions in the Seward area. Information was obtained from state and local agencies, personal communications, previous studies, and literature reviews.

3.12.1 Seward Street System

The Seward Highway is the only route in and out of Seward, providing access between Seward and Anchorage and destinations on the Kenai Peninsula. At the north Seward city limits, the Seward Highway is a two-lane roadway with 12-foot travel lanes and 4-foot paved shoulders. The posted speed limit is 55 miles per hour north of the airport and 35 mph to the south (Figure 3-13). In the downtown area, the Seward Highway becomes Third Avenue, both state roadways which are maintained by ADOT/PF. As shown on Figure 3-13, Third Avenue/Seward Highway provides the principal access route to and from Seward and the proposed project site. Other primary roadways include: Nash Road, which extends to the east side of Resurrection Bay; Port Avenue which serves the railroad dock at the north end of the bay; and Fourth Avenue, Railway Avenue, and other downtown streets near the proposed project site.

Nash Road intersects the Seward Highway just north of the city limits and provides access to the residential, commercial, and institutional development on the east side of Resurrection Bay (Figure 3-13). Nash Road is a two-lane roadway with a posted speed limit of 55 mph in the vicinity of the Seward Highway intersection. A left turn lane is provided at the Nash Road intersection. Approximately two miles southeast of the Seward Highway intersection the speed limit is reduced to 35 mph and there is an uphill grade in the southeast direction. As shown in Figure 3-13, Port Avenue intersects the Seward



Filename: FIG3-13.DWG

SEWARD STREET SYSTEM

Job No. 28347-002-160

DAMES & MOORE

IMS PROPOSED INFRASTRUCTURE PROJECT
SEWARD, ALASKA
FIGURE 3-13

Highway immediately north of the Small Boat Harbor. It also intersects with Fourth Avenue which serves the marina and other waterfront uses in the Small Boat Harbor area.

Fourth Avenue is a wide, two-lane street with parking generally allowed on both sides of the street. In the downtown commercial area, the on-street parking consists of angled parking spaces. Fourth Avenue provides a direct connection between the existing ferry dock, through the downtown retail core, and north to the Small Boat Harbor area.

The street system in downtown Seward is laid out in a grid pattern (Figure 3-13). North-south streets are treated as through routes with stop signs controlling traffic on the intersecting east-west streets. Third and Fourth Avenues are the principal routes leading in and out of the downtown area. Third Avenue is the extension of the Seward Highway; it is designated as Third Avenue from Port Avenue south to the southern terminus. Fourth Avenue provides access to the ferry dock at the proposed project site, and to the Small Boat Harbor area to the north. On-street parking is allowed on most streets, except at intersection approaches. Some on-street parking adjacent to the primary retail and commercial areas of downtown is "angle parking," which provides higher parking densities.

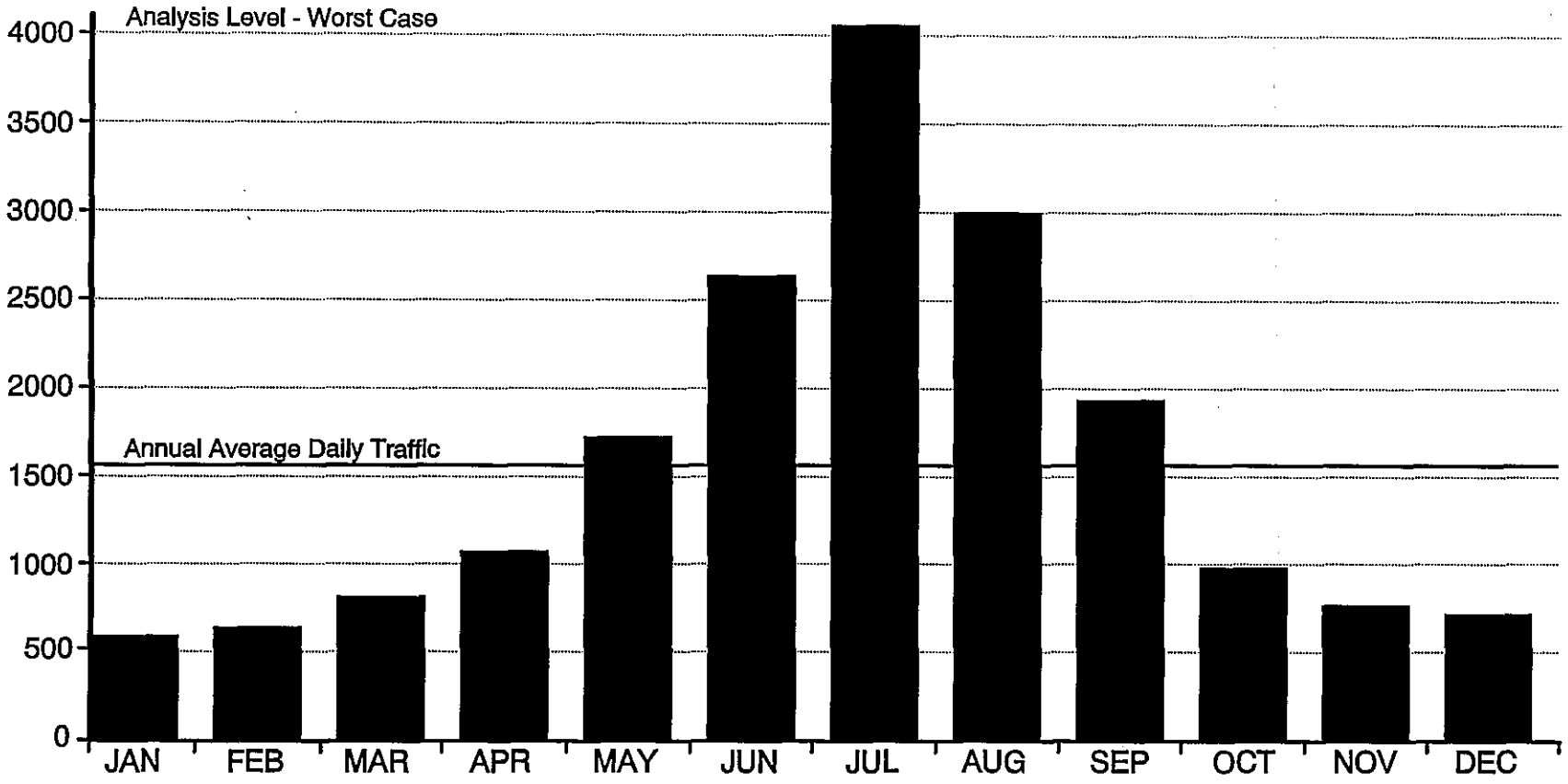
Railway Avenue is an east-west street located along the north edge of the proposed project site. To the east, Railway Avenue becomes Ballaine Boulevard which runs north-south along Resurrection Bay, providing access between the proposed project site and the Small Boat Harbor. To the west, Railway Avenue becomes Lowell Point Road and provides access to residential development on Lowell Point, approximately 2.5 miles to the south. Adjacent to the proposed project site, Railway Avenue is paved approximately 40 feet wide, with a 66 foot wide right-of-way, and on-street parking on both sides of the street. East of Fourth Avenue, there are curbs, gutters, and sidewalks on both sides of the street except for the sidewalk on the north side of the street which ends at Sixth Avenue. No curbs, gutters, or sidewalks are provided on Railway Avenue west of Fourth Avenue.

3.12.2 Traffic Volumes

Traffic volumes in the Seward area vary widely from winter to summer, reflecting the high level of visitors and related tourism activity present during the summer. The variation can be seen in Figure 3-14 which summarizes 1993 average daily traffic volumes by month for the Seward Highway in the vicinity of Moose Pass, approximately 25 miles north of Seward. This traffic volume data was obtained from ADOT/PF and was established from traffic counters near Moose Pass at a station on the Seward Highway.

As shown in Figure 3-14, traffic volumes are higher than the annual average from May to September and below average during the remaining months. Peak traffic volume occurs in July; approximately 2.3 times the annual average volume and 5.7 times higher than the lowest volume which occurs in January. Average daily traffic volume during July is 20 percent higher than in August, the next highest month.

Average Traffic Volumes



AVERAGE TRAFFIC VOLUMES

Job No. 28347-002-160
DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 3-14

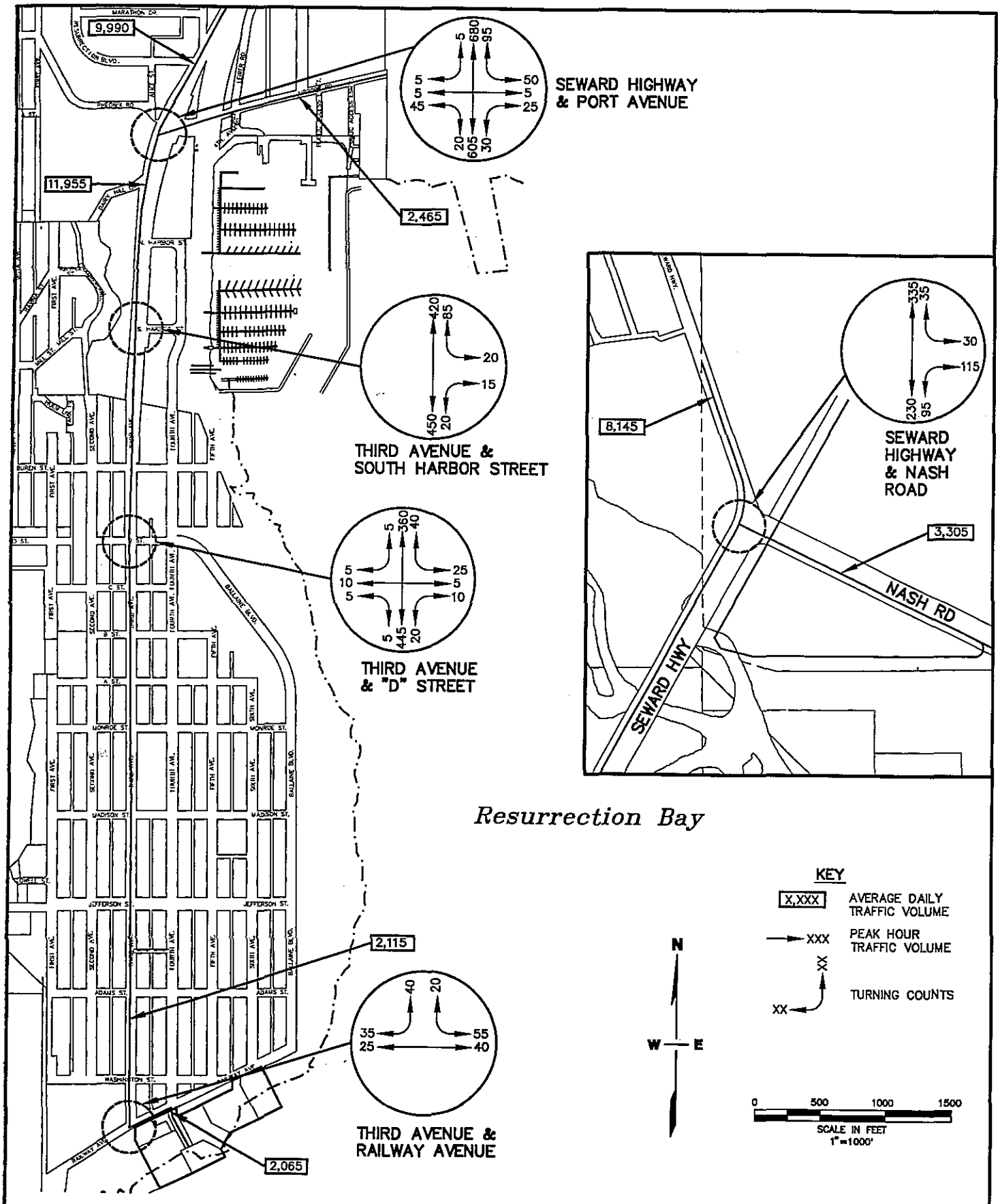
It was recognized that the data from Moose Pass may not accurately reflect the variation in traffic experienced on other roadways and in Seward. Data from Homer was also reviewed as part of this examination. The Sterling Highway leading to Homer had a 2.1 seasonal adjustment factor between the highest month of the year and the annual average traffic volume; other streets within Homer indicated that a 1.2 seasonal adjustment was appropriate.

For the purposes of this analysis, a seasonal adjustment factor of 2.3 was applied to the Third Avenue/Seward Highway thoroughfare. An adjustment of 1.65 was applied to all other streets. It was recognized that application of the 2.3 factor to Third Avenue within Seward would likely overestimate the seasonal adjustment that occurs, however, the higher resulting traffic volume would provide the basis for a more conservative analysis of traffic conditions.

Discussions with ADOT/PF traffic staff suggested that the seasonal variation experienced by the Sterling Highway through the town of Soldotna may be a more representative indication of the seasonal variation likely to be experienced by Third Avenue/Seward Highway within Seward, because the nature of travel and the highway traffic volume is similar. The seasonal adjustment factor for this section of the Sterling Highway is 1.7 between a peak month and the annual average condition, indicating that peak month traffic volume is generally 70 vehicles higher than those occurring during the average of the entire year. This factor is very consistent with the 1.65 factor applied to all streets in Seward, except Third Avenue/Seward Highway.

Existing Traffic Volumes: Figure 3-15 summarizes 1994 existing average daily and afternoon peak hour traffic volume for the peak summer month. The volume is based on 1992 and 1993 data from ADOT/PF which have been adjusted to a 1994 scenario using a 4 percent annual growth rate. The 4 percent rate is equivalent to the recent annual increases in traffic volumes on the Third Avenue/Seward Highway. This growth rate was confirmed by ADOT/PF staff, who reviewed traffic growth along three street segments of Third Avenue/Seward Highway since 1986. Using a weighted average which considered the street segment length, a growth rate of 4.2 percent was determined (Dan Kelly, personal communication, 1994). All traffic volumes shown in Figure 3-15 have also been seasonally adjusted to reflect the peak summer month condition described above. This approach will assure that the traffic impacts associated with the proposed project will be evaluated in a context of peak background traffic volumes. This approach also assumes that the proposed project will experience its peak activity during the summer months.

As shown in Figure 3-15, average daily traffic volumes on Third Avenue/Seward Highway during the peak summer month are highest at nearly 12,000 vehicles in the vicinity of the Small Boat Harbor and north to Nash Road. Traffic volumes decrease north of Nash Road to about 8,100 vehicles. In the vicinity of the proposed project site, daily traffic volumes are significantly lower with approximately 2,100 vehicles on Third Avenue near Railway Avenue. The same pattern can be seen in afternoon peak hour volumes. The highest peak hour volumes occur in the vicinity of the Small Boat Harbor, while the lowest peak hour volumes occur in the downtown area.



Filename: FIG3-15.DWG

EXISTING PEAK MONTH TRAFFIC VOLUMES

Job No. 28347-002-160

DAMES & MOORE

IMS PROPOSED INFRASTRUCTURE PROJECT
SEWARD, ALASKA
FIGURE 3-15

The high level of tourist activity during the summer results in a relatively high proportion of RVs on Seward area roadways. RVs tend to be highly visible due to their size and relative lack of maneuverability when compared with typical passenger vehicles. ADOT/PF data indicates that RVs account for approximately 4 percent of traffic volumes on the Seward Highway in the vicinity of the Small Boat Harbor. Recreational vehicles are defined by ADOT/PF as larger vehicles with six tires or multiple rear-axles. Smaller vehicles, such as pick-up truck campers and mini-vans, are categorized as "autos". As a result, common perceptions may suggest a higher relative proportion of RVs in Seward than is indicated in the ADOT/PF data. The ADOT/PF categorization is appropriate for use in this analysis, as these smaller RVs impact traffic operations in a manner similar to autos.

Horizon Year Traffic Volume Forecast: Traffic counts from ADOT/PF indicate that traffic volumes on Third Avenue/Seward Highway within Seward have increased at an annual rate of approximately 4 percent. This rate was applied to existing peak month traffic volumes to arrive at forecasts for the 1998 analysis horizon year. These peak month traffic volume forecasts are summarized in Figure 3-16.

3.12.3 Traffic Operations

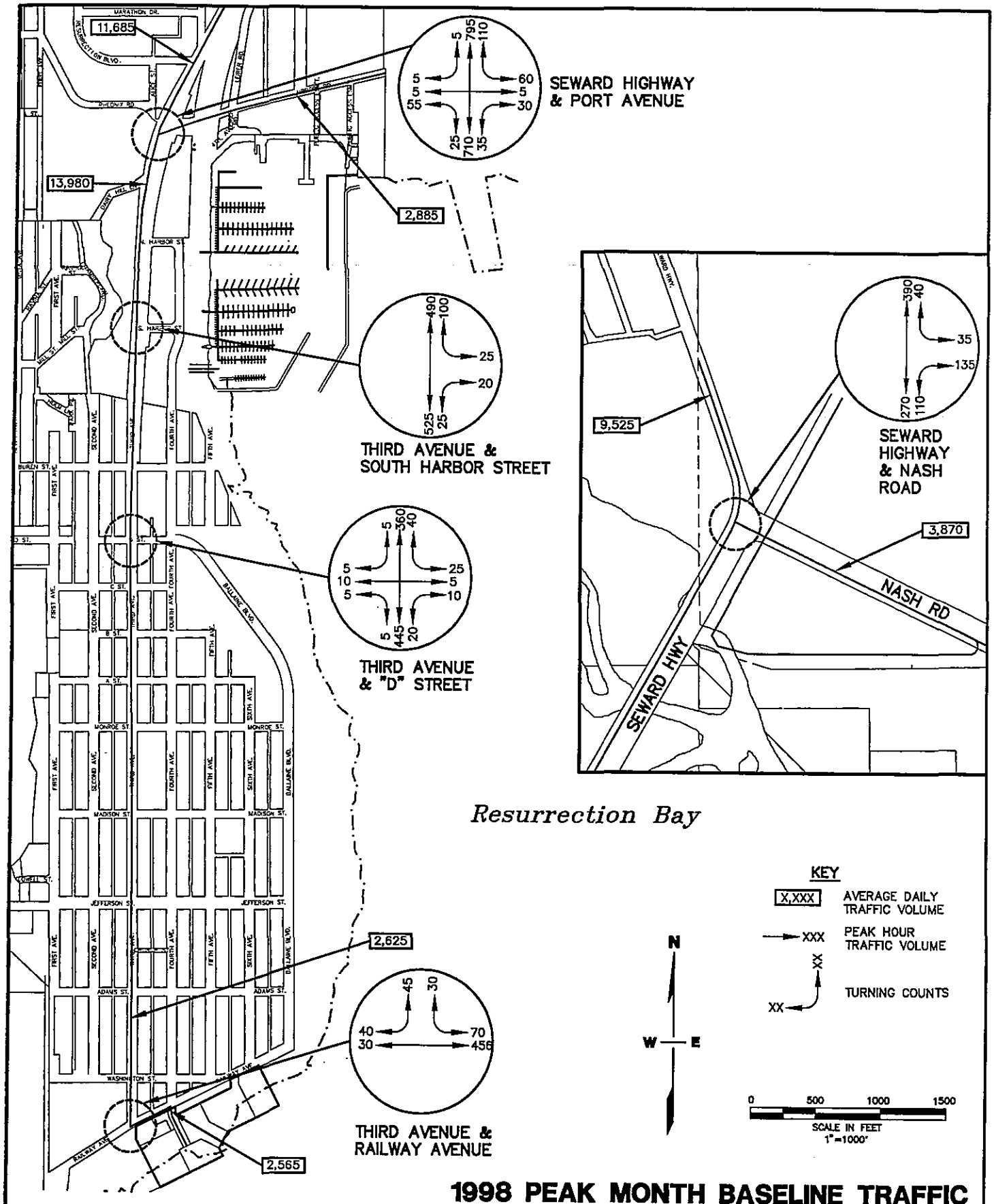
A peak hour level of service (LOS) analysis was conducted to assess traffic operating conditions at intersections in the proposed project vicinity. An LOS analysis provides a qualitative label of operating conditions and traffic congestion, based on quantified criteria. It assists in interpreting the significance of the traffic volumes such as those shown in Figures 3-15 and 3-16. Values range from LOS A, indicating free-flowing traffic with little or no delay, to LOS F, indicating extreme congestion with long delays. At unsignalized intersections, the LOS is measured in terms of reserve (or unused) capacity. Table 3-22 summarizes the different LOS criteria.

TABLE 3-22
LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

LOS	Reserve Capacity	Expected Delay
A	400 or more	Little or none
B	300 to 399	Short
C	200 to 299	Average
D	100 to 199	Long
E	0 to 99	Very long
F	less than 0	Failure - extreme congestion

Source: Transportation Research Board, Highway Capacity Manual, 1985.

For this analysis, LOS were developed following procedures presented in the *Highway Capacity Manual: Special Report 209*, Transportation Research Board, 1985. The LOS were calculated using the peak hour volumes shown in Figure 3-16, and thus, represent a peak month, peak hour condition. Table 3-23



1998 PEAK MONTH BASELINE TRAFFIC VOLUMES WITHOUT PROPOSED PROJECT

Filename: FIG3-16.DWG

Job No. 28347-002-160

DAMES & MOORE

IMS PROPOSED INFRASTRUCTURE PROJECT
SEWARD, ALASKA
FIGURE 3-16

summarizes the resulting LOS for 5 major intersections on the Seward Highway, which is the most heavily utilized roadway in Seward.

As shown in Table 3-23, intersection operations are best in the downtown area and become progressively worse in a northerly direction. Adjacent to the proposed project site, the intersections of Railway Avenue at Third Avenue currently operates at LOS A during the peak month, peak hour and is forecast to continue to operate at LOS A in 1998. The LOS A condition indicates that there is adequate capacity to accommodate existing and forecast traffic volume with minimal delays.

TABLE 3-23
PEAK MONTH, PEAK HOUR LEVELS OF SERVICE

	Existing 1994		1998 Horizon Year	
Intersection	LOS	Reserve Capacity	LOS	Reserve Capacity
Third Ave. and Railway Ave.	A	764	A	712
Third Ave. and D St.	B	331	C	269
Seward Hwy and South Harbor St.	B	374	C	274
Seward Hwy and Port Avenue	E	84	F	-2
Seward Hwy and Nash Road	C	223	E	88

Source: Calculations based on methodology presented in Transportation Research Board, 1985, *Highway Capacity Manual: Special Report 209.*

The intersections of Third Avenue and D Street and the Third Avenue and South Harbor Street operate at LOS B and are forecast to operate at LOS C in 1998 during the peak month, peak hour. The LOS B and LOS C conditions are indicative of short to average delays.

To the north at the Seward Highway and Port Avenue, the intersection currently operates at LOS E and is forecast to operate at LOS F in 1998. LOS E and F conditions indicate that the intersection is operating at or near capacity with long delays for traffic attempting to enter, or cross the Seward Highway. The poor LOS at the intersection is due to the high traffic volumes traveling through the intersection on the Seward Highway, during the peak month of the year (July).

The Seward Highway and Nash Road intersection currently operates at LOS C. Operating conditions are expected to deteriorate to LOS E by 1998 due to anticipated higher forecast traffic volumes, combined with the existing 55 miles per hour speed limit along this section of the Seward Highway.

Other intersections along Fourth Avenue in the downtown street grid operate at somewhat better LOS than corresponding intersections at Third Avenue, because overall traffic volumes are lower. Traffic

progression on Fourth Avenue is relatively slower than Third Avenue along mid-block segments as a result of greater on-street parking activity, particularly in areas where angle parking result in backing maneuvers.

It should be recognized that the LOS results cited above, represent the peak hour condition during a typical weekday, during the peak month of the year (July). As a result, the volumes are substantially higher than those which occur during an average month, and many times higher than those occurring during a winter month. However, even with the seasonal adjustment applied, it is important to recognize that the volumes are hourly volumes and the related LOS reflects the average condition within that peak hour. As a result, it is likely that there are limited times within the peak hour that perform noticeably worse than the LOS indicated; similarly, there are generally times within the peak hour that perform noticeably better than calculated. This causes the specific experience of different persons driving at different times within the same hour to be different. The actual traffic conditions of individual drivers is likely to vary from the average LOS indicated in the calculations.

The intersection LOS listed in Table 3-23 are representative of peak month, peak hour conditions. During other months LOS are expected to improve approximately 20 to 30 percent, based on lower traffic volumes. During the winter months LOS are expected to be significantly better with little or no delays at intersections, except those caused by adverse weather conditions.

3.12.4 Traffic Safety

Table 3-24 summarizes accident data obtained from ADOT/PF for intersections along Third Avenue/Seward Highway, from 1990 to 1992. For analysis purposes, the data was grouped into three roadway segments which correspond approximately with the downtown area, the Small Boat Harbor area, and north Seward. The rate is derived per million vehicle miles.

TABLE 3-24
THREE YEAR ACCIDENT HISTORY: THIRD AVENUE/SEWARD HIGHWAY

	Annual Total					May 1 - September 30				
Roadway Segment	1990	1991	1992	Average	Rate	1990	1991	1992	Average	Rate
Railroad Avenue - A Street	2	11	3	3.7	5.3	0	2	2	1.3	2.57
A Street - Port Avenue	4	6	3	4.7	2.5	2	3	1	2.0	1.51
Port Avenue - Nash Road	8	16	9	11.0	2.8	2	10	4	5.3	1.77
Total	14	28	15	19.0	--	4	15	7	8.7	--

Source: Compiled from existing ADOT/PF data.

Accidents occurred at the rate of 3.7 per year on the downtown area roadway segment (Railway Avenue to A Street), 4.7 per year on the Small Boat Harbor area roadway segment (A Street to Port Avenue), and 11.0 per year on the northern roadway segment (Port Avenue to Nash Road). Approximately half of the accidents occurred during the May-to-September tourist season and half during the winter season.

Although traffic volumes are significantly higher during the summer tourist season, the total number of accidents is similar to that experienced in the winter season when adverse driving conditions result in a greater potential for accidents.

The same pattern is apparent in the accident rate per million vehicle miles, which takes into account traffic volumes and the length of the roadway segment. Accident rates during the summer are 35 to 50 percent less than in the winter. For both time periods, Table 3-24 indicates that the accident rate is highest in the downtown area (Railway Avenue - A Street). This is likely due to the higher number of cross streets and to the additional vehicle movements associated with entering and exiting the on-street parking spaces. There were no fatal accidents within the study area during this time period.

3.12.5 Parking

Public parking for approximately 570 cars is provided in city-owned lots adjacent to the Small Boat Harbor. This is not adequate to serve existing demand at the Small Boat Harbor during peak summer conditions, especially during peak weekends, holidays, and special events like the Silver Salmon Derby. During these periods, parking occurs on the shoulders of the Seward Highway, extending in both directions from the Small Boat Harbor area. The off-street parking lots in the Small Boat Harbor area are currently limited to 4 hour or 72 hour time limits, with no camping allowed. As a result, boaters on trips longer than three days have no adequate location to park for extended periods. When these peak conditions occur, convenient parking is generally considered extremely difficult to secure anywhere near the Small Boat Harbor.

Conditions in the downtown area are somewhat less congested, except during unusual peak events (such as the Fourth of July). During conditions when parking is difficult to obtain, it is common for parking to occur in informal parking areas, along roadway shoulders and in areas where parking is not generally allowed. In the downtown area, on-street parking is permitted on most streets. On Fourth and Fifth Avenues, angle parking is provided between Railway Avenue and Jefferson Street. This allows for greater densities of parking adjacent to the retail uses located on the two streets. Private parking lots serve some of the businesses, but the majority of businesses rely on the on-street parking to meet their needs. A small off-street parking lot for general public use is located adjacent to the Youth/Teen Center at Railway and Fourth Avenues, but city staff indicates that little use is made of the lot. Outside of the downtown area, parking for an additional 200 cars has been developed by the city in a new parking lot near the existing railroad dock.

In the immediate vicinity of the proposed project site, on-street parking is provided on both sides of Railway Avenue east of Third Avenue. The existing IMS facilities currently have 29 parking stalls for employee and visitor use. These stalls are located on the western half of the site, adjacent to the existing IMS office and laboratory facilities.

The proposed project site plans to accommodate RV parking for approximately 75 vehicles on the eastern portion of the proposed site. Although there are no other areas on the proposed project site designated for RV parking, additional RV parking does occur on an irregular and informal basis in other areas of the site.

3.12.6 Transit Service

There is no local, regularly scheduled bus service in Seward. The Chamber of Commerce operates a trolley shuttle service during the summer. There are also taxi service areas and a Seward Senior Center Van. Scheduled daily bus service between Seward and Anchorage, with connections to other Kenai Peninsula destinations, is provided by Seward Bus Lines. Additional bus service in the form of charters and tours to and from outlying areas is also available from a number of companies.

3.12.7 Rail Service

The Alaska Railroad Depot is located at Fourth Avenue and Port Avenue. The depot is a simple, unenclosed shelter, without amenities. Daily rail service between Seward and Anchorage is provided from May to September. Table 3-25 summarizes ridership on the Alaska Railroad between Seward and Anchorage from 1987 through 1994.

Since 1987, rail ridership has increased an average of over 27 percent each year, from approximately 4,700 to 15,800 passengers. The largest increases, however, occurred between 1987 and 1989, with 38 and 90 percent increases in successive years. Since 1989, increases have averaged approximately 8 percent annually.

TABLE 3-25
ALASKA RAILROAD RIDERSHIP: SEWARD/ANCHORAGE

	1987	1988	1989	1990	1991	1992
Passengers	4,723	6,537	12,392	13,708	14,555	15,827

Source: Market Demand Study by Fox Practical Marketing and Management, July 1993

3.12.8 Ferry Service

The Alaska Marine Highway System provides ferry service from the Municipal Dock, located at the end of Fourth Avenue. The M/V *Tustumena*, which is based in Seward, provides service between Seward, Cordova, Valdez, Kodiak, and Homer. During the summer, service is also provided to the Aleutian Islands. The ferry stops in Seward two days a week, every 3 out of 4 weeks in the peak season from May through September. On Thursdays, the boat arrives from Kodiak early in the morning and leaves for Valdez later in the morning after a 5 to 6 hour layover. On Fridays, the boat arrives in the evening from Valdez and leaves for Kodiak after a 2 to 3 hour layover. Vehicle traffic for the ferry typically

arrives a couple of hours prior to departure. However, if the boat is late or there are large pieces of freight to be loaded, ferry traffic may be at the dock as much as 12 hours prior to departure. Table 3-26 summarizes ferry passenger and vehicle traffic for Seward.

TABLE 3-26
FERRY PASSENGER AND VEHICLE TRAFFIC IN SEWARD

	1988	1989	1990	1991	1992	1993
Passengers	7,886	6,436	6,248	1,653	6,176	6,606
Vehicles	3,092	2,750	2,302	1,113	2,548	2,740

Source: Alaska Marine Highway System, Management Information Group

Between 1988 and 1993, passenger ridership averaged approximately 6,700 persons per year, fluctuating between 6,200 and 7,900 persons. The exception was in 1991, when ridership was down dramatically due to the M/V *Tustumena* being taken out of service for 7 months for repairs. Vehicles carried on the ferry averaged approximately 2,900 cars per year and ranged from 2,300 to 3,100, except again for 1991. Overall, passenger ridership and vehicle traffic have remained relatively constant since 1989, with no notable upward or downward trend, except for 1991.

Seasonal variations in ferry traffic can be seen in Table 3-27, which summarizes ferry passenger and vehicle statistics for 1993 by month. Passenger ridership and vehicle traffic peaks during the 3-month period, from June to August. The seasonal variations for ferry vehicle traffic, however, is much less pronounced, and there is an added peak during the winter months.

TABLE 3-27
1993 FERRY PASSENGERS AND VEHICLE TRAFFIC
IN SEWARD BY MONTH

Month	Passengers	Vehicles
January	151	129
February	170	135
March	0	0
April	263	165
May	406	212
June	1,180	369
July	1,673	477
August	1,443	446
September	453	197
October	363	223
November	427	340
December	77	47

Source: Alaska Marine Highway System, Management Information Group
* February 22 - April 18, 1993: M/V *Tustumena* out of service for overhauling.

The City of Seward and the Alaska Marine Highway System are looking for alternate berthing sites for the M/V *Tustumena*. Although no determination has been made regarding a specific site for the relocated dock, several alternative sites have been suggested, including the existing railroad dock, a new dock along the waterfront at B Street, and the north dock at the SMIC on the east side of Resurrection Bay. The city's schedule calls for the ferry service to be relocated prior to the 1997 completion of the proposed project facility. Other possible scenarios would be for ADOT/PF to discontinue ferry service to Seward or for it to remain at its present location.

3.12.9 Cruise Ship Service

Cruise ships that make ports of call in Seward use the railroad dock at the north end of Resurrection Bay. The majority of cruise ship passengers embarking and debarking in Seward currently transfer directly to and from buses which provide connections to Anchorage. With the exception of bus trips between the railroad dock and the Seward Highway, the majority of passengers currently have minimal impact on the local street system.

Estimates by Fox Practical Marketing and Management indicate that cruise passengers to Seward will total approximately 170,000 in 1994. From 1991 to 1994, cruise ship dockings have increased by an average of approximately 50 percent per year (Table 3-20). Although it is unlikely that such a high rate of growth would continue, cruise ship dockings would likely continue to increase in the near future based on the recent trends.

3.12.10 Non-Motorized Facilities

Sidewalks are provided on most streets in the downtown area. Outside of the downtown, pedestrian facilities are generally limited to roadway shoulders or unpaved paths adjacent to the roadway. A bicycle and pedestrian path runs between the eastern boundary of the proposed project site north, along Resurrection Bay to the high school. Adjacent to the proposed project site, sidewalks are provided east of Fourth Avenue on both sides of Railway Avenue. The sidewalk on the north side of the street terminates at Sixth Avenue.

Pedestrian and bicycle travel within Seward is an important component to current mobility, especially during the peak summer tourist season. During peak summer conditions, especially on weekends, the use of bicycles and other pedestrian travel modes is further increased, since vehicles are likely to park only once, due to the shortage of available parking. Bicycles are used on both City streets and along the waterfront bicycle/pedestrian path.

3.12.11 Air Travel

An airstrip is located immediately northeast of the railroad dock at the north end of Resurrection Bay. A single air carrier, FS Air, makes three scheduled flights each weekday to and from Anchorage. Departures are scheduled at 7:30 a.m., 1:00 p.m., and 7:00 p.m.; arrivals occur approximately one hour prior to departures. On weekends, the service is reduced to two flights, 7:30 a.m. and 7:00 p.m.

In addition to scheduled air service, three charter companies provide service from the Seward airstrip, including Bear Lake Air Service, Scenic Mountain Air, and Kenai Fjords Air Tours. (Source: Seward Chamber of Commerce).

3.12.12 Small Boat Harbor

The Seward Small Boat Harbor experiences crowding during the summer months, especially during peak activity weekends, and the Silver Salmon Derby. Transient moorage space is very limited. The City of Seward and ADOT/PF have drafted a Boat Harbor Agreement for public review for the ongoing management of the state-owned components of the Small Boat Harbor. It indicates (section 5.2) that "Vessels owned or operated by any federal, state, or other government agency shall use the Harbor under the same conditions and the same moorage rates as those specified for the general public, except that the U.S. Coast Guard, fire fighting vessels used exclusively for the health and welfare of the boating public may be given preference berthing or moorage in the Harbor".

4.0 ENVIRONMENTAL CONSEQUENCES

CHAPTER 4.0

ENVIRONMENTAL CONSEQUENCES

4.1 BASIC ASSUMPTIONS FOR EFFECTS ASSESSMENT

The effects of the proposed project include the analysis of the effects of Alternative I, the Proposed Action; Alternative II, Research and Wildlife Rehabilitation Only; and Alternative III, the No Action Alternative. It also addresses: cumulative effects; mitigating measures; unavoidable adverse impacts; the relationship between local short-term uses and maintenance and enhancement of long-term productivity; and the irreversible and irretrievable commitment of resources resulting from the proposed project.

A thorough description of the proposed action and alternatives is presented in Section 2.0 of this document. Below is a summary of the major project elements considered in the effects analysis of this EIS.

4.1.1 Alternative I, Proposed Action

Project elements of Alternative I include the following:

- The 7 acre project site, Tracts 2, 3, 4, 5, and 6, would be leased from the City of Seward to SAAMS for the proposed action (See Figure 2-2);
- Approximately 250,000 visitors are expected to visit the proposed project in the first year of operation. An estimated 50,000 of those visitors would be generated by the project; the remainder are those already visiting Seward for other purposes.
- Constructed facilities would include research laboratories; pools, tanks, and a tide pool for habitat; a life support system with freshwater and seawater supply; a stormwater drainage system with oil/water separator; visitor viewing areas for educational purposes; a retail shop with educational materials; a parking lot adjacent to the proposed facility for 150 to 160 visitor vehicles; and a parking lot adjacent to the Rae Building (IMS Seward Marine Center) for 50 staff vehicles;
- Excavation of approximately 10,000 cubic yards would occur for building foundations and shoreline activities. All of this material will be used on-site for fill;
- Wave protection would be provided by a sheet pile bulkhead with an armor rock face. No dredging would be required. Approximately 5,000 cubic yards of rock most likely would be obtained from a state quarry located approximately 3/4-miles down Lowell Point Road, however, four other potential sites are located in the project vicinity. Material would be trucked to the site between November 1994 and March 1995;

- Site preparation would include the removal of debris from both the site and nearshore area. Minor reshaping of the shoreline may occur during this activity;

- Construction activities would occur from November 1994 to May 1997. The peak labor force, 47, would occur in late summer, 1995;

- The proposed facility, with approximately 75,000 square feet of interior space, would include two components, a research and wildlife rehabilitation component (22,000 square feet) and a visitor and education component (26,000 square feet). Building systems to support both components would require approximately 27,000 square feet;

- Exterior space would include about 46,000 square feet of animal habitat and research tanks, 127,000 square feet of parking lots and 67,000 square feet of visitor plaza, sidewalks, and landscaping;

- Outdoor tanks and habitat would accommodate up to 125 marine birds, 2 to 4 Steller sea lions, 1 to 4 sea otters, and 6 to 12 harbor seals;

- A submersible and a support vessel could be obtained for research purposes. If acquired, the proposed support vessel would dock at the existing IMS Seward Marine Center dock when the R/V *Alpha Helix* is not in port (approximately 180 days per year). When not conducting research at sea, the proposed support vessel could dock at the Small Boat Harbor, anchor in Resurrection Bay, or dock at the SMIC for maintenance. The existing IMS Seward Marine Center dock would be used for loading and unloading the submersible from the support vessel, as well as vessel equipment and supplies. No improvements to the existing dock would be required;

- Displacements due to the project include a warehouse, machine shop, the Youth/Teen Center, and approximately 57 camp sites at the city's Iditarod Campground. Ferry service to the existing Municipal Dock on the site would likely be relocated to a currently unidentified site in Seward. If necessary, ferry service and associated traffic would be accommodated by the project until an appropriate location is found;

- The LSS would require approximately 4,400 gpm of seawater. Two intake pipes would be located about 400 feet offshore at a depth of approximately 250 feet. The screened pipes would be anchored with three foot by three foot concrete saddles;

- Approximately 4,400 gpm of sea water would be discharged through a 24-inch line with diffuser located at an estimated depth of 50 feet below MLLW; approximately 1,600 gpm of this seawater would be treated prior to discharge;

- Approximately 150 gpm of freshwater would be needed for fish genetics studies. This is intended to come from a spring located approximately 2,500 feet from the project site along Lowell Point Road. If water quantity and/or quality is not adequate from this location, other sources include: one or more wells drilled on the IMS Seward Marine Center campus near the Rae Building, surface water (Lowell Creek), or water supplied from the city. A gravity fed storage tank would be required;

- An estimated 100 gpm of uncontaminated freshwater would be discharged through the lines described above. Approximately 50 gpm would be treated before discharge through the system;

- Domestic discharge from the proposed facility would be to the city's sanitary sewer system; and

- Heating fuel oil would be purchased locally and stored on-site in a 15,000 gallon above ground, double-walled tank.

Traffic and Transportation Assumptions: The following assumptions were made to evaluate the relative effects of anticipated project traffic on the City of Seward. These assumptions ensure that effects associated with the proposed project would not be underestimated.

- Traffic analyses assumes that traffic volumes generated as a result of the proposed project are added to the existing average, peak-hour traffic volumes during the single highest traffic volume month of the year (July). Existing traffic volumes in July are 20 percent higher than in June and August; are more than double the average for the entire year; and are nearly six times higher than the lowest months of the year.

- Traffic volumes associated with the peak number of visitors at the proposed facility are assumed to occur in a single hour. This serves to compress the actual rate of arrivals and departures by one-third, because the average duration for visitors is expected to be one and one-half hours.

- Major summer holidays (Memorial Day, July 4th, Silver Salmon Derby Week, Labor Day) occurring on weekends are assumed to result in traffic volume levels as high, or higher, than those used as the basis for this analysis.

Visitor projections have been derived from the following studies (See Section 2.2.6 and Table 2-3 for visitor projections from these studies):

- Alaska SeaLife Center Resident/Non-Resident Market Demand Study, 1993, prepared by Fox Practical Marketing and Management; and

- Feasibility Study for the Alaska SeaLife Center, 1993, Thomas J. Martin.

- Alaska Industrial Development and Export Authority (AIDEA) by PFM, 1993.

- Update & Expansion of Market Demand Analysis for the Alaska SeaLife Center, 1994, prepared by Fox Practical Market and Management.

Economic Assumptions: Assumptions for the analysis of labor, economic, and housing include the following:

- The proposed facility would open at 10:00 a.m. in the summer and close at 9:00 p.m.; open at 10:00 a.m. in the winter and close at 4:00 p.m.;

- The proposed facility would be open every day in the summer and five to six days a week in the winter, possibly closing during mid-week;

- Admission prices would be $12.50 for an adult ticket; $6.50 for children; and children under two years old would be free. Group ticket price would be $11.00 per person. An average $9.01 per visitor would result in the first year of operation. A lower price would be charged in the off-season to encourage Alaska residents to attend;

- Projected visitation assumptions are discussed in Section 2.2.5 and Table 2-3. These assumptions have been drawn from previously referenced reports (i.e., Fox, 1993; Thomas J. Martin, 1993) (See Section 4.1.4, above);

- A retail shop with educational materials would perform at or above industry norms, generating an average $5.00 per visitor in retail sales, with a return of $2.50 per visitor after the cost of the goods sold;

- A facility membership program is assumed to be part of project operations. The assumed annual membership of 5,000 individual or family and 1,000 corporate, was based on price, the population of the area, the attendance at the center, and the experience of other similar facilities (See Section 2.2.7);

- Sales taxes would be charged at the facility on sales of admission tickets and retail goods. Sales tax revenues would be collected and paid to the city and borough. Given SAAMS' status as a non-profit organization, this is not required by law but has been agreed to as a potential condition of the land use agreement with the city.

- All researchers are expected to be grant or contract funded, with the revenue for overhead support flowing to the facility. Generally, overhead staff would be a support cost of the facility;

- Revenues generated from grants and donations have been assumed to be $150,000 annually (See Section 2.2.6).

4.1.2 Alternative II, Research and Wildlife Rehabilitation Only

Many elements of Alternative II are identical to Alternative I. Differences between them include:

- Reduction of interior square footage to 49,000 square feet. The second floor of the building, which contains most of the visitor and education elements, would be eliminated from the project design. Specific areas eliminated include the lobby, retail shop, indoor exhibit areas, the visitor portion of the walkway around the tanks and pools, the visitor plaza, and the 166-space visitor parking lot;

- Visitors to the proposed facility would be limited to occasional school groups or tours.

4.1.3 Alternative III, No Action

None of the activities proposed with Alternatives I or II would occur with Alternative III.

4.1.4 Major Projects Considered in the Cumulative Effects

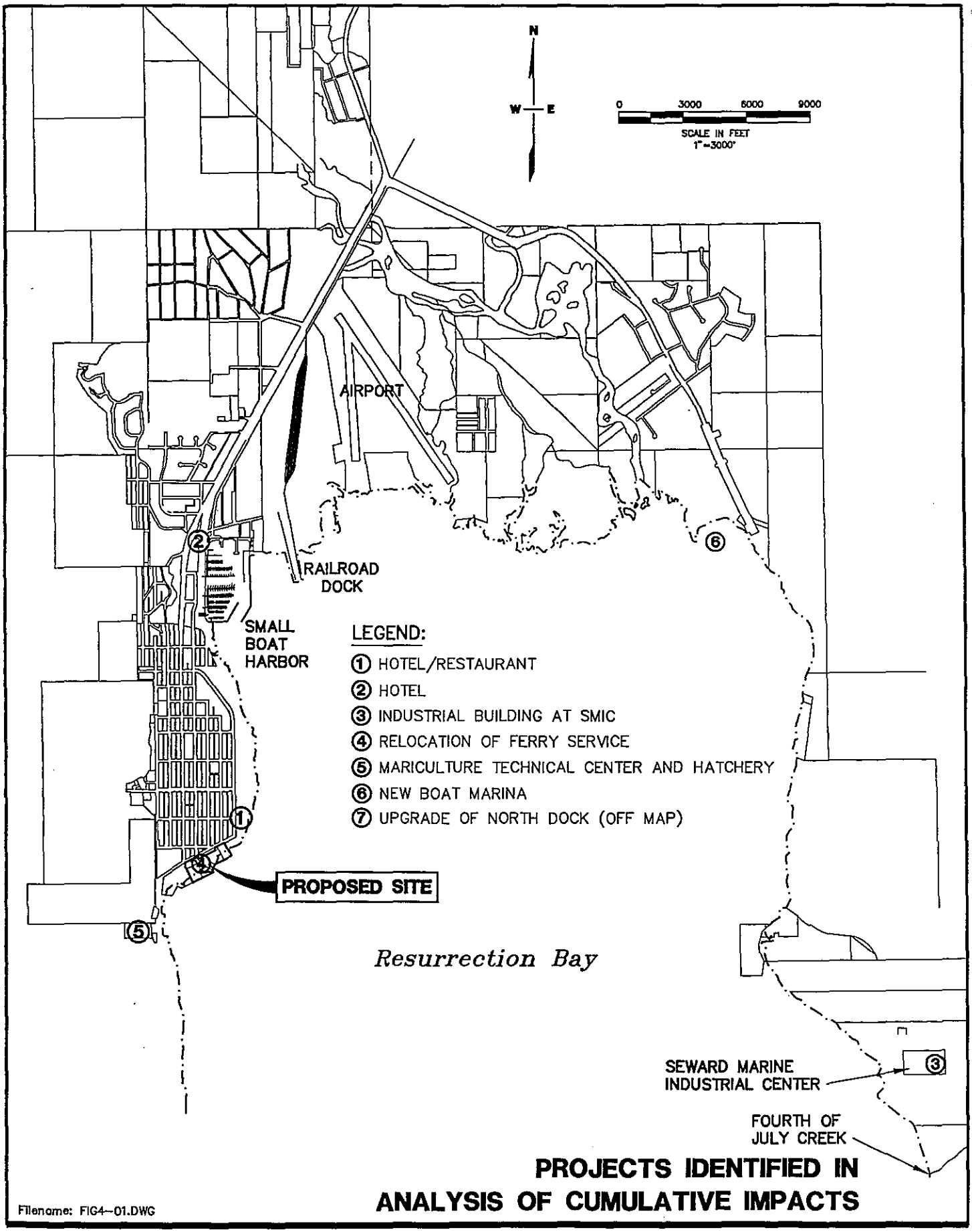
Cumulative effects are defined in 40 CFR 1508.7 as effects on the environment which result "from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions.... Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time." Cumulative effects are usually viewed as those effects which are added to the existing environment and remain to become part of the baseline for the next project. These effects are different from effects which are present only during the life of the proposed project and cease with the proposed project's termination.

The following projects are considered in this analysis of cumulative effects, and their proposed locations are indicated by reference number in Figure 4-1.

1) A conditional use permit has been approved to construct and operate a restaurant and 40-room hotel downtown near the proposed project. The property has been re-zoned to eliminate the off-street parking requirement.

2) A franchise hotel is slated for construction in the fall of 1994 at the north edge of the existing Small Boat Harbor. A conditional use permit has been granted and the project was approved by the Seward Planning Commission.

3) A $3 to $4 million building is planned for construction in the SMIC for ship repair services in 1995.



PROJECTS IDENTIFIED IN ANALYSIS OF CUMULATIVE IMPACTS

Filename: FIG4-01.DWG

Job No. 28347-002-160

DAMES & MOORE

IMS PROPOSED INFRASTRUCTURE PROJECT
SEWARD, ALASKA
FIGURE 4-1

4) The city is planning to relocate the ferry service from its present location at the Municipal Dock on the proposed project site. Timing of the relocation is uncertain at this time (See Section 2.2.1). The future location of the ferry service has not yet been determined.

Other projects being considered by the city but not in the foreseeable future include:

5) The Mariculture Technical Center and Shellfish Hatchery is currently in the site selection process. Seward is one of three sites being evaluated. A proposed location for this facility in Seward is adjacent to and west of the existing IMS Seward Marine Center;

6) A private developer is planning a 1,200 slip marina off Nash Road on the east side of Resurrection Bay; and

7) COE plans to upgrade the north dock at the industrial park with a breakwater and an approximate 200-foot extension of the existing dock.

These projects are not considered in the cumulative effects analysis of the EIS.

4.1.5 Definitions Used in Effects Assessment

The definitions shown in Table 2-4 were developed to help determine the relative extent of effects. Effect ratings of HIGH, MODERATE, LOW, NEGLIGIBLE, and BENEFICIAL are defined in the table.

4.2 ALTERNATIVE I - PROPOSED ACTION, EFFECTS ON:

PHYSICAL CONSIDERATIONS

4.2.1 Soils and Geology

Effects of Construction Activities: Construction activities associated with the proposed action would include site grading, shoreline excavation, and shoreline construction. Based upon conceptual site layouts, approximately 10,000 cubic yards of material would be excavated from beneath the building substructure to achieve design sub-grade elevations. Roughly 7,000 cubic yards of structural fill would be required beneath second story foundations and adjacent to the structure. The remaining 3,000 cubic yards would be used for other site development and grading. PN&D (1993) concluded, as part of a preliminary geotechnical investigation of the proposed site, that existing on-site soils appear suitable for use as structural fill material.

In addition to the above, shoreline activity would require clearing the area of debris resulting from the 1964 earthquake and tsunami. A 60-foot by 160-foot man-made tidal pool would be constructed adjacent to the proposed facility along the shoreline. Adequately sized armor rock would be placed around the

tide pool and along the shoreline for stabilization purposes. To further protect the shoreline from significant storm wave action and subsequent erosion, approximately 160 linear feet of sheet pile bulkhead would be constructed behind the tidal pool.

Additional and more detailed information on the overall construction program for the proposed project is included in Section 2.2.4 of this document.

Construction-related effects to geology and soils would be: 1) alterations to existing topography (including the existing tidal/intertidal sediments) associated with grading and other earthwork activities as discussed above; and 2) possible soil erosion over areas where grading and earthwork activities occur. It is anticipated that construction activities would occur between December 1994 to spring of 1997.

Mitigation measures to minimize effects to geology and soils that are either incorporated as part of project design, or that would be implemented during construction include: 1) limiting grading disturbances to essential project areas; 2) balancing, and limiting to the extent practical, the amount of cut and fill requirements; 3) preparing a Stormwater Pollution Prevention Plan for construction activities that complies with EPA NPDES permit requirements to minimize and control stormwater discharges from the proposed site; and 4) stabilizing disturbed areas through revegetation as soon as practical.

CONCLUSION: Construction effects of Alternative I on geology and soils are expected to be LOW. The proposed project would require minor, temporary earthwork during construction which would be stabilized through construction techniques or design features.

Effects of Operation: Once the proposed project is constructed and becomes operational, effects of Alternative I to geology and soils are expected to be NEGLIGIBLE. Operation of the proposed facility would not change existing grades, shorelines, tidal/intertidal areas, or soil types.

4.2.2 Hydrology and Water Quality

Effects of Construction Activities: Construction-related effects to hydrology and water quality would include: 1) changes in salinity and water chemistry in the immediate vicinity of the storm water outfall in Resurrection Bay as a result of increased volumes of stormwater runoff and groundwater discharges associated with de-watering activities during foundation excavation; 2) localized increases in turbidity in the tidal and intertidal area as a result of sediment disturbances associated with debris removal during initial site preparation activities; and 3) localized increases in turbidity as a result of sediment disturbances associated with the installation of sheet piling and armor rock materials around the tide pool and wildlife habitat area. These effects to existing hydrology and water quality would vary with specific construction tasks. These effects would also be localized and not continuous over the construction period (November 1994 to May 1997).

Mitigation measures that are either incorporated into project design, or that would be implemented during construction to minimize these effects include: 1) preparing a Stormwater Pollution Prevention Plan that complies with EPA NPDES permit requirements to minimize and control stormwater discharges from the

proposed site during construction; and 2) installing a settling pond(s) or trench(s) to clarify discharges associated with de-watering activities prior to these waters being discharged to Resurrection Bay. COE permit requirements may include: 1) installing silt curtains in the immediate nearshore zone to minimize the extent of turbidity associated with removing shoreline debris in the tidal and intertidal areas and installing sheet piling and armor rock materials in the tidal pools and wildlife habitat areas; and 2) seasonal restrictions on when construction activities may occur.

CONCLUSION: Construction effects of Alternative I on hydrology and water quality are expected to be LOW. Mitigation measures that are either incorporated into the project design, or that would be implemented during construction would minimize effects from turbidity associated with stormwater run-off and de-watering activities.

Effects of Operation on Hydrology: Operation-related effects to hydrology would include: 1) increased stormwater discharge volumes as a result of an increase in impervious surfaces over the proposed project area; 2) extracting 150 gpm of freshwater from a nearby spring or groundwater via a well(s) completed in local aquifers for specific research studies at the proposed facility; and 3) domestic water demands of approximately 21,470 gpd .

Approximately 80 percent of the 7 acre site would be covered by building structures, paved parking areas, sidewalks, and other impervious surfaces, which will increase the volume of stormwater discharges to the Bay from the site. In addition, approximately 150 gpm of freshwater would be needed for specific research needs. Freshwater would come either from a spring located 2,500 feet to the west on Lowell Point Road, Lowell Creek, or from one or more wells drilled on the IMS Seward Marine Center campus near the Rae Building. Use of spring or stream water could affect surface water flow in the immediate area. Groundwater withdrawal would reduce the available quantities in aquifers in the immediate vicinity of the well(s). Domestic water usage has been estimated based on staff, visitor, and washdown usage for an average day during the peak period of June 1 to September 1. Domestic water supply to the facility would be provided by the City of Seward. These calculations are presented in Table 2-2 and discussed in more detail in Section 2.2.4 of this document.

CONCLUSION: The effects of Alternative I on local hydrology as a result of increases in stormwater discharges are expected to be NEGLIGIBLE due to: 1) the relatively small overall area affected; 2) the proposed site is not in an aquifer recharge zone; and 3) groundwater levels at the proposed site appear to be influenced by local seawater fluctuations.

The effects on hydrology as a result of extracting 150 gpm of freshwater from a local spring or groundwater from local aquifers for specific research needs and approximately 21,470 gpd for domestic purposes are expected to be LOW. Annual precipitation in the Seward area typically ranges between 65 and 75 inches per year. This volume of precipitation, coupled with the relatively permeable nature of the surficial geology in the Seward area, suggests that adequate surface and groundwater quantity/quality exists. However, until a flow test is run or a well(s) is drilled and adequate pump tests are completed, final evaluations regarding the use of spring water or groundwater for the proposed facility cannot be fully determined.

In addition, the city has an adequate water supply system to provide the required volumes of domestic water. The current city water pressures in the vicinity of the site are 85 psi static and 72 psi residual. Therefore, the effect of the proposed project on local hydrology from domestic water demands is expected to be LOW.

Effect of Operation on Water Quality: Operation-related effects to water quality will be caused by: 1) additional stormwater discharges to Resurrection Bay from impervious surfaces over the proposed site; 2) discharges of both fresh and sea water discharges into Resurrection Bay associated with the proposed facility's LSS; and 3) domestic sanitary discharges.

Mitigation measures incorporated as part of the overall design of the project include installing a drainage system to control the increased volume of stormwater discharge from the site. As mentioned above, approximately 80 percent of the 7 acre site will covered by building structures, paved parking areas, sidewalks and other impervious surfaces, which will increase the volume of stormwater discharges to the Bay from the site. An on-site storm drainage system would be constructed to capture surface water discharges resulting from the proposed project. Currently, an existing city storm drain crosses the proposed building site and discharges into Resurrection Bay. The existing city storm drain would be consolidated with the proposed on-site drainage system; with the discharge line sized to accommodate the combined flow volume. Project design also includes installing an oil/water separator at the storm drain outfall location. This separator would be designed to accommodate runoff generated on-site, as well as that crossing the site from the city's existing line, prior to ultimately discharging into Resurrection Bay. It is anticipated that a 30 to 36 inch diameter stormwater discharge pipe would be required.

As a result of all stormwater discharges from the proposed facility, along with discharges from a portion of the city's existing storm sewer system that would be connected to the facility's, passing through an oil/water separator prior to being discharged to the Bay, water quality effects from additional stormwater discharges are expected to be BENEFICIAL.

Approximately 150 gpm of treated and untreated freshwater and 4,400 gpm of treated and untreated seawater would be discharged to Resurrection Bay through a marine outfall system. The marine outfall system would include a main collection sump on shore, and 24-inch diameter outfall pipe with a perforated diffuser structure at the discharge end. The perforated diffuser discharge structure would be located at a depth of approximately 50 feet below MLLW offshore of the proposed facility.

The discharge water's salinity would be diluted slightly (approximately 4-5 percent from the addition of 150 gpm of freshwater) and would primarily contain small concentrations of organic and inorganic material (animal wastes, uneaten food particles, and fine sediments). Prior to discharge into Resurrection Bay, the seawater will be filtered through a sand filtration system, disinfected by ozone treatment, and dechlorinated. The circulation system is designed to completely exchange the water in the facility between 10 and 12 times per day.

This exchange, coupled with the filtration and disinfection treatment, is designed to help maintain water quality within the proposed facility, as well as in the discharge waters returned to the bay. The discharge waters will also go through a diffuser head (a part of the marine outfall system) as it re-enters the Bay. This, coupled with the tidal exchanges and current circulation patterns in the bay, would minimize overall effects to the existing water quality of the bay from this facility. Therefore, water quality effects to existing bay water as a result of operating the proposed facility are expected to be LOW.

Domestic wastewater discharges as a result of operation of the facility would be approximately 21,470 gpd. This discharge would be through a facility sanitary sewer system connected to the City of Seward's sanitary sewer system and treatment facility.

The City of Seward's existing sewage treatment plant is operating at 60 percent capacity and has adequate capacity for the daily discharge volumes generated by the proposed facility. Approximately 24 to 34 percent of the plant's capacity would remain available. Therefore, water quality effects from incremental increases in wastewater discharges through the city's sewer and treatment system are expected to be LOW.

CONCLUSION: Overall, effects of Alternative I on water quality would be LOW. Some BENEFICIAL effects would result as well, due to the stormwater drainage system planned to be built as part of the proposed project.

4.2.3 Air Quality

Effects of Construction Activity: Construction-related effects to local air quality include increased amounts of regulated pollutants (carbon monoxide, sulfur dioxides, nitrogen oxides, and/or particulates) released to the atmosphere as a result of: 1) exhaust emissions from the use of mobile and stationary construction equipment; and 2) fugitive dust.

Mobile and stationary construction equipment would typically include: earth moving equipment (rollers, front loaders, backhoes, bulldozers, graders, pavers, and trucks); material handling equipment (concrete mixers, concrete pumps, and cranes); stationary equipment (pumps, generators, and compressors), impact equipment (pneumatic wrenches, jackhammers, and pile drivers); and other small miscellaneous equipment (vibrators and saws). Fugitive dust from excavated surfaces would be generated by earthwork activities and from vehicle movements. Air quality effects during construction would vary with specific construction tasks, and would be intermittent throughout the construction period (November 1994 through May 1997).

Mitigation measures to minimize effects to local air quality as a result of construction activities would include: 1) implementing a detailed inspection/maintenance program for construction equipment to optimize engine performance and fuel efficiency; and 2) the use of water or chemical dust suppressants to control fugitive dust emissions.

CONCLUSION: With the implementation of these mitigation measures, the construction effects of Alternative I on local air quality is expected to be LOW. Pollutant concentrations from mobile and stationary construction equipment would not approach maximum levels permitted by federal standards for ambient air quality and protection of existing air quality.

Effects of Operation: Operation of the proposed facility would effect local air quality by increasing amounts of regulated emissions to the atmosphere of carbon monoxide, sulfur dioxides, nitrogen oxides, and particulates, and as a result of: 1) consuming approximately 100,000 gallons of #1 and/or #2 fuel oil per year for heating purposes; 2) the use of a stand-by 750 kilowatt generator as an emergency power supply during temporary power outages; 3) increases in visitor/tourist and employee vehicle emissions (autos and buses) in the vicinity of the proposed facility; and 4) odors from animals held at the facility.

Projected increases in vehicle emissions in the vicinity of the proposed project would vary with fluctuations in seasonal visitors/tourists in Seward. The summer months attract the largest volume of visitors/tourists to the Seward area and, therefore, vehicle emissions in the project vicinity are expected to be higher during these months than in other months of the year. Visitor/tourist fluctuations in Seward and to the proposed facility are addressed in detail in Sections 3.11 and 4.2.11 of this document.

Possible mitigation measures to minimize effects to local air quality as a result of operation of the proposed facility would require implementing one, or a number, of the mitigation measures presented and discussed in Section 4.2.12 of this document. These mitigation measures would reduce the amount of vehicle travel to the site and, therefore, reduce the amount of vehicle emissions in the project vicinity. These mitigation measures include: 1) encouraging higher vehicle occupancies for visitors; 2) encouraging higher vehicle occupancies for employees; 3) increasing transit/shuttle bus service to the proposed facility; 4) improving pedestrian linkages to the proposed facility; 5) encouraging other non-auto travel modes for local travel; and/or 6) increasing the use of the Alaska Railroad service between Anchorage and Seward.

CONCLUSION: The operation effects of Alternative I on local air quality are expected to be LOW. This is due to the fact that concentrations of regulated air pollutants in the Seward area are considered to be well below federal and state ambient air quality standards. The incremental increases in regulated pollutants generated during operation of the proposed project are, therefore, not expected to increase overall pollutant concentrations in the Seward area to maximum allowable levels. In addition, implementation of one, or a number, of the potential mitigation measures to reduce the amount of vehicle travel to the site as presented and discussed in Section 4.2.11 could further reduce effects from vehicle emissions in the project vicinity.

The proposed facility will be designed to support up to 125 birds, 6 to 12 harbor seals, 2 to 4 Steller sea lions, and 1 to 4 sea otters. Odors from these animals would affect air quality. However, due to the seawater circulation system (the entire water within the facility would be replaced 10-12 times per day), coupled with good housekeeping practices within the facility consistent with other, similar facilities, odors from the proposed project are expected to be NEGLIGIBLE outside the facility.

4.2.4 Noise

Effects of Construction Activity: Construction-related noise associated with the proposed action would result from equipment powered by internal combustion engines (earth moving, materials handling, and stationary equipment) and pneumatic impact equipment (jackhammers, impact pile drivers, etc.). Figure 4-2 presents typical noise ranges for various heavy equipment that will likely be used during construction activities. As shown on Figure 4-2, construction noise levels typically range between 68 and 105 dBA at a distance of 50 feet (please refer to definition of dBA in Section 3.4) from the source. However, this noise would be short-term and intermittent, and vary with different stages of project construction.

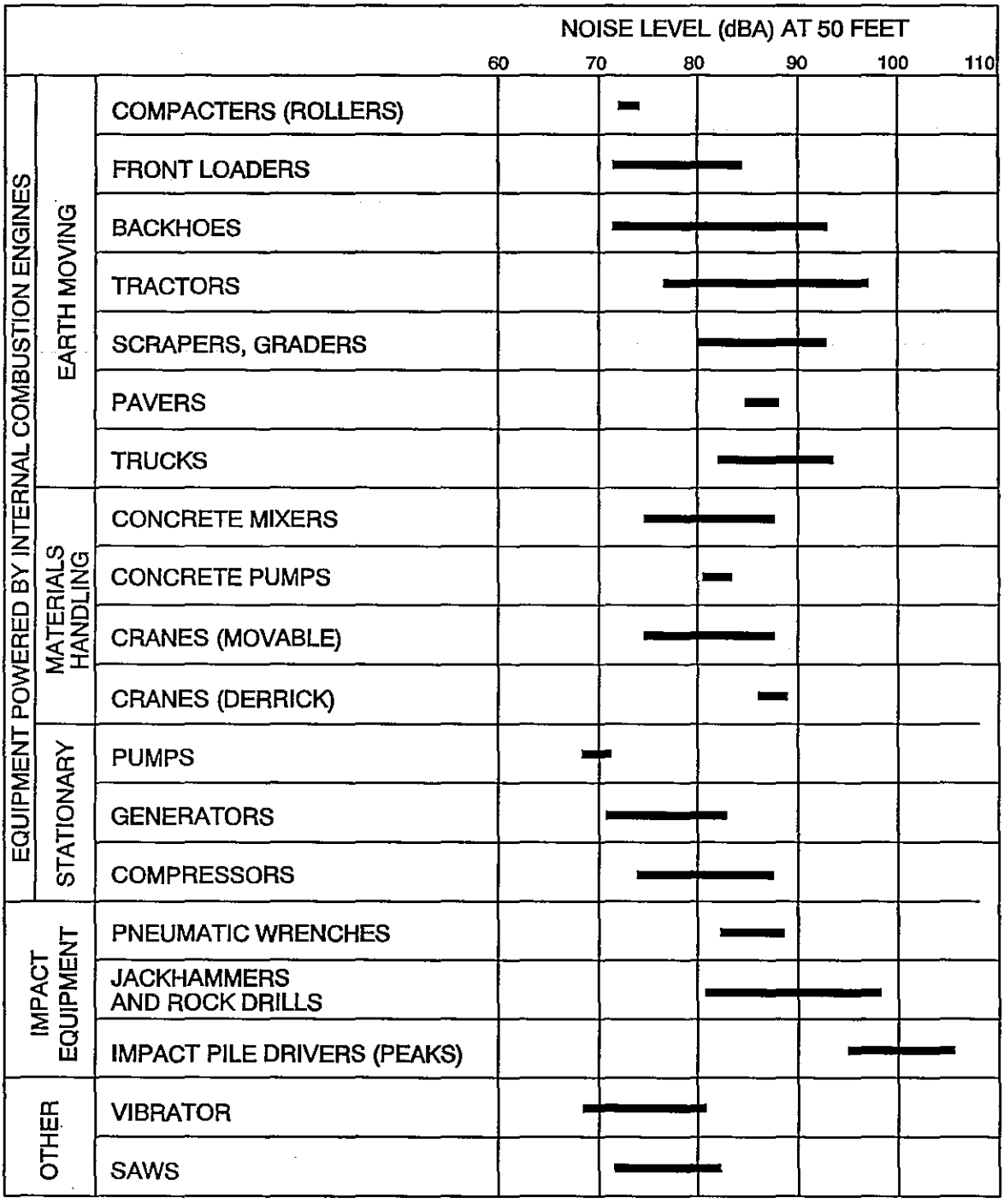
Mitigation measures to minimize noise as a result of construction activities that would be part of the proposed project include the following: 1) no construction would be performed within 1,000 feet of an occupied dwelling on Sundays, legal holidays, or between the hours of 10:00 p.m. and 6:00 a.m. on other days; 2) no construction equipment would have unmuffled exhaust systems, and all construction equipment would have sound control devices no less effective than those provided as original equipment; 3) construction equipment would comply with applicable EPA equipment noise standards; and 4) no pile driving operations would be performed within 3,000 feet of an occupied dwelling on Sundays, legal holidays, or between the hours of 10:00 p.m. and 6:00 a.m. on other days.

CONCLUSION: Construction of the proposed project would cause temporary increases in noise levels. However, with implementation of the measures mentioned above, noise effects from construction of the proposed project are expected to be LOW.

Effects of Operation: During operation of Alternative I, there would be noise associated with: 1) visitor and tourist traffic (vehicles and buses) in the project vicinity; 2) from birds and marine mammals held within the proposed facility; 3) use of the stand-by generator during power outages; and 4) from pumps and related equipment necessary to maintain adequate water circulation and water quality.

The proposed facility would be designed to house and support up to 125 birds, 6 to 12 harbor seals, 2 to 4 Steller sea lions, and 1 to 4 sea otters. Noise from these animals, especially those held in outdoor facilities, could be heard in immediate areas within and outside the facility. However, noise from these animals would be intermittent and vary with the number and type of individuals, and would rapidly attenuate away from the immediate vicinity of the facility. Thus, the noise effects (i.e., disturbance to humans) from animals at the facility are expected to be LOW, and no mitigation measures are proposed.

Noise would also occur as a result of intermittent operation of the stand-by generator during local power outages, or during testing. Pumps, chillers, and related equipment necessary to maintain adequate circulation and water quality would contribute to operational noise effects. However, the stand-by generator, pumps, chillers, and other circulation and water quality-related equipment would be housed in the basement level of the facility, minimizing noise from these sources.



Source: U.S. DOT Federal Highway Administration
Federal Aid Highway Program Manual,
Vol. 7, Chapter 7

CONSTRUCTION EQUIPMENT NOISE RANGES

Job No. 28347-002-160
DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 4-2

Secondary effects to noise would be caused by traffic increases in Seward from the increased visitors and tourism, however, this would be limited to operation hours.

CONCLUSION: Noise effects associated with facility operations are expected to be LOW.

BIOLOGICAL RESOURCES

4.2.5 Wildlife and Marine Resources

Consultation with FWS and NMFS was initiated in April and completed in May 1994 regarding possible adverse effects of the proposed project on threatened or endangered species (per Section 7 of the Endangered Species Act). Both agencies concluded that no effects would occur. FWS stated that no threatened or endangered species occur in the proposed project area. NMFS stated that the threatened Steller sea lion does not frequently enter shoreline waters or haul out on terrestrial portions of the proposed project area. See Appendix A for correspondence regarding the Endangered Species Act consultation for this proposed project.

Effects of Construction Activities: The effects of construction activities on terrestrial and marine resources are discussed below.

Terrestrial Wildlife

The planned site work would disturb approximately 7 acres of land. All of the site has, however, been cleared or altered in the past and currently supports little wildlife.

Human, vehicular, and mechanical activities are common in and around Seward and, generally, wildlife would be expected to habituate to the activity or disturbance. In some instances, construction activity would result in wildlife becoming attracted to the site, as in the case of improper food storage and garbage disposal. Northwestern crows, gulls, common ravens, black-billed magpies, and Steller's jays are the most likely wildlife to be attracted to improperly stored food and garbage. As part of the proposed project construction, food and garbage would be stored in covered storage areas or closed containers to prevent the attraction of wildlife.

There are no known wildlife species residing on the site, although small burrowing rodents likely occur and would be displaced during site excavations. Red squirrels, small rodents, and the little brown bat would be most likely to occur within the site area but their numbers are expected to be very small.

Birds (e.g., song sparrows) which occur in the general area of the site occasionally utilize shoreline armor rock for nesting habitat. Some small areas of armor rock will be excavated, but there should be no overall reduction in habitat for these birds. Other bird species such as bald eagles, glacuous-winged gulls, common ravens, and northwestern crows, may enter the construction-site, or occupy nearby areas, but none of these species is expected to be harmed by the project. Birds would either adjust to the increased noise levels or move to a less disturbed area.

CONCLUSION: The effects of Alternative I construction activities on terrestrial wildlife in the project area are expected to be LOW due to the low numbers of wildlife in the project vicinity. The increases in vehicular and mechanical activity and related increases in noise levels, as well as the temporary but low level of degraded air and water quality around the proposed site, are expected to have a LOW-level effect on area terrestrial wildlife.

Marine Birds

A large variety of marine birds utilize the nearshore areas of Resurrection Bay and the Seward area including marine oriented waterfowl, shorebirds, and the neritic and pelagic seabirds which use the waters of Resurrection Bay. However, there are no essential marine bird habitat areas immediately adjacent to the project site.

CONCLUSION: Marine birds may be affected by Alternative I construction activities, although the effects are expected to be LOW since there are no essential marine bird habitat areas adjacent to the project site. Potential effects consist primarily of short-term displacement.

Marine mammals

Noise and human activity at the construction-site may temporarily displace sea otters and harbor seals which occasionally feed along the shoreline or move through the nearshore area adjacent to the site. Construction activities, such as driving sheetpile, would generate noise and vibrations in the water which may temporarily displace diving mammals in the area.

CONCLUSION: Due to the short duration of Alternative I construction activities causing noise and vibrations in the nearshore area of the site, the effects of construction activities on marine mammals are expected to be LOW.

Effects of Operation: The operation of the facility would include research habitats for the holding of both marine birds and marine mammals, and wildlife rehabilitation facilities such as tanks and pools for live animals.

Marine Birds

The proposed facility is designed to support up to 125 birds, which would be held for research and rehabilitation, and public education purposes. Birds would be obtained primarily from the rehabilitation of injured individuals brought into the facility, or from the recovery of orphaned birds. There is the possibility of capture of some wild birds for research purposes. All birds would be isolated from contact with other wild individuals and from individuals undergoing rehabilitation to prevent the possible spread of disease. The primary species of interest would be those injured as a result of the EVOS spill, or those common to the EVOS spill area. These include several species of alcids, such as common and thick-billed murres, Kittlitz's and marbled murrelets, pigeon guillemots, horned and tufted puffins, and rhinoceros and parakeet auklets. Other marine birds held at the proposed facility may include harlequin

ducks, black-legged kittiwakes, and black oystercatchers. Captive birds would be isolated and wastewater from bird quarantine areas would be disinfected to prevent the possible transmission of disease from captive birds to the local population.

Common scavengers such as glaucous-winged gulls, common ravens, or bald eagles may be attracted to prey on captive birds and their food at the facility. However, to prevent the attraction of wildlife to captive birds and their food, bird holding areas would be protected by netting and facility staff would employ sanitary maintenance to minimize food sources for scavengers.

The number of captive birds at the center may increase as a result of natural breeding. Some of these birds may be released to the wild, but releases would be infrequent and would be expected to have negligible effects on wild populations. Birds brought from other institutions outside of Alaska would not be released to the wild in Alaska.

The effects on wild bird populations of individuals captured for research would depend upon the relative abundance of the species in question. Adherence to federal permitting requirements for the capture of migratory birds would make the effects of capturing a wild bird low to negligible.

CONCLUSION: The effects to wild populations of retaining a source of birds for research purposes are expected to be NEGLIGIBLE.

Marine Mammals

Marine mammals would be held at the facility for purposes of rehabilitation and research. The proposed facilities would be designed to hold harbor seals (6 to 12), Steller sea lions (2 to 4), and sea otters (1 to 4). Marine mammals would be obtained primarily from the rehabilitation of injured animals, from the recovery of orphaned pups, or from transfers from other facilities. Retention of this small number of animals is expected to have no effect on wild populations. Many of the animals held for a period of time may be considered "non-releasable" due to permanent injury or their adaptation to human activity which would affect their chances for survival in the wild. They would be considered permanent residents of the facility.

Animals which are likely to be released would be handled in such a manner so as to minimize habituation to humans, that is, their contact with humans would be minimal. Animals which are released to the wild would be tagged and their behavior monitored.

To minimize the potential of disease pathogens from rehabilitated marine mammals affecting wild populations, the following steps will be in place at the proposed facility: 1) the presence of a pathology laboratory at the facility to ensure detection of any diseases that may occur in animals retained there, 2) capabilities on-site to treat diseased animals, including the presence of a full-time veterinarian, 3) a seawater system designed to isolate and treat any pathogens, including those in individual quarantine units, and 4) an air ventilation system designed to isolate quarantine areas, thus preventing airborne transmission of pathogens.

Large numbers of fish and shellfish would be needed to sustain marine mammals at the facility. Fish and shellfish for sea otters, and fish for seals and sea lions would be obtained from local commercial sources and would have a negligible effect on species availability for sport and subsistence harvest.

Marine mammals are protected by the MMPA and the AWA. These acts require the facility to provide humane treatment during the capture and transport of mammals, and protection from abuse and harassment by the viewing public, respectively. The NMFS and the FWS are responsible for the administration and enforcement of the humane capture and transport of animals; while APHIS is responsible for ensuring humane handling and care of captive animals. To adhere to public display requirements of these acts, facility employees or attendants would supervise the viewing public. Additionally, physical barriers such as fences, walls, and glass partitions would be installed to provide animals with enough distance from the public so as to reduce potential harassment from the viewing public. Both methods may be employed, depending on the circumstances.

CONCLUSION: Effects of Alternative I facility operations on marine mammals would be BENEFICIAL for individuals which have been rehabilitated and released, while the effect on nonreleasable animals would be LOW since they would remain captive. The effect on wild populations from the retention of this small number of individuals would be a NEGLIGIBLE.

Marine Resources

The operation of the LSS will involve a seawater intake structure approximately 400 feet offshore, placed approximately 250 feet deep. This depth is well below the euphotic zone (where phytoplankton density is the highest) and also below the freshwater lens which carries much of the silt load from local streams.

Intake volumes would be approximately 4,400 gpm. Each intake structure (two redundant systems) would consist of a large diameter (18 to 20 inches), high density polyethylene pipe placed on the sea floor with the end sections elevated approximately 3 feet off the bottom.

Some small marine organisms that may become entrained into the intake pipe would be carried into a large seawater holding structure (wet well) at the facility, where they would be caught on one of the screens or filters as water is pumped to one of the several systems. The organisms would be flushed out with discharge water. Marine organisms which are likely to find their way into the intake pipe include several types of zooplankton, gamarid amphipods, juvenile shrimp, and juvenile fish (i.e., cod and pollock).

Water discharged from the facility is expected to have a slightly elevated temperature and a slightly lower salinity relative to ambient water quality. The outfall structure would be a perforated pipe 24 inches in diameter and would have a flanged end. The perforations can effect a dilution of the wastewater into the receiving water of up to 1:100. This dilution would greatly reduce any potential effect on the receiving water as far as temperature, salinity, or turbidity.

The depth of the outfall would be approximately 50 feet below MLLW so that organics from facility wastewater (i.e., particles of uneaten fish, shellfish, or fecal material not removed by filtration and ozone treatment) can be more rapidly decomposed. The outfall would also be located where it would not effect the intake structures of other facilities which require high quality seawater, such as the potential Mariculture Research Center and Shellfish Hatchery. The final depth and location would be determined through consultations with respective agencies.

Total volumes of the discharge water would be approximately 4,550 gpm (4,400 gpm sea water plus 150 gpm freshwater). Of this, approximately 2,600 gpm would be untreated flow-through water, while the remaining volume would be treated water from the proposed facilities.

Water contaminated with uneaten food and fecal material would be treated with ozone along with the other facility wastewaters. Small amounts of halogenated compounds such as chlorine (0.1 milligrams per liter (mg/L) maximum) and hypobromous acid (0.01 mg/L maximum) used in disinfecting surfaces and pools, would be treated to ensure that the discharge meets State Water Quality Standards.

The concentration of disinfecting chemicals in discharge water would be minimized by routing a portion of the disinfectant washdown to the sanitary sewer system. The surfaces near the marine mammal and marine bird pools would slope away from the holding water in the pools so that washdown water could be separated, further reducing the amount of chemicals remaining in the discharge water. The small amount of chemicals in the discharge water would be further diluted below levels which would effect marine fish or invertebrates.

Taking water from the 250 foot depth would minimize the entrainment of commercially important crustacean larvae (shrimp and crab), juvenile and larval fish, and other species which have planktonic life stages. These organisms are typically found in greater densities at higher levels in the water column. Biofouling organisms such as mussels, barnacles, and marine algae would also be much less prevalent at this depth. Experience with the existing IMS Seward Marine Center seawater system indicates that biofouling would not be a significant problem.

The sections of intake piping would be perforated with numerous one-inch holes which would reduce the velocity of incoming water to approximately 0.1 feet/second. The size of the holes and low velocity of water is intended to minimize the entrainment of small mobile organisms and prevent the entrainment of the larger marine fish and invertebrates.

Wastewater sources would be treated by the facility treatment system, diluted, and discharged to 50 feet below MLLW via a specially designed outfall diffuser head, therefore minimizing the concentration of contaminants from the facility, as well as minimizing organic buildup at the outfall location.

CONCLUSION: The effects of Alternative I operation of the water intake system on marine microorganisms such as amphipods, juvenile shrimp, and juvenile fish are expected to be LOW, considering their abundance in the local area. Due to the processing of all LSS wastewater through a treatment facility that would disinfect and dechlorinate wastewater prior to discharge into the bay, the effect of facility wastewater discharge on the nearshore marine environment is expected to be LOW.

4.2.6 Vegetation, Wetlands, and Habitat

Effects of Construction Activities: Because the site has been previously developed, the area is only sparsely vegetated with young seedlings, saplings, and grasses which would be removed during construction activities. The site would then be landscaped and specific areas planted with grasses, trees, and shrubs typical of the local native forest vegetation. Revegetation of the site after construction is completed would likely result in more vegetative cover than that which currently occurs on the site.

Wetland habitat areas directly affected by construction include the intertidal area adjacent to the site, which would undergo both removal of concrete remnants from the old Railroad Dock and the construction of a sheltered tide pool structure. Siltation from heavy equipment excavation along the shoreline may temporarily reduce the water quality in adjacent intertidal areas during the course of construction activities. Potential effects would be addressed through the COE permitting process. Stipulations attached to permits could include siltation curtains and/or seasonal restrictions on when construction activities may occur.

Most of the area where the sheltered tide pool would be constructed is presently barren of vegetation. Only a small amount of intertidal algae at the lower beach elevations, primarily popweed and filamentous green algae, would be affected. Some intertidal invertebrates, mostly barnacles, mussels, and small crustaceans may be lost in the development of this area.

CONCLUSION: The effects of clearing existing vegetation under Alternative I are expected to be NEGLIGIBLE as the site currently supports few trees and is sparsely covered with common colonizing species. The effects of development on shoreline invertebrates are expected to be LOW, as these species are abundant and would be expected to rapidly recolonize on the new structures.

Effects of Operation: The proposed landscaped vegetation on the site would create a small "park-like" habitat which would be utilized to some extent by birds and small mammals.

The small amount of intertidal habitat lost as a result of the proposed project would be mitigated for by the development of the artificial tide pool habitat in the same general location. Sheltered tide pools would support a higher diversity of epifaunal species than what presently exists on this level of the beach. Gravel beach habitat and old concrete rubble and armor rock currently cover the beach site. The new supporting structure or rock facing material will also provide a surface for attaching organisms such as barnacles, blue mussels, and intertidal algae. Overall, there should be a net increase in the diversity of the intertidal flora and fauna on this part of the beach.

CONCLUSION: The operation of the facility under Alternative I would have NEGLIGIBLE effects on area vegetation. There would, however, be a BENEFICIAL effect of landscaping the area, in that habitat for area birds, small mammals, and intertidal species would be created.

SOCIAL SYSTEMS

4.2.7 Visual/Aesthetics

Effects of Construction Activities: The proposed site and surrounding vicinity is an industrial waterfront property with adjacent historical structures that have little architectural cohesiveness. The proposed site and adjacent intertidal zone contain debris from the structures and docks destroyed by the 1964 earthquake and resulting tsunami. As part of site preparation, the existing Youth/Teen Center and a welding shop and a warehouse currently leased by NSHC would be removed. However, the warehouse would be retained during most of the construction and used as a staging facility.

In addition, there are two sites on Railway Avenue in the immediate vicinity of the proposed project that are included in the National Historic Preservation Act. These are the Iditarod Historic Trail (NHT78) and the Alaska Railroad Depot (NHR87), which are protected under the NRHP. There are five other sites of state or local historic importance in the project vicinity (refer to Figure 3-4).

Construction activities associated with the proposed facility would be visible from existing roads and viewpoints, including: from the downtown business district and Third and Fourth Avenues; the city park east of the proposed site; and cruise ships and other water craft in Resurrection Bay. Visual/aesthetic effects would be temporary, vary with specific construction tasks, and include a deterioration of existing vistas as a result of earthwork and other construction-related activities.

CONCLUSION: Visual/aesthetic effects as a result of Alternative I construction activities are expected to be LOW.

Effects of Operation: The proposed project design would provide an integration of traditional architectural elements with the surrounding landscape and habitats. As described in more detail in Chapter 2, the proposed project includes the development of three major landscape components. Those components are: (1) a public space between the habitats and the visitor parking lot; (2) the parking lot; and (3) the existing city park.

The public space between the visitor parking lot and research habitats would have three essential components. One would be a hard surface public plaza at the western end of the park and in front of the entrance to the educational component. This plaza would form an appropriate visual termination to Fourth Avenue and introduce the transition to the water's edge. The plaza would also be an opportunity for activities such as the start of the Mount Marathon Race, the city Christmas tree, and other Seward public events. The second element would be a viewpoint at the existing Municipal Dock.

The third element would be the link between these two points, formed by extensions and outcroppings of the rockwork of the habitat area. The link would also be planted with appropriate shoreline vegetation. These outcroppings and plantings would offer places of rest and protection from the weather. Like the habitat, the extensions and outcroppings would resemble the linear and folded glacial rock formations of the region.

The new parking lot would be paved, striped, and lighted, and would contain islands planted with appropriate shoreline vegetation. These islands and similar vegetation would also be placed along the bike path at the northern edge of the parking lot, which would provide an improved setting for the historic elements within the adjacent park.

Exterior wall systems for the building have not yet been determined. If a concrete or masonry bearing wall system is used, the exterior walls would be structural cast-in-place concrete, with design features such as wood or masonry inserts. If a steel frame is used, exterior non-structural curtain walls would be framed with light gauge metal studs. The roof would be an architectural-grade metal roof system, but it would not appear as an industrial building. The building would be less than 34 feet in height to protect views of Resurrection Bay from existing structures.

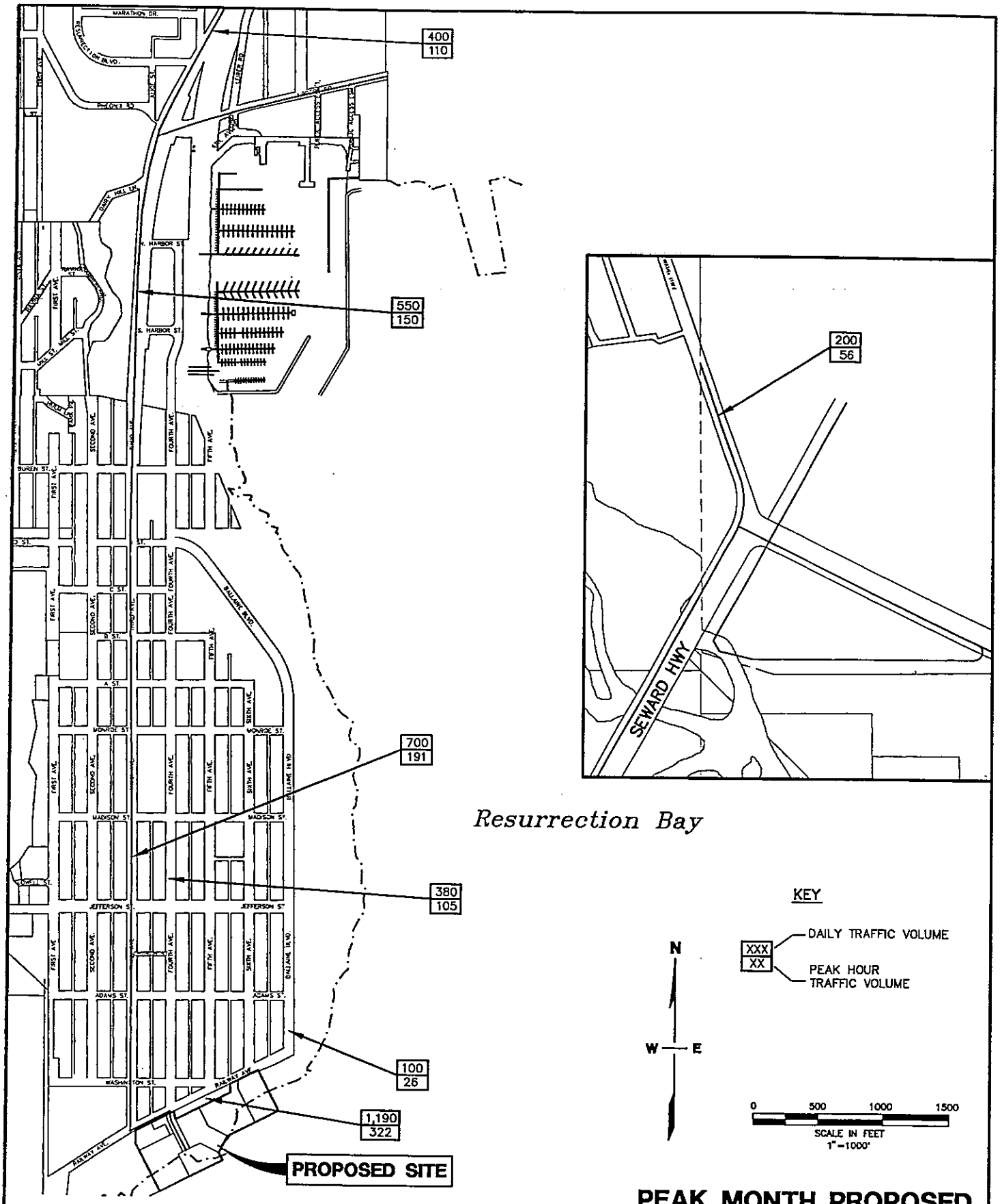
The proposed facility would be visible from existing roads and viewpoints in the immediate vicinity. These include those from the downtown business district and Third and Fourth Avenues, from the city park east of the proposed site, and from cruise ships and other water craft in Resurrection Bay (Figure 4-3). However, individual design elements and proposed landscaping would increase the overall visual/aesthetic quality of the area. In coordinatin with the SHPO, integration of traditional non-industrial architechtural elements would be compatible with surrounding landscape and habitats.

Secondary effects would result from a general upgrade of the area which may create the opportunity for other nearby property owners to redevelop or upgrade their properties.

CONCLUSION: The proposed project under Alternative I would create more aesthetically pleasing vistas than the existing, industrial oriented vistas that currently exist over the site. Therefore, the overall effect to visual/aesthetic resources as a result of project operation is expected to be BENEFICIAL.

4.2.8 Archaeological and Historic Resources

The NEPA and Section 106 of the NHPA are similar but separate compliance processes. The NEPA process must address a proposed action's potential effects on archaeological and historic resources, regardless of their designation. The Section 106 process requires an evaluation of whether the proposed action will result in "adverse effects" on archaeological resources and historic resources that are on, eligible, or potentially eligible for inclusion on the NRHP. The NEPA analysis below addresses the probable effects of the proposed project on archaeological and historic resources, based on the literature review and the results of the archaeological and historic resource surveys described in Section 3.8.2. and included in Appendix B. The NHPA Section 106 process will be completed through a MOA between the DOI, SHPO, City of Seward, and SAAMS; and further measures to mitigate adverse effects will be developed as part of the MOA.



PEAK MONTH PROPOSED PROJECT GENERATED TRAFFIC VOLUMES

Filename: FIG3-03.DWG

Job No. 28347-002-160

DAMES & MOORE

IMS PROPOSED INFRASTRUCTURE PROJECT
SEWARD, ALASKA
FIGURE 4-3

Effects of Construction Activities: The effects of construction of the proposed facility on archaeological and historic resources are discussed below.

Archaeological Resources

The AHRS lists no archaeological site on or in the vicinity of the proposed project, and a survey conducted by a certified archaeologist as part of Section 106 coordination with the SHPO has determined that there are no known archaeological properties in the vicinity of the proposed project (see Section 3.8.2). In addition, most of the excavation and placement of the project facilities would occur in areas previously filled during the 1950's, and would not affect any potential resources. To address concerns expressed by the Seward Planning and Zoning Commission and the Seward Historic Preservation Commission, archaeological monitoring will occur during the entire excavation phase of the project construction. If archaeological resources are encountered, construction would be stopped and the City of Seward and SHPO notified immediately. Consultation with these parties would provide direction on how to proceed with the protection or salvage of the resources, and with construction.

Five potential construction material borrow pits have been identified, three of which are existing and being used. Consultation with the SHPO will occur prior to proceeding with mining at any of these sites.

Historic Resources

There would be no direct effect on historic resources from construction activities. During construction of the proposed project, the NSHC warehouse, the NSHC welding shop, and the building now housing the Youth/Teen Center likely would remain in place. At the end of construction, these buildings likely would be removed. However, these three properties are likely ineligible for inclusion on the NRHP, and are not listed as historic resources in the Phase I Seward Historic Preservation Plan.

The area north of Washington Street across from the proposed expansion of the IMS Rae Building parking lot was not inventoried, but is not considered part of the area potentially affected, primarily because the parking lot expansion is an expansion of an existing use, and no structures will be constructed at this location. There would be no effects on any properties on or eligible for inclusion on the NRHP in the vicinity of the parking lot expansion. Expansion of the IMS parking lot would avoid any disturbance to the trees that are part of the historical site in their immediate vicinity, known as "The Line". While no structures from the Line remain at the site, these trees remain to mark the historic location.

A proposed fresh water pipeline leading west along the Railway Avenue utility corridor will be routed beneath the existing bridge at the outlet of the Lowell Creek flood control facility (which is on the NRHP) and would not directly modify the outlet flume or affect its visual integrity. There would be no effects on this NRHP property.

Historic structures adjacent to and across from Railway Avenue from the proposed project may be indirectly affected during construction due to a change in the noise levels experienced in the vicinity of the construction activities, which would detract from the setting of these historic properties. However, these effects would be temporary and only experienced during the 1994 to 1997 construction season (the adverse effects of construction activities described above in Section 4.2.7). With regard to Mile 0 of the Iditarod Trail, which was once in the vicinity but no longer has a physical manifestation, the construction activity would have no effects on the NRHP property.

A more notable potential effect is the change in visual surroundings in the immediate vicinity of the proposed project. Construction activities and the finished project facilities would be in close proximity to the Alaska Railroad Depot (which is on the NRHP) and Ladies (Hoben's) Park (which is likely eligible to the NRHP). However, the historical context of these structures was destroyed by the 1964 earthquake, and as the project is currently designed, there would be no effect on these two NHRP properties. The landscaping plan will be reviewed by the SHPO as a stipulation of the MOA. The visual and contextual integrity of the Seward Machine Shop, which is potentially eligible for inclusion on the NRHP, may be adversely affected. Based on the conceptual design, general types of adverse effects include altering the visual, structural, and historical context and setting of historic properties. Adverse effects can occur when the project design, size, scale, color, material, and character conflict with those same characteristics of nearby historic properties. Stipulations in the MOA would minimize adverse effects through appropriate project design and continuing consultation with the SHPO. When more specific information on the project design becomes available, the effects of the proposed project would be re-evaluated.

Because the final site design has not been developed, mitigation of adverse effects to historic properties under Section 106 of the NHPA involves stipulations included in the MOA being developed by the DOI, SHPO, City of Seward, and SAAMS. An additional measure being taken to adjust the project's relationship to Ladies Park (which will suffer no effect under Section 106, as the project is currently designed) concerns an offer by SAAMS, made at the August 22, 1994 meeting of the Seward Historic Preservation Commission, to work with the SHPO and the City of Seward to make improvements to the park in keeping with its historical appearance. When done in consultation with the SHPO and the City of Seward, such improvements will enhance this property and avoid any adverse effects resulting from improvements.

In addition, landscaping would be installed between the facility parking area and those adjacent historical resources to screen them from the physical presence and activity levels of the proposed action. Adverse effects also could be offset when existing industrial activity and storage of materials on the site are discontinued or moved off site as a result of the proposed action. This would reduce or remove existing visual elements which currently detract from historic resources, including those adjacent to and across the street from the proposed project site. The landscaping plan would be reviewed by the SHPO as a stipulation of the MOA.

CONCLUSION: There would be no effect on known archaeological resources from construction activities. Construction of the proposed project would have no adverse affect on four of the five NRHP or NRHP-eligible properties: the Lowell Creek Diversion Project, the Iditarod Trail, the Alaska Railroad

Depot, and Ladies/Hoben's Park. The Seward Machine Shop may be adversely affected by the proposed project. However, these adverse effects could be mitigated through the Section 106 consultation and stipulations in the MOA between the DOI, the lead federal agency, and the SHPO to ensure that the proposed project be compatible with the size, scale, color, material, and character of nearby historic properties.

Indirect effects on the visual and aesthetic setting of historical resources from noise and other construction activities would be LOW and consist of temporary increases in noise and dust levels, affecting the setting of historic structures.

BENEFICIAL effects would result from removal of building, material storage, and debris that currently detract from the historic setting.

Effects of Operation: The effects of operation of the proposed action on archaeological and historic resources is discussed below.

Archaeological Resources

The AHRS lists no archaeological sites on, or in the vicinity of, the proposed project. Additionally, the archaeological survey and investigation conducted by a certified archaeologist has determined that there are no known archaeological properties in the vicinity of the proposed project. Therefore, the proposed project operation would to have no affects on known archaeological resources.

Historic Resources

The proposed project also would have no adverse effects on historic resources in Seward, beyond those incurred by construction. The increased public activity at the Railroad Depot and Ladies/Hoben's Park is in keeping with their original functions. The Seward Machine Shop was built and operated as a commercial building serving customers, and increased public activity would not significantly affect the structure. The potential relocation of the ferry would, however, result in the discontinuation of use of the Alaska Railroad Depot (NRHP site 87) as a ticket office for the ferry. There are no formal plans, including project-related plans, for use of the depot at this time.

Overall, effects of construction and operations of the proposed project on archaeological and historic resources would be NEGLIGIBLE.

4.2.9 Land and Shoreline Use

Effects of Construction Activities: Construction activity effects on land and shoreline use in the project vicinity are discussed below.

Residential Use

The primary effect from construction would be an increase in demand on the short term rental and temporary housing market. Only two construction personnel are anticipated to relocate to Seward for the entire duration of the construction period. However, demand for short term living areas for trailer and recreational vehicles for most of the non-resident workforce would rise. This temporary housing demand would be primarily noticeable during the peak of construction employment from June 1995 to March 1996.

Approximately two-thirds of the construction workforce would come from outside of Seward. Several primary trades would be involved on the site for one year, including plumbers, sheet metal workers, and electricians, who would begin in May 1995 and finish in December 1996. The number of the project workforce, including other building trades, would remain above 25 (maximum of 47) during a 15-month period from May 1995 until July 1996. Due to varied labor tasks, different workers would be sequencing throughout the project. Demand for housing would be at its peak during this time, regardless of the type of construction activity.

Housing rental rates in Seward range from $410 to $650 per month. The vacancy rate for rental units in the Kenai Borough is 3.8 percent, one of the lowest rates in the state. The construction period is too short and the employment peak too small to require building of new permanent structures to house construction workers. Residential demand from construction activities would fall primarily on temporary facilities. Use of the construction-site for employee housing in RVs or campers is prohibited by municipal code. As potential mitigation, SAAMS will require, as part of the construction bid package, that the construction contractor arrange for housing for the construction workforce. A permanent construction camp facility at Mile 7 of the Seward Highway (Gary's Independent Gas Station and RV Camp) is projected to become operational during the summer of 1994, with accommodations for 90 workers (personal communication between Gary Zimmerman, owner, and Darryl Schaefermeyer, SAAMS, 5/27/94). Other private facilities may also be available.

Another effect from construction would be excavation and hauling the armor rock to be used for the shoreline area. Five sites are being considered. Utilizing the Kenai Peninsula Borough site (Site 1) would have a negligible effect on land use. The site is adjacent to an area already in use for refuse transfer. The addition of a resource extraction would not adversely affect land use adjoining this site since the nearby areas are predominantly vacant. Gravel trucks would, however, have to travel through residential areas to reach the Seward Highway, and then travel along Third Avenue to the project site. While restricting extraction operations to weekdays and "daylight" hours would mitigate most impacts at this site, some land use conflicts would occur near residential areas.

The residential density near the Japanese Creek site (Site 2) is the highest of the five sites, and extraction activities could be noticeable during construction. Ash Street is now used as access for a small number of residential properties. The addition of a temporary industrial use would change the nature and character of the area and temporarily lessen property values. Also, gravel trucks from this site would

travel through residential areas to reach the Seward Highway, and then follows the same route as for Site 1. While restricting extraction operations to weekdays and "daylight" hours would mitigate some of the impacts at Site 2, land use conflicts would occur near residential areas.

Use of the Lowell Canyon pit (Site 3) avoids extraction activities near residential areas, although gravel trucks would travel through residential and commercial areas along Jefferson Street and Third Avenue to get to the project site. Use of the state quarry on Lowell Point Road (Site 4) would also avoid extraction activities near residential areas, and truck access along Lowell Point Road would avoid residential and commercial areas. Use of the municipal material stockpile near the SMIC would have minimal use conflicts with activities in the area, but would result in gravel trucks traveling through residential and commercial areas along Nash Road, the Seward Highway, and Third Avenue to the project site.

Commercial Use

A portion of the $5.6 million to be spent on construction labor would help stabilize existing businesses and encourage startup of new enterprises. The monthly payroll for the proposed project is projected to be above $200,000 for every month between May 1995 to July 1996. Some of this money would be spent locally for food, recreation, and other services. This year-long infusion of cash may result in increased utilization of the downtown commercial district and potential upgrading. The NSHC warehouse and storage use would be relocated to somewhere away from the immediate downtown area.

Recreational Use

Construction would displace up to 57 RV spaces at Iditarod Campground. The Alaska Railroad Depot, the Ladies Park, and the bike path would be protected by fencing during construction of the facility; there would be no direct effects on use of those resources from the construction phase. During construction, however, the quality of the experience at these sites would be adversely affected by noise and dust levels from 1995 to 1997.

The source for the armor rock to be used for the shoreline area is assumed to be one of five potential sites. Hauling and blasting of material from any of these locations during fall, winter, and spring, plus restricting activities to weekdays and "daylight" hours would avoid most effects to land uses in the downtown area, and effects would be low.

CONCLUSION: Construction would create a short-term demand on residential land use; however, with potential space for RVs on-site and the availability of campsite space at Mile 7 of the Seward Highway, effects on residential use would be LOW. The NSHC facility would relocate off-site, resulting in a change in commercial use; construction payroll and material purchase expenditures would be BENEFICIAL to commercial uses in Seward. Construction would displace up to 57 RV spaces at the Iditarod Campground, although with the exception of peak weekends, demand could be accommodated at other city campgrounds. Adjacent recreational uses would be buffered by fencing.

Overall effects of Alternative I construction activities on recreational uses would be LOW.

Effects of Operation: The effects of operation of the proposed project on land and shoreline use are discussed below.

Land Ownership Status

There could be a modification in land ownership status at the project site associated with the proposed action. Land that is currently owned by the City of Seward, Tracts 2, 3, 4, 5, and 6, would be transferred or leased to SAAMS, for construction and operation of the project. City leases of Tracts 3 and 4 to NSHC are being terminated as part of this project (see Figure 3.9-1).

In response to increased housing demand and business opportunities generated by the proposed action, businesses or parcels of land may change ownership. However, foreseeable changes in land ownership status would be LOW.

Land Use

Development of the proposed project would displace some existing public and private land uses at the site. The removal of these uses would change the dominant land uses in this area from industrial and transportation to institutional and commercial.

The Youth/Teen Center would relocate as part of this project. Although alternatives are being considered, a site has not been determined; a portion of the cost and responsibility of relocation is anticipated to be part of the project budget.

Approximately 2/3 to 3/4 of the Iditarod Campground on Tracts 5 and 6 would be displaced by parking for the proposed facility; the remaining portion would continue to operate. The public Ladies Park to the north of the site, and incidental public use of the shoreline area from the Municipal Dock eastward for fishing, picnicking, or walking, would not be displaced or adversely affected. As potential mitigation, SAAMS is discussing improvements to Ladies Park with the City of Seward.

A private industrial use that would be discontinued includes two buildings and a fenced storage yard owned by NSHC. The main operation of NSHC is located near the new railroad dock at the head of Resurrection Bay to the north. SAAMS is negotiating with NSHC to buy out the remainder of their existing lease with the city and to purchase the existing warehouse. The contents of the warehouse have been sold and will be moved off-site by the purchaser. The warehouse will be used during construction, then removed from the site.

The state ferry could discontinue use of the Municipal Dock as an action separate from this project. The city has historically favored relocating the ferry service to a more suitable site in Seward northeast of the proposed project site, well away from the immediate downtown area.

The proposed action would represent an eastward extension of existing institutional/research land uses by the IMS facilities. The introduction of commercial uses associated with tourism and the education component is a new land use for the site.

The general land use pattern in Seward is gradually changing to reflect the increase in tourism in the area and state-wide. The overall effect of the proposed action would be to enhance the tourist-based land use in the downtown area. The foot traffic and attendant tourist activity at the education component of the proposed project would spill into the downtown area, especially those properties bordering the IMS Seward Marine Center and southern Fourth Avenue. The attendant opportunities would increase pressure on the adjoining properties to renovate and upgrade to capture tourist dollars. This focus on the tourist trade is currently evolving in the downtown area at a modest pace. It mirrors the trend of development that is taking place at and near the Small Boat Harbor. The overall effect of the proposed facility would be to accelerate the rate of tourist development in the city.

Residential demand resulting from the operation of the proposed project would not result in an increase in residential housing demand beyond the city's capacity. Twenty-five new hires from outside Seward are expected to work at the facility. The projected salaries for the executive director, finance director, program director, and the physical plant manager are all above the mean income for the city (1990 US Census). Nine other positions are within in the middle range of existing salaries. All of these positions are expected to be filled from other areas, which would cause relocation to Seward. The people relocating to Seward to work in the proposed facility should be able to find housing within their price range from existing stock or as newly constructed houses on one of the currently available lots. Permanent employment should not result in a shortage of housing or the need for significant new subdivision, utility, or other infrastructure development.

Land Use Regulations

The proposed action would require replatting of the property by the Kenai Peninsula Borough. It also would require rezoning and a CUP approval from the Seward Planning Commission and Seward City Council. SAAMS has applied to the City of Seward for both a CUP and rezoning of Tracts 3, 4, 5, and 6 to the CBD Zone. The Planning Commission has approved the CUP subject to 16 conditions, two of those conditions are currently under appeal with the Council Board of Adjustment. The City Council introduced a Zoning Ordinance change supporting the rezoning request to CBD. This request will be subject to a Public Hearing and Council action on September 12, 1994. If approved, the zoning change would be effective 10 days later, on September 22, 1994.

The project would also require compliance with Seward Building Codes and would be subject to a consistency review with the Kenai Peninsula Borough Coastal Management Program. This review would be conducted when applications for appropriate state and federal permits are submitted.

CONCLUSION: Existing land use at the project site would change due to the proposed action, with City of Seward-owned Tracts 2, 3, 4, 5, and 6 leased or transferred to SAAMS for construction and operation of the project. Two recreation uses on the project site, a portion of the Iditarod Campground and the

Youth/Teen Center, would be displaced, with the latter relocated to an alternate site. Effects on recreation use would be MODERATE. Increases in residential land use associated with project workforce would be NEGLIGIBLE for project construction and LOW for project operation. Existing land use at the project site would change from industrial and transportation uses to commercial uses, particularly if the ferry is relocated. The proposed action would require replatting of the project site by the Kenai Peninsula Borough, rezoning and a CUP from the City of Seward, and is subject to a Consistency Review with the Borough Coastal Management Program.

Overall, effects of Alternative I on land and shoreline uses would be LOW.

4.2.10 Socioeconomics

Effects of Construction Activities: The effects of the proposed project construction activities on socioeconomics in Seward are discussed below.

Local Economy

Construction of the proposed action would have a moderately beneficial effect on the economy of Seward through two mechanisms. First, the project would create temporary construction jobs in Seward, approximately one-third of which would be local hire (see following discussion under demographic characteristics). The peak construction workforce is estimated at 47, with an estimated payroll of $5.6 million. An unknown percentage of this payroll would be spent locally, resulting in beneficial effects to the Seward economy during the construction period. Secondly, approximately $500,000 of construction expenditures would be made locally for goods and services. This represents a beneficial effect on the Seward economy during the construction period of 1994 to 1997.

Demographic Characteristics

The non-resident project workforce would create a temporary increase in the population of Seward during the construction period of 1994 to 1997. Assuming that two-thirds of the workforce would be made up of non-residents, the population increase would remain above 15 for the majority of construction, with an additional 32 workers added during peak construction. The effect of this represents approximately a 1 percent increase in community population, which would be negligible.

Construction of the proposed project will create a workforce that would remain above 25, to a maximum of 47, during a 15-month period from May 1995 until July 1996. Due to varied labor tasks, different workers would be sequencing throughout the project, and it is difficult to estimate the total full-time equivalent of jobs created. Total construction payroll is estimated at $5.6 million; monthly payroll would remain above $200,000 from May 1995 through July 1996, peaking at $365,000 in September 1995. Compared to the 1992 annual payroll of Seward employment as an approximate indicator, the increase in wages would represent a threefold increase in construction payroll, but represents an approximate 5 percent increase in the total annual payroll.

Community Infrastructure and Service Characteristics

Construction of the proposed action would create an increased demand for water, sewer, and electric services at the project site. Because adequate capacity exists in all of these services, the potential adverse effect would be negligible and offset by charges for those services.

In order to construct and operate the facility at this site, electric power lines would need to be rerouted along Railway Avenue. Seward's Comprehensive Plan calls for new or rerouted powerlines to be located underground whenever possible. In addition, the proposed pipeline from the freshwater source to the project site would be located in an existing right-of-way along Railway Avenue. If this occurs, excavation would cause temporary disturbance of Railway Avenue.

The non-resident construction workforce would create a demand for temporary housing for the duration of the construction period. This will be arranged by the contractor. A permanent construction camp facility at Mile 7 of the Seward Highway is projected to become operational during the summer of 1994, with accommodations for 90 workers (personal communication between Gary Zimmerman, owner, and Darryl Schaefermeyer, SAAMS (5/27/94). Other private RV facilities may also be available. Construction effects on demand for Seward housing would be low.

It is unlikely that the majority of non-resident construction workers would move their families to Seward for the period of construction; consequently, effects on the Seward schools would be negligible. Non-resident peak employment of 32 could create extra demand for health and social services, although this demand would be low. Police and fire service would also be required during the period of construction. However, the project site is within the municipal service area, and the need for coverage is not expected to change.

Public Fiscal Characteristics

An increase in sales tax revenue to the city and Kenai Peninsula Borough may occur as a result of construction. Because the proposed project would be operated by a non-profit organization, and purchase of materials that become part of a non-profit organization structure are exempt from sales tax, it is estimated that this beneficial effect would be LOW. An increase in sales tax revenues would, however, occur from purchases made by the construction workforce during the construction period.

Construction of the proposed action would displace approximately 3/4 of the sites at the Iditarod Campground. Camping fees would decrease due to that displacement; however, adequate capacity exists in other campgrounds during non-peak periods to handle the displacement. During the Fourth of July and Silver Salmon Derby, the loss of 3/4 of the revenue would be approximately $3,400 to $3,900.

Quality of Life

Project construction would temporarily degrade the social environment and quality of life in the vicinity of the proposed project due to factors such as increased noise and dust levels, and construction-related traffic. The effect would last during the construction period of 1994 to 1997, and would be noticeable in adjacent residential and commercial areas, the Ladies Park, and the remaining portion of the Iditarod Campground. However, construction activities would not occur during holiday weekdays, or between the hours of 10:00 p.m. and 6:00 a.m. If the quarry on Lowell Point Road is used as a materials source, the effects on traffic on Lowell Point Road would be noticeable during the period of November 1994 to March 1995, due to trucking of fill. The overall effect of construction on quality of life would be low.

CONCLUSION: The adverse effects of the construction phase of Alternative I on the socioeconomic characteristics of Seward would range from NEGLIGIBLE to LOW; and some BENEFICIAL economic effects would occur.

Construction of the proposed project would have a BENEFICIAL effect through creation of employment and construction expenditures in Seward; approximately 1/3 would be local hire. Increase in population and demands on infrastructure would be NEGLIGIBLE. Adverse effects on housing would be LOW, with the demand met at suitable locations. Construction expenditures and local expenditures by the project workforce would have a low-level BENEFICIAL effect on public fiscal characteristics. There would be a NEGLIGIBLE loss of revenue from the Iditarod Campground. Construction effects on quality of life related to noise, traffic, and dust levels would be LOW.

Effects of Operation: While the goal of the proposed project is to increase the scientific understanding of the spill-affected area, it would cause a number of direct impacts to Seward's private sector. The effects of proposed project operations in Seward are discussed below.

Local Economy

The proposed facility would become a new, year-round employer by the opening in June 1997. This outcome would be consistent with the city's development strategy in recent years; to provide Seward residents with more stable, less seasonal income opportunities. It would create employment and increase local procurement of goods and services which would continue during facility operation. Such local spending would generate new jobs indirectly, and tax revenues and moorage fees would increase.

Indirect employment is likely to be created by the project in several sectors of Seward's economy (food and lodging, transportation, retail trade, and services) due to the new demand for products and services to operate the facility, and the need to accommodate additional tourists. When "new money" enters a local market, each dollar changes hands several times before it leaves the local economy. For this project, annual operations are estimated to cost $3,836,600. Of this amount, approximately $197,500 would be spent on local goods and services (See Calculation #5, Appendix E), plus $519,754 in municipal utilities, for a total of $717,254 per year. Economists have developed "multipliers" to estimate the secondary sales and employment effects of such expenditures (Northern Economics, 1991). While a

multiplier effect would apply to the proposed project, specific sales multipliers and employment multipliers to estimate the secondary effects of project spending have not been developed.

Overall, the education and visitation component of the proposed project would fuel tourist development in Seward by attracting approximately 50,000 new tourists to town, beyond the visitors currently arriving for other purposes. The project would also attract additional traffic and business to the central business district, compared with the trend in recent years of attracting visitors to the development at the north end of town in the Small Boat Harbor area. The additional activity could be favorable to current visitor-oriented economic interests and provide additional local economic opportunities. The facility would also be likely to extend the average length of visitors' stays, thereby increasing the economic benefits to visitor-oriented businesses: food and lodging, transport, retail trade, and recreational services.

CONCLUSION: The overall effect of Alternative I on the local economy would be BENEFICIAL.

Demographics

The proposed project would increase the temporary and transient resident populations in Seward. At least 25 new employees would be hired from out-of-town to work at the facility. Given that many of these people would move to town with their families, the estimated number of new residents due to direct employment would be 74 people. This assumes that the new employees hired to work at the facility would mirror the demographics of Alaska as a whole (see Calculation #1, Appendix E). The Seward area's current population is 3,937, including residents in adjacent areas. Seventy-four new residents would represent a 2.7 percent increase in year-round population as a direct result of this project, which would be a negligible increase in population.

In addition to this slight increase in year-round population, the six additional visiting researchers projected to work at the proposed facility would increase the temporary resident population. However, these individuals would be funded by grants from outside the project budget, and are not likely to establish long-term residences in Seward.

The transient, non-resident population is projected to increase by the greatest number. In each of the first 5 years of operations, approximately 50,000 new visitors would come to town specifically to visit the facility. Approximately one-half of the new visitors are projected to come to Seward during the off-peak period of October through May. The increase in visitors during the off-peak season represents a 35 percent increase during this period (see Calculation 5, Appendix E, and discussion of effects on Quality of Life in this section).

The proposed facility would be one of Seward's larger employers, and would increase employment in the Seward area with direct and indirect new jobs. Operations plans show that direct new employment for operations would be higher in summer than in winter, given a lower number of visitor-related staff requirements during winter months. Summer staffing is projected to be 67 full- and part-time workers.

Winter staffing is projected to be 56 full- and part-time workers. As shown in Table 4-1, an estimated 20 full-time equivalent new jobs and 22 part time new jobs would be filled by Seward residents. Another 25 full-time equivalent jobs would be filled by individuals hired from outside of Seward.

TABLE 4-1
PROPOSED LOCAL AND NON-LOCAL HIRE FOR PROJECT OPERATIONS

	Full-Time Equivalent	Part-Time
Local Hire	20	22
Non-Local Hire	25	0
TOTAL HIRES	45	22

Source: Heery International, Inc., IMS Infrastructure Improvement Project #94199: Draft Proposed Operating Characteristics, May 13, 1994, pp.10.

The new jobs would have a beneficial effect of reducing Seward's unemployment rate, which has ranged from 8 percent in summer to 18 percent in winter during recent years. Projected job titles and salary information are shown on Table 4-2.

Per capita income in Seward in 1990 was $16,615. Median household income was $37,049. The average salary of employees in the new jobs hired for Alternative I would be $29,337.31 (based on all full-time salaried and all part-time hourly positions, with benefits of 35 percent of base annual salary included). This average salary is 77 percent higher than the 1990 per capita income.

Total payroll for the project's first full year of operations would be approximately $1,965,600. The total 1992 payroll in Seward was $44,130,319. The project-related payroll added in 1997 would represent an increase of 4.5 percent over the 1992 payroll.

Indirect employment would likely be created by the project in several sectors: food and lodging, transportation, retail trade, and services, due to the new demand for products and services to operate the facility, and the need to accommodate additional tourists. The estimated increase in indirect employment would be beneficial, but the magnitude is unknown.

CONCLUSION: The increases in employment, income levels, and total payroll would have beneficial effects on Seward's economy and population. The increase in the permanent resident population of Seward would be negligible; the increase in transient population would be low. The overall effect of Alternative I on demographics would be NEGLIGIBLE, with BENEFICIAL effects in employment and income levels.

TABLE 4-2
AVERAGE WAGE RATES FOR SELECTED PROJECT OCCUPATIONS

	Position Status	Base Annual Salary	Benefits 35% Annual	Total Salary Annual	Local Hire	Outside Seward Hire
Executive Director	1 FTE	$100,000	$35,000	$135,000		X
Executive Secretary	1 FTE	$27,000	$9,500	$36,500	X	
Secretary Assistants	2 PT	$10/Hr.	$0	$20,000	X	
Finance Director	1 FTE	$60,000	$21,000	$81,000		X
Administrative Assistant	1 FTE	$22,200	$7,800	$30,000	X	
Marketing Director	1 FTE	$40,000	$14,000	$54,000		X
Membership Coordinator	1 FTE	$35,000	$12,00	$47,000	X	
Accounting Assistant	1 FTE	$41,500	$14,500	$56,000	X	
Lead Cashier	1 FTE	$18,900	$6,600	$25,500	X	
Cashiers	16 PT	$10/Hr.	$0	$62,600	X	
Shop Manager	1 FTE	$30,000	$10,500	$40,500	X	
Shop Assistant	1 FTE	$20,000	$7,000	$27,000	X	
Shop Assistant	2 PT	$10/Hr.	$0	$22,400	X	
Program Director	1 FTE	$70,000	$24,500	$94,500		X
Administrative Assistant	1 FTE	$22,200	$7,800	$30,000	X	
Physical Plant Manager	1 FTE	$50,000	$17,500	$67,500		X
Assistant Plant Engineer	1 FTE	$35,000	$12,250	$47,250	X	
Custodians	2 FTE	$18,750	$6,500	$25,250	X	
		$18,750	$6,500	$25,250	X	
Custodians	2 PT	$10/Hr.	$0	$25,200	X	
Education Director	1 FTE	$35,000	$12,250	$47,250		X
Curators	4 FTE	$35,000	$12,250	$47,250		X
		$35,000	$12,250	$47,250		X
		$35,000	$12,250	$47,250		X
		$35,000	$12,250	$47,250		X
Marine Veterinarian	1 FTE	$70,000	$24,500	$94,500		U of A/ EVOS
Animal Care Technicians	5 FTE	$30,000	$10,500	$40,500	X	
		$30,000	$10,500	$40,500	X	
		$30,000	$10,500	$40,500	X	
		$30,000	$10,500	$40,500		X
		$30,000	$10,500	$40,500		X
Lab Technician	1 FTE	$30,000	$10,500	$40,500		X
Night Supervisors	3 FTE	$20,000	$7,000	$27,000	X	
		$20,000	$7,000	$27,000	X	
		$20,000	$7,000	$27,000	X	

TABLE 4-2
AVERAGE WAGE RATES FOR SELECTED PROJECT OCCUPATIONS
(continued)

	Position Status	Base Annual Salary	Benefits 35% Annual	Total Salary Annual	Local Hire	Outside Seward Hire
Security	2 FTE	$25,000	$8,700	$33,700	X	
		$25,000	$8,700	$33,700	X	
Endowed Chair - Chief Scientist	1 FTE	$0	$0	$0		U of A
Administrative Assistant	1 FTE	$22,200	$7,800	$30,000	X	
*Endowed Chair	1 FTE	$0	$0	$0		U of A
*Endowed Chair	1 FTE	$0	$0	$0		U of A
Lab Technicians	2 FTE	$30,000	$10,500	$40,500		U of A
		$30,000	$10,500	$40,500		U of A
University of Alaska Students	6 FTE	$22,200	$7,800	$30,000		U of A
		$22,200	$7,800	$30,000		U of A
		$22,200	$7,800	$30,000		U of A
		$22,200	$7,800	$30,000		U of A
		$22,200	$7,800	$30,000		U of A
		$22,200	$7,800	$30,000		U of A
Visiting Researchers (6 FTE)		$0	$0	$0		IMS/ EVOS/ Other
	45 FTE/ 22 PT		Subtotal	$1,965,600		

*Assume $1,500,000 endowment cost per chair earning 5% per annum - $75,000.
Note: FTE = Full Time Employee; PT = Part Time. All positions would be funded by the proposed project, except the visiting researchers. That funding would be from research grants.

Source: Heery International, Inc., IMS Infrastructure Improvements Project, 1994.

Community Infrastructure and Service Characteristics

The capacities of all public utilities in Seward are sufficient to supply the anticipated requirements of this project. The City of Seward provides public utility services and finances utility operations through user charges. These charges go into discreet "Enterprise Funds" for electricity and water/sewer to ensure that costs are recovered and services can be provided on a continuous basis.

Water: Potable water consumption in Seward has recently been 1.2 to 1.5 million gpd, or approximately 22 percent of the current supply. The proposed facility would use an estimated 21,470 gpd in domestic water, which is an approximate increase of 2 percent over the current consumption. Approximately 78

percent of capacity would remain available. An existing 6-inch water line runs across the project site to the Municipal Dock. This line would need to be maintained for the state ferry while it is still docking at the site, and for other vessels using the Municipal Dock. Additional freshwater for genetic fisheries studies would be provided from a spring and piped to the project site, creating no additional demand on the city's water supply.

The effect of the proposed project on water use would be NEGLIGIBLE.

Sewer: The Sewage Treatment Plant is currently operating at approximately 50 percent of its capacity. Current volume is 700,000 gpd through the city sewer main and pump station. On an average high use day, with domestic water use at the proposed facility projected to be approximately 21,470 gpd, the additional volume would amount to an increase of 3 percent over existing wastewater flows. Approximately 46 percent of available capacity would remain. A sewage line crosses the project site and would need to be relocated to Railway Avenue. A stormwater line also crosses the site and drainage would need to be maintained, although it can be reconfigured. Also, some fraction of visitors might extend their stay in Seward, such as by staying overnight in order to visit the facility the following day, this might slightly increase the sewage volume, which would be a secondary impact on sewage capacity.

The effect of the proposed project on sewer service would be LOW.

Electricity: The city's electric utility has a capacity of 10.5 mw of power generation. Peak consumption in Seward occasionally reaches 9 mw. The peak electrical load at the proposed facility is projected to be 1,200 kilowatts (1.2 mw) of "connected load", not all of which would be demanded at one time. The City of Seward's electric utility has more than sufficient transmission and distribution capacity to accommodate this demand without adversely affecting utility customers or rates. In the event of an interruption of service, the utility has sufficient generation capacity at the Fort Raymond substation to provide continued electric service to Seward customers (D. Calvert, personal communication, 1994). In addition, the proposed project would have a "stand-by" generator for use during power outages.

In order to construct and operate the facility on this site, electric power lines would need to be rerouted along Railway Avenue. Seward's Comprehensive Plan calls for new or rerouted powerlines to be located underground whenever possible. If this occurs, excavation would cause temporary disturbance of Railway Avenue.

The additional electrical load from the proposed facility would have a NEGLIGIBLE effect on Seward's electrical capacity.

Solid Waste and Recycling: Solid waste in Seward is collected and staged at a new transfer facility which opened in 1992. From there, waste is transferred to a Kenai Peninsula Borough facility in Soldotna. The proposed project would generate solid waste and recyclable materials from three sources; the facility operations, household waste from new employees' households, and the 50,000 additional visitors to the facility who generate refuse during their stay in Seward by purchasing meals and other products.

There are over 1,000 households in Seward, and dozens of commercial facilities. In 1993, 5,136 tons of refuse was transferred out of Seward (this included waste from cruise ships and tourists as well.) The proposed facility operations would generate solid waste typical of office facilities, plus other laboratory and research-related waste. Domestic waste from the 25 new employees' households would be added to this volume. These two sources could constitute approximately 200 tons of refuse per year. Compared with 1993, this would be equivalent to a 4-percent increase in volume, and an increase of nine truck hauls from Seward to Soldotna per year. The volume would be negligible in terms of capacity of the Seward transfer facility and Borough landfill. Increased costs for the additional hauls would be incurred by the Borough. (T. Frothingham, personal communication, 1994).

A secondary impact of the project would be the additional solid waste generated by the 50,000 people projected to visit this facility who would not otherwise come to Seward. While passing through Seward, visitors would be likely to make other purchases at restaurants, gas stations, or gift shops and dispose of packaging from these products. This volume of solid waste could amount to 300 tons of refuse per year, or an increase of 6 percent over the city's 1993 volume, and an 14 additional truck hauls per year. Additional costs would be incurred by the borough, of a small amount relative to the overall budget. (T. Frothingham, personal communication, 1994).

Recycling of materials in Seward is limited by the capacity of staff to store materials at the transfer facility and the limited number of volunteers assisting in the effort. The facility and households would generate recyclable materials such as paper, cardboard, metal, and glass. The added volume would be minor in relation to current volumes, but the number of volunteers may need to be increased in order for the program to remain effective. (O. Baumgardner, personal communication, 1994.)

In conclusion, the increase in solid waste generated by the facility, new households, and additional visitors would have a LOW effect on Seward's solid waste handling capacity and the cost. However, the combined effects of direct and secondary solid waste streams could cost the borough an additional unknown amount for hauling and operations each year.

Telephone: The telephone system has a capacity for 10,000 telephone connecting lines. In 1993, 2,300 lines were in service. Assuming that the proposed facility will require 10 phone lines, and each new employee will require a phone hook-up in their household, approximately 35 new phone lines would be needed. These lines would be well within the capacity of the telephone system. Telephone and cable lines run along Railway Avenue on existing power poles.

The additional phone service required due to the proposed project would have a NEGLIGIBLE effect on Seward's telephone system.

Fuel Supply: No data has been found to suggest that the proposed project would impact fuel supplies or prices in Seward. Estimated annual heating oil requirements would be $159,000 for facility operations.

The proposed project would have a BENEFICIAL effect on fuel suppliers due to local purchasing of heating oil.

Housing: In terms of housing, the proposed project could have both beneficial and adverse effects. New residents associated with the facility would cause a temporary tightening of the housing market by occupying 20 percent of the available, currently vacant units. This would reduce vacancy rates and increase housing prices in the short term, which could have an adverse effect on other potential renters and home buyers.

New employees of the facility would need to secure their own housing; the facility would not provide housing. While the supply of housing in Seward is adequate to meet this demand, the projected influx of new occupants would likely further reduce housing vacancy rates and increase prices in the short term. The vacancy rates of all housing in Seward was at 12 percent in 1990. This rate is low compared with Alaska statewide, at 18.8 percent in the same year. Given that approximately 121 units were vacant, and assuming the vacancy rate remains constant until 1997 when the new residents would arrive, an adequate number of units would be available for the estimated 21 new families and four additional individuals associated with this project. It is likely that some families would rent homes initially and others would buy at the outset, creating increased demand and possibly raising prices in both the rental and purchase markets (K. Martin, personal communication, 1994).

Some of Seward's housing stock is thought to be substandard in quality and code compliance. An unknown number of the new residents would want to build new houses, or upgrade existing houses, to meet needs or preferences not met by Seward's existing housing stock. For instance, only 10 percent of owner-occupied units are valued at $150,000 or higher, so new residents with larger families or higher incomes may have difficulty finding larger houses or houses in the higher price range. Such a demand could trigger development of some of the 800 lots available in town. New construction would result in employment opportunities, improvements to the housing stock, and additional property tax revenues to the city.

The availability of accommodations in Seward restricts the number of overnight visitors, particularly during summer months. Precise figures have not been compiled, but hotel rooms are scarce and rates are high during the peak season. Affordable overnight accommodations for school groups during the off-peak season, September through May, could be a problem (i.e., availability and cost). This project could place additional demand on affordable overnight accommodations, with influxes of new visitors attracted by this project, but could provide a local economic opportunity as well.

The workforce associated with the proposed project would have a MODERATE effect on housing vacancy rates and a temporary LOW effect on housing prices. New visitors attracted by the proposed project would have a MODERATE effect on the availability of affordable overnight accommodations.

School System and Education: The project's education component would offer exhibits of marine habitats and species, interpretive displays, a setting for interaction with research staff, and facilities which could complement teaching facilities locally and across the state. The education component would increase educational opportunities for Seward students and other residents, as well as residents of other communities in South-Central Alaska and beyond.

The interest in school field trips to Seward for marine education has been increasing at the existing IMS facility in recent years. The proposed education component could meet this demand with new educational facilities. During the fall/winter/spring season, the facility would be opened on a reduced schedule, but school groups or other tours would be scheduled on request.

Approximately 29 new students could move to Seward and enroll in the public schools as a result of the proposed project. This estimate is based on the number of new employees hired from outside Seward and an average number of children who might move with the employees to Seward (See Calculation #2, Appendix E).

Impacts to the schools would depend upon the ages of students who would be enrolled and upon the existing enrollment at the time of project startup. The elementary school has a capacity for 17 more students than are currently enrolled. The junior and senior high schools have a capacity for 296 more students than are currently enrolled. If more than 1/2 of the estimated new students were to be enrolled in the elementary school, that school could reach capacity. However, the age groups of additional school-age students is unknown, and the capacity of the elementary school could be reached independent of the proposed project.

The proposed project would have a BENEFICIAL effect on education in Seward and the region. Enrollment at the elementary school could reach capacity regardless of the proposed project; the overall effect of the project on school capacities would be LOW.

Health and Social Services: The three percent increase in year-round population would result in a slightly increased demand for health and social services. The 50,000 additional visitors to Seward would also increase demand throughout the year, particularly during the peak summer periods and primarily for minor medical emergency services. Seward residents are concerned about improvements presently needed at the hospital in order to improve the quality of service. These concerns were made clear in 1993 and 1994 community surveys. However, the hospital is currently under utilized, and the increase in use would have a positive effect on the hospital.

The proposed action would have a NEGLIGIBLE effect on capacity for health and social service delivery.

Police/Fire/Emergency Services: The Seward Police Department anticipates that, with additional visitation levels, user conflicts and minor crimes could occur. The Department's capacity to respond and the dispatch and communications system in place are more than adequate to cope with increased activity that would be associated with the proposed facility. One limitation, however, would be the city jail, which is undersized for current demand.

The water supply for fire protection at the proposed facility would be provided from the city's water main. The water supply and pressure near the project site is sufficient to supply the fire needs of the proposed building. The Fire Department and its volunteers have the capacity to respond, however, so the presence of the facility would not adversely impact the Department's ability to serve the rest of the downtown area (D. Squires, personal communication, 1994). According to Seward's fire officials, the

proposed buildings would present fire fighting challenges due to the number of people expected to be present in the facility during hours of operation.

Fire protection systems for this proposed facility would be designed and installed to meet the Uniform Building Code 1991; the Uniform Plumbing Code 1991; the National Fire Protection Association Standards; local, state, and federal codes and regulations; and the owner's insurance company. In the next year or two, the city's fire protection system will be reviewed and rated for purposes of updating fire insurance premiums in the area. The rating is likely to improve due to recent equipment upgrades, which would result in reduced premiums for commercial buildings in town. The presence of this project should not affect whether, or how much, the premiums change (John Gage, personal communication, 1994).

Current equipment and volunteer capacity of Seward's ambulance and emergency services satisfies existing needs and could cover additional needs without further equipment purchases. Currently, the number of ambulance calls in summer months (the "run-load") is two to three times higher than in winter months. The current run-load is 42 per summer month. The presence of 50,000 new visitors in Seward each year plus 74 new residents could result in 4 to 5 additional calls per month in summer. This would represent a moderate increase.

The proposed project would have a NEGLIGIBLE effect on police and fire services, and a MODERATE effect on emergency services and the city jail.

CONCLUSION: The overall effects of Alternative I on community infrastructure would range from BENEFICIAL to MODERATE (adverse). Effects on education would be beneficial; effects on water, solid waste, electric capacity, telephone service, health service, and fire and police would be negligible; effects on sewer services and school systems would be low; and effects on emergency services, the city jail, and housing would be moderate.

Public Fiscal Characteristics

The proposed project would cause several changes in city revenue characteristics. There would be a decrease in campground fee revenues, and increases in moorage fees, utility revenues, sales tax revenues, and property tax revenues. In addition, lease revenues to the city from NSHC and the ferry service would decrease at the time of property transfer. The changes are described below.

Lease Revenues: This project would change the current land uses on the site and the existing revenues from the site. Current annual lease revenues are shown in Table 4-3.

TABLE 4-3
CURRENT LEASE REVENUES TO CITY
FROM PROPOSED PROJECT SITE

Lessee	Current Annual Lease Amount	Use
Northern Stevedoring Handling Corp.	$38,415	Tracts 3 and 4
Alaska Marine Highway System	33,690	Preferential berthing and mooring of ferry and rental of railroad depot building
Total	$72,105	

In 1993, total rents and lease revenues to the city were $511,445. If the lease fee revenues from NSHC and the ferry service were lost, it would be 14 percent loss of city lease fees and a 1 percent loss of total city revenues. The Alaska Marine Highway System ferry services could relocate to another site in Seward, which has not yet been determined. No plans for further lease agreements between the city and NSHC are known at this time. If these lessees move to lands not owned by the city, a reduction in lease revenues would occur. However, if these lessees relocate to other sites owned by the city, and similar lease agreements are negotiated, an overall reduction of lease fees may not occur. The proposed project would not affect whether these revenues continue; however, it could effect the timing of their moves by hastening the schedules.

A low cost lease between SAAMS and the city for use of Tracts 2, 3, 4, 5, and 6 would create a minor amount of revenue; lease terms and rates have not yet been settled. The proposed project would cause an unknown effect on the timing of loss of lease revenues to the city; however, the loss of revenues would be NEGLIGIBLE compared to overall city revenues.

Moorage Fee Revenues: Mooring of the proposed 130-foot research vessel at the Small Boat Harbor would add moorage fees to the city's Harbor Enterprise Fund. At this time, specific plans for the vessel and vessel days in port are not known. (These mooring costs are planned to be absorbed by the existing IMS budget, rather than by the new project budget (T. Smith, personal communication, 1994).

One subset of current fee revenues may decrease. Some commercial vessels currently use the Municipal Dock when the ferry is not in port. Moorage rates for use of city docks outside the Small Boat Harbor are higher than rates charged for transient moorage inside the harbor. The higher rate serves as a disincentive to lengthy stays at the outside docks. If the proposed project is constructed, commercial or industrial use of the Municipal Dock by other vessels, such as for loading and unloading of fishing gear, may be discontinued. If the same vessels continued to dock in Seward but are no longer permitted to dock at the Municipal Dock, they may choose to dock at the Small Boat Harbor as space is available. Their daily moorage fees there would be lower.

Increases in moorage fees from the proposed project would be small but BENEFICIAL.

Camping Fee Revenues: The RV camping area on city lands on the east end of the proposed site (Iditarod Campground) currently generates user fees of $8 per vehicle per night in summer, and $2 per vehicle per night in winter. The area has a capacity of 75 RVs. Rough estimates of current revenues at the Iditarod Campground are $28,860 per year (See Calculation #3, Appendix E). In the proposed action, approximately 3/4 of this capacity would be converted from a campground to a parking area. During peak periods, this revenue stream would be reduced by 3/4, the loss of fees to the city could be $3,400 to $3,900 per year. However, RVs are likely to seek out other city campgrounds, where camping fees would also be charged.

The project would cause a reduction in camping fees generated from this site. The effect on overall camping fees paid to the city would, however, be NEGLIGIBLE.

Utility Revenues: The project would be serviced by the City of Seward municipal electric, water, and sewer utilities. Preliminary estimates show that the city would receive $360,754 in revenues for project services annually. These calculations are based on industrial rates. City revenues from sales of electricity, water, and sewer to industrial customers in 1993 totalled $255,483. The first year of revenues from these utility services would be an increase of 141 percent over 1993 revenues from industrial customers, and an increase of 6.2 percent over 1993 revenues from all customers.

The increased sales of utility services would have a BENEFICIAL effect on overall utility revenues.

Property Tax Revenues: Because the proposed facility would be built and operated by SAAMS, a not-for-profit entity, the facility is planned to be tax-exempt. The project site would be leased by SAAMS from the city. Therefore, no property tax revenues would accrue to the city from the site. With new residents moving into Seward's limited housing market (as described in the Housing section above), an unknown number of those new residents would likely build new houses. This construction would result in additional property tax revenues to the city and Borough of roughly $2,200 and $6,300 per year (See calculation #3, Appendix E). Home construction by project employees would have a beneficial effect on property tax revenues.

It is possible that city or borough property tax rates could increase in the future in order to make municipal improvements related to this proposed project. This is a municipal policy question, the responsibility for which lies solely with the residents of Seward and the Seward City Council and/or the Kenai Peninsula Borough Assembly. It is difficult to assess the likelihood of tax rate increases, or the potential consequences which could result. Also, given the other developments underway, throughout the Seward area, some taxation decisions may be made based on the cumulative effects of several activities, not based on this project alone (see discussion of Cumulative Effects, Section 4.5). Any proposal for tax rate changes would be subject to the city and/or borough public review processes.

A secondary source of property tax revenue could be realized if property owners in the vicinity of the proposed facility (or along the main roads) elect to improve existing structures or property to take advantage of new visitation or other demands created by the facility, such as the need for short-term accommodations for researchers or students.

The overall effect of the project on property tax revenues would be BENEFICIAL.

Sales Tax Revenues: Because the facility will be operated by a non-profit organization, operations at the proposed facility would be legally eligible for exemption from sales taxes, according to city and borough tax code. However, tax revenues from sales may accrue to the city and borough in two ways. First, as a potential condition of the city's property lease, sales tax would be collected on admissions and sales of goods sold at the retail shop of the facility. Using calculations presented in Appendix E, total annual sales tax revenues could amount to $100,000 per year for the city and $70,000 per year for the borough.

The facility would have a secondary effect on sales tax revenues for the city and borough. The additional visitors drawn to Seward by the facility would be likely to make other purchases while in Seward. Assuming 50,000 additional visitors come to the facility, and that each spends $10 on taxable items elsewhere in Seward while they are in town, the city would receive $15,000 and the borough would receive $10,000 in additional sales tax revenues annually.

The combined direct and secondary effects of the proposed action on sales tax revenues could be $115,000 per year for the city and $80,000 per year for the borough. These revenues would have a BENEFICIAL effect on the fiscal condition of the city and borough.

City Expenditure Characteristics: A lease of land for this proposed project is currently under negotiation between the city and SAAMS. In addition, the NSHC lease is likely to be terminated by the city prior to its expiration date in 1999.

While the overall effect of the proposed project on city expenditures is not fully known, the effects of the proposed project on city expenditures would be LOW.

CONCLUSION: The effects of Alternative I on the City of Seward's fiscal condition would range from NEGLIGIBLE to LOW with some BENEFICIAL effects. Effects on mooring fees, property and sales tax revenues, and utility sales would be BENEFICIAL. Effects on campground fees and lease fees would be NEGLIGIBLE. Effects on city expenditures would be LOW, but are not fully known.

Social Environment/Quality of Life

Several concerns which have been stated about the proposed project are related to increased tourism. They include likely changes in Seward's small town atmosphere, crowding, parking congestion downtown and at the boat harbor, and possible increases crime and litter.

This proposed project would add to a strong growth trend of summer tourism and recreation in Seward in recent years. Current tourist visitation to Seward is approximately 440,000 people per year. The proposed facility is projected to attract 50,000 new visitors to Seward each year. This represents an 11 percent increase over the existing levels. As many as 250,000 to 262,000 people are projected to visit the proposed facility each year in the first five years. In an average summer week, 14,570 people could move through the site, which would equal 2,914 per day on an average high visitation day. Approximately 27,000 of the anticipated 50,000 new visitors are projected to arrive during the peak summer period of June 1 through September 15. During this time, 85 percent of Seward's annual visitor traffic occurs - 374,000 people visit the town. The additional visitors associated with the proposed facility constitute an increase of seven percent during the peak summer period (see calculation #5, Appendix E). A seven percent increase would be defined as a low social effect; however, during the summer, Seward's small town atmosphere is already altered by the presence of large numbers of visitors and there is significant local sensitivity to the existing summer tourist traffic, so this effect is considered a moderate effect.

Increased visitation, crowding, and congestion is likely to cause some increase in criminal activity and possible conflicts between user groups, as an indirect result of the proposed project. Such problems are most likely to occur during peak summer periods and be similar to the activity currently evident during crowded periods, such as theft, alcohol-related infractions, and domestic offenses (D. Brosso, personal communication, 1994). Litter is also likely to increase with the greater number of visitors. The presence of litter could depend in part on the availability and maintenance of waste receptacles in the vicinity of the proposed project.

The area likely to be most affected by visitors associated with the proposed action would be the southern waterfront and downtown areas of Seward. The additional 2,914 people per day would add to current numbers of pedestrians and vehicles in central downtown area, the Municipal Dock area, the fishing beach, and the Iditarod Campground. Crowding and congestion would increase in these areas, as well as along the primary access routes between the Small Boat Harbor area and the proposed facility (Third and Fourth Avenues, and Ballaine and Railway Avenues). During the peak period, the small town atmosphere in these areas would be changed, to a visitor-oriented atmosphere. (See also the discussion of Traffic and Transportation, Section 4.2.12.)

Of the 50,000 new visitors traveling to Seward each year specifically to visit the facility, 23,000 are projected to arrive during the off-peak months of October through May. Existing visitation to Seward is approximately 66,000 people during that period, so the additional visitors would constitute a 35 percent increase in off-peak visitors. This could cause a major change in the small town atmosphere, particularly given that the downtown and the waterfront area near downtown would be the focus of new visitors' activities.

One effect of the increased visitation during the fall, winter, and spring would be increased year-round visitor-related activity during these months and, hence, extension of the peak season for some local enterprises. The increase in year-round visitors would have a beneficial effect on local businesses, particularly seasonal businesses.

CONCLUSION: Alternative I would have a moderate effect on the small town atmosphere of Seward overall during peak summer periods, and a high effect on the small town atmosphere of the southern waterfront and downtown areas of the town year-round. During the off-peak season, the presence of visitors would have some beneficial effects on the small-town atmosphere of Seward. The overall effect of the proposed project on the social environment and quality of life would range from MODERATE to HIGH; BENEFICIAL effects would occur during the off-peak visitor season.

4.2.11 Recreation and Tourism

Effects of Construction Activities: Effects of construction activities on recreation and tourism related to Alternative I are presented below.

Boating

Construction of the proposed project would temporarily exclude recreational boating from the nearshore area of the proposed project site during periods of delivery of materials, and during the construction of water intake and outflow lines, the wave barrier, and tide pool.

The effects of construction activities on boating would be LOW.

Fishing

During construction of the proposed project, the site will be fenced off and access will be maintained to popular public fishing along the shoreline from the Municipal Dock eastward. The area from the dock west to the existing IMS facility property will be removed from public access; however, this area contains construction debris, and is not as heavily used as the eastern area.

The overall loss of fishing opportunities in the project area during construction will be LOW. Effects on fishing from boats will be similar to the effects on boating discussed above.

Camping

Construction of the proposed project would displace an estimated 2/3 to 3/4 of the Iditarod Campground, located on Tracts 5 and 6. This would result in the loss of 50 to 57 of the 75 RV camping slots (K. Sturdy, personal communication, 1994), representing approximately 13 percent of the city campground capacity and estimated annual use (see Table 3-16). Noise and dust from construction activities would be noticeable during the summers of 1995 to 1996 at the remaining 1/4 to 1/3 of the Iditarod Campground.

Housing would not be provided as part of the project and city code does not allow RV housing on-site. As mitigation, SAAMS would require that the construction contractor provide for housing or RV space for the construction workforce. A permanent 90-space construction camp facility, projected to become operational during the summer of 1994, is located at Mile 7 of the Seward Highway and space may be available from other private operators.

Construction workforce use of city campgrounds would be NEGLIGIBLE. Although campsites would be lost from the Iditarod Campground, the overall effect on the municipal campgrounds would be MODERATE.

Day Use and Special Events

Construction of the proposed project would require the relocation of the Youth/Teen Center. Two siting options have been considered in the past: use of the old Masonic Temple Site, and relocation in or adjacent to the Senior Citizens Center. As project mitigation, SAAMS will provide up to $100,000 to assist with the cost of relocation, but will not take part in selecting a suitable location.

Construction activities would create noise and dust that would be noticeable during the summers of 1995 and 1996 at the Ladies Park. This could detract from the quality of using the site, but would not physically interfere with use. As potential mitigation, SAAMS is discussing the possibility of upgrading Ladies Park with the City of Seward. Increased traffic associated with construction of the proposed project could result in increased hazards in accessing the bike path at Ladies Park. The proposed project design would incorporate design features that would reduce potential conflicts with use of the bike path (see Section 4.2.12.)

There would be no construction effects on special events such as the Mt. Marathon Run or Silver Salmon Derby. Overall, construction effects on day use and special events would be LOW.

Federal and State Lands and Facilities

Construction of the proposed project would have no direct effects on federal and state lands and facilities.

Tourism Activities and Facilities

Construction of the proposed project would create noise and dust that would be noticeable during the summers of 1995 and 1996 to tourists in the south end of town. If the ferry service has not relocated by the time construction begins, construction could create some inconvenience for passengers using the ferry, primarily related to traffic and queuing areas.

Gravel and construction material extraction would occur at one of five existing or historic gravel pits in the Seward area. Potential adverse effects include extraction noise and dust levels being noticeable to campers and other recreation activities in the vicinity of Lowell Point and Spring Creek, and the presence of gravel trucks traversing routes used by tourists. However, gravel extraction is scheduled to take place

during winter and early spring months when the level of tourism activities are low, and the level of adverse effects would be correspondingly low. Depending on when it is scheduled, construction of a water pipeline from the freshwater source in an existing right-of-way on Railway Avenue could cause temporary delays in recreation/tourism traffic on the Lowell Point Road. There would be no other effects on tourism activities and facilities in Seward.

Overall effects from construction activities on tourism activities and facilities would be LOW.

CONCLUSION: Construction would result in temporary exclusion of fishing off the proposed project site. It would accommodate shoreline fishing to the east of the proposed project but not to the west. Effects would be LOW. Up to 57 RV spaces would be displaced from Iditarod Campground; other campgrounds could accommodate the loss except on peak weekends. Effects would be MODERATE. Adjacent recreation facilities would experience LOW effects on quality of use due to construction activities. Adverse effects on special recreation events and tourism in the downtown area would be LOW. There would be no effect on state and federal facilities.

Overall, effects of Alternative I construction activities on recreation and tourism would be LOW, with the exception of the effect on campground space during peak weekends. During these weekends, effects on campgrounds would be MODERATE.

Effects of Operations: The effects of Alternative I operations on recreation and tourism are discussed below.

Boating

Research vessels docking at adjacent IMS facilities may cause short-term, temporary displacement of recreation boats fishing off the shoreline. Similarly, the reconfiguration of the shoreline associated with the wave barrier may cause vessels to move up to 50 yards further offshore the proposed facility. Intermittent docking of the research vessels at the Small Boat Harbor would cause a reduction of available space for transient recreational boaters. However, research vessels would most likely use the Small Boat Harbor during the winter months when demand for berth space is lower. Additionally, recreational boaters would not have use of the Municipal Dock with the proposed project, regardless of whether or not the ferry relocates. With the new city boat launch and parking area proposed for construction in the summer of 1994, the effect this loss of use would have on recreational boaters of the project is considered to be low.

The overall effect of Alternative I on recreational boating is LOW.

Fishing

The design of the proposed action would maintain popular public fishing access to the shoreline from the Municipal Dock eastward. The area from the dock west to the IMS facility property would be removed from public access; however, this area presently contains construction debris, and is not as heavily used

as the eastern area. The loss would not be significant. Effects on fishing from boats would be similar to the effects of boating discussed above.

The overall effect of Alternative I on recreational fishing is NEGLIGIBLE.

Camping

The proposed action would displace an estimated 2/3 to 3/4 of the City's Iditarod Campground, located on Tracts 5 and 6, resulting in the loss of 50 to 57 of the 75 RV camping slots (K. Sturdy, personal communication, 1994). This represents approximately 13 percent of the city campground capacity. Assumptions on lost visitor use are presented in Table 4-4 utilizing calculations developed in Appendix E.

TABLE 4-4
PROJECTED ANNUAL DISPLACED CAMPING VISITATION

PERIOD	PERCENT CAPACITY	VISITATION	DISPLACED VISITATION
Fourth of July	100	75 x (.75) x 3 nights	= 168
Silver Salmon Derby	80	75 x (.75) x 7 nights	= 315
Other non-peak summer nights	50	75 x (.75) x 77 nights	= 2,156
"Winter" Nights (between Labor Day and Memorial Day)			= 215
	TOTAL		= 2,854

The City Parks and Recreation Director believes that, with the possible exception of the 4th of July and Silver Salmon Derby Weekends, other city campgrounds have enough capacity to absorb displaced demand, and not all of the visitation revenue would be lost to the City of Seward. During these peak weekends, space would be available at the Spring Creek campground, and campgrounds outside city limits. The city would still likely operate the remaining area of the Iditarod Campground, which is currently the only campground that the city keeps open in the winter. There are other areas of the project site that are currently used for unauthorized RV camping during peak use weekends. No estimate of this use or potential displacement is available.

Additional visitation to Seward created by the proposed project would create a demand for more campground use. This would further contribute to overcrowding that occurs during peak periods, such as the Fourth of July and Silver Salmon Derby Weekends. During the rest of the year, other city campgrounds have enough capacity to absorb displaced demand.

The overall effects of Alternative I on camping facilities in Seward are MODERATE.

Day Use and Special Events

The proposed project would not physically affect the adjacent recreation day-use facilities of Ladies Park, the basketball court, and the bike path. These areas would be separated and screened from the proposed facility by and landscaping and other appropriate measures. It is possible that day-use, such as picnics by non-residents, may increase with the increase in tourism anticipated with the proposed project. Other city parks, such as the pavilions along Waterfront Park, might also experience increased use from additional visitors attracted by the proposed project. As potential mitigation, SAAMS is discussing the possibility of upgrading Ladies Park with the City of Seward. Increased traffic associated with operation of the proposed project could result in increased hazards in accessing the bike path at Ladies Park. The proposed project design would incorporate design features that would reduce potential conflicts with use of the bike path (see Section 4.2.12.)

The proposed project would have no direct effects on special events such as the Mt. Marathon Run and the Seward Silver Salmon Derby, since shoreline fishing access will be maintained. Although these events could be indirectly affected by the displacement of camping sites; capacity is available at other campgrounds in the Waterfront Park, the Spring Creek campground, and campgrounds outside city limits.

The overall effect of Alternative I on day-use recreational facilities and special events is NEGLIGIBLE.

Federal and State Lands and Facilities

The proposed action would have no direct effects on federal and state lands and facilities. As an additional tourism attraction in Seward, the facility is likely to contribute to increased visitation during summer months at Kenai Fjords National Park, Alaska Maritime National Wildlife Refuge, and the U.S. Air Force and U.S. Army Military Recreation Camp facilities.

Tourism Activities and Facilities

Studies done for the proposed project estimate that it will have four important effects on tourism activities and facilities:

- Attract 102,220 visitors annually to the proposed project from Southcentral Alaska and 75,600 non-resident, non-cruise ship visitors; 50,000 visitors would be new, with approximately 50 percent coming during the fall-winter-spring period;
- Provide an attraction that would capture 46,400 of cruise ship visitation presently passing through Seward, resulting in them spending more time and money in town;
- Modify tourism circulation patterns in Seward by attracting more people to the south end of town; and

- Tourism expenditures at the facility would generate revenue that will be used to operate the proposed facility and would be subject to sales tax generating revenue for the City of Seward (see Section 4.2.10).

Projections of annual visitation to the proposed project are shown in Table 4-5.

TABLE 4-5
PROJECTED ANNUAL VISITATION TO THE PROPOSED FACILITY
1997 TO 2001

Year	Visitation	Percent Increase
1997	250,551	n/a
1998	252,819	0.9
1999	247,040	-2.3
2000	254.452	3.0
2001	262,085	3.0

Source: Heery International, Inc., 1994

These figures make the following assumptions:

- Approximately one-third of this visitation would be from southcentral Alaska residents;
- Cruise ship passenger visitation would begin at 46,000 annually, and increase by 2001; and
- Fall-winter-spring visitation, including school groups, would remain at approximately 23,000 annually.

Estimates prepared for the evaluation of traffic consequences assume a summer period daily visitation of 2,914, of which 48 percent would be arriving by car and 37 percent cruise ship or bus tour groups.

Organized Tours and Tour Companies

The proposed project would potentially affect organized tours and tour companies in two ways. Some cruise ship tour schedules could be modified to allow for a visit to the proposed project, 46,400 annual cruise ship passenger visits to the center are projected. Cruise ships traditionally dock by the Alaska Railroad Dock. This in turn may create additional business opportunities for local shuttle bus operations. Second, an additional 50,000 new visitors are anticipated to be attracted to Seward annually as a result of this project, with 50 percent coming during the summer months. These new visitors would create potential additional business for sightseeing and fishing charter operations in Seward.

State Tourist Facilities and Services

At least two percent of the additional non-resident visitation is expected to arrive by train. This increased railroad use could result in schedule changes or additional rail car capacity. Some increase in ferry passenger numbers could result, but it is likely to be one percent or less.

Private Tourist Facilities and Services

The 50,000 new visitors to Seward would create additional business opportunities for lodging, restaurant, and other service operators. This would be particularly significant during the fall-winter spring months, when 50 percent of new visitation is expected to occur.

Overall, effects of Alternate I operations would be BENEFICIAL to tourism activities and facilities.

CONCLUSION: Effects of Alternative I on recreational and tourism would be LOW, with the exception of MODERATE effects on camping particularly during peak use periods. Effects on tourist facilities and services would be BENEFICIAL.

4.2.12 Traffic and Transportation

Effects of Construction: During the construction phase of the proposed project, traffic would be generated by construction workers and by delivery of equipment and material to and from the project site. An average of 25 construction workers are expected daily throughout the construction period, resulting in approximately 50 vehicle trips per day (one-half inbound; one-half outbound). If on-site parking for construction workers is not provided, employee vehicles would likely use on- and off-street parking in the surrounding neighborhoods, including the central business district.

An estimated 5,000 cubic yards of armor rock would be brought to the site over a 4-month period (December 1994 to March 1995) for construction of the wave barrier and tide pool area. This could generate approximately 350 to 500 truck loads, or 700 to 1,000 truck trips, to and from the site (700 truck trips would result from using 15 yard dump truck and trailers; 1,000 truck trips would result from using 10 yard dump trucks without trailers). Lowell Point Road quarry, identified as the most likely source for the rock, is located approximately 3/4 of a mile from the site on Lowell Point Road, a relatively narrow road running along the west edge of Resurrection Bay. Current average daily traffic volumes on Lowell Point Road are approximately 1,000 vehicles per day, mostly attributed to a residential area further south of the quarry, and to existing quarry truck traffic. Access to the quarry would be over a narrow bridge which is currently unable to accommodate heavy vehicles. However, the City Engineer has indicated a willingness to work with the proponent to repair the bridge.

Assuming the above, the four month period of wave barrier construction would reflect the highest density of truck traffic to and from the site. If the activity occurred evenly over the 66 working days of the period (Monday through Friday), an average of 11 to 15 truck trips could be generated each day from December 1994 to March 1995. As indicated above, the trips would travel along Lowell Point Road with little or no effect on other Seward roadways.

Other quarry sites could be chosen by the contractor. Local options include the Afognak Logging, Inc. site located at Japanese Creek, a borough owned and operated site adjacent to the city landfill, a city owned site in the rear of SMIC, and a city-owned pit located on Lowell Canyon Road.

Use of the Lowell Canyon Road pit would mean travel through residential areas. Use of the Afognak Logging site would result in the need to develop an access road, and could result in truck traffic through or near residential neighborhoods. Use of the borough site would result in truck traffic on Dimond Boulevard, which also passes near a residential neighborhood. However, some heavy vehicles already use Dimond Boulevard to access the city dump and transfer station. The SMIC site would result in the use of Nash Road. All of these alternate sites would result in the level of truck traffic described above being added to the Third Avenue/Seward Highway through Seward. However, 11 to 15 daily truck trips would not result in any noticeable operational effect on Seward streets, especially during the winter when the primary quarry activity is scheduled.

The issue of the potential for load restrictions to effect construction activity was also investigated. Specific information was obtained from Pete Shook, Assistant Manager for Maintenance and Operations, ADOT/PF Central Region, who is responsible for imposing load restrictions when necessary. In general, the ADOT/PF imposes load restrictions during spring breakup, when the frost transfers from the pavement to the base course of material. This is determined through on-site testing, as necessary, to make the determination. In most cases, the load restrictions are implemented sequentially, first eliminating overloads, then reducing to a 75 percent load. Mr. Shook indicated that the Seward area does not typically fall below a 75 percent load,. A January 24, 1994 memo was published by the ADOT/PF which presented a quick summary of anticipated load restrictions for the various areas and highways. For the Seward area, the following sequence of restrictions were identified:

- Overloads Restricted: 3rd week of March.
- 75% Load Restriction: 2nd week of April.
- Legal Loads Allowed: 2nd week of May.
- Overloads Allowed: 3rd week of May.

Thus, load restrictions of 75 percent by weight (50 percent by volume of a loaded dump truck) would likely occur along various portions of the Seward Highway, and possibly other area roads, between mid April and mid May, a period of about 4 weeks.

Site construction activity during these times would be subject to these restrictions. However, the most intense period of construction truck activity would be related to the import of 5,000 cubic yards of Armor rock from a local quarry. This activity is planned to occur between December 1994 and March 1995. Assuming this schedule is met, it appears unlikely that load restrictions will be in effect during the period of most intense construction vehicle traffic. Other construction traffic is likely to occur after this period and could be subject to load restrictions. It does not appear that the potential for load restrictions during spring breakup would have any effect on the construction schedule.

To minimize the effects of construction activity on traffic and parking conditions, sufficient employee parking would be made available on the site to avoid use of on-street or other public parking in the site vicinity. Additionally, truck travel through town would be limited to designated routes, such as Third Avenue.

CONCLUSION: The effect of Alternative I construction activity on traffic and parking conditions would be LOW. Should ferry service remain at the Municipal Dock during construction, the effect on ferry operations would be MODERATE.

Effects of Operation: The analysis of transportation-related effects focuses on an average highway scenario during the peak summer tourist season (typically July). This scenario was derived by increasing the forecast visitor counts for an average day in the peak summer season by 20 percent to achieve a maximum level of effect. This level of proposed project activity is evaluated against background conditions representative of an average day in Seward in the peak summer month. The trip generation and assignment of traffic volumes for the proposed project are discussed below, followed by impacts to traffic operations, safety, parking, and other motorized and non-motorized travel modes.

Street System

Physical changes to the Seward street system resulting from the proposed project would be minor, and are generally limited to modifications for site access and loading requirements. Physical changes to the street system would include curb cuts between Fifth and Sixth Avenues, and at Sixth Avenue (Figure 2-7) to provide access to the visitor parking area, and between Third and Fourth Avenues to accommodate bus loading and unloading. A driveway near Third Avenue would provide service and support access. On Washington Avenue, an additional curb cut would be made for the driveway of the 50-space employee parking lot near the Rae Building.

SAAMS would work with the city to place informational signs that will guide visitors to and from the proposed site along preferred travel routes. Encouraging site traffic to use Third Avenue would minimize non-local trips along Fourth or Ballaine Avenues, or other local streets near the site.

Signs for inbound traffic would be placed on the Seward Highway, north of the marina area, directing traffic to continue south on Third Avenue to Railway Avenue. At Railway Avenue, traffic would be directed east to the visitor parking area. Outbound traffic would be directed west from the parking lot driveway, along Railway Avenue to northbound Third Avenue. The specific placement and number of

signs would be refined as the project is further developed in coordination with city and ADOT/PF officials. If joint use operation with the ferry occurs, additional signs directing ferry traffic to the west, along Ballaine Avenue and D Street would separate the ferry traffic operations from other IMS visitor traffic. A variance from the Planning and Zoning Board would be required for off-site signing, since it is not currently allowed in the city code.

CONCLUSION: The overall effect of Alternative I operations on the Seward street system is expected to be NEGLIGIBLE, even if the ferry continues to berth at the Municipal Dock and joint operations with the IMS facility occur.

Traffic Volume

Traffic volume impacts are defined in terms of the changes in traffic volumes and patterns which would occur as a result of project development, and the effect of those changes on traffic operations (capacity and/or delay).

Project Traffic Volumes: This analysis considers the net change in local traffic volumes and patterns caused by Alternative I using a multiple step process. It includes an estimation of person trips occurring during defined analysis periods; the travel modes by which those person trips would occur; the development of vehicle trip generation estimates by type of vehicle; an estimate of the new travel to Seward induced by the project; and the assignment of the net effect of these vehicle trips to the street system. The development of these estimates is included as a separate discussion in Appendix F.

The forecasted vehicle trip generation for Alternative I was based on a range of assumptions which reflect a relatively high project activity level during the peak summer tourist season (June through August). Other assumptions relating to mode split and average vehicle occupancies were made which assure that the design-day and design-hour vehicle estimates would not likely be exceeded. The overall assumptions for this analysis are presented in Section 4.1.

Table 4-6 summarizes the travel modes which are assumed to be used by project visitors and employees traveling to and from the project site. As indicated in the table, approximately one-half of all visitors to the site would travel by private auto or RV. Slightly more than one-third of visitors would travel by bus. The majority of these visitors would result from tour packages or cruise ships and would be transported to and from the site on charter buses. The remaining modes would be used by 11 percent of project visitors.

Table 4-7 summarizes the daily and peak hour vehicle trips estimated for the facility on a high attendance day during the peak summer tourist season (June through August).

TABLE 4-6
TRAVEL MODE SPLIT

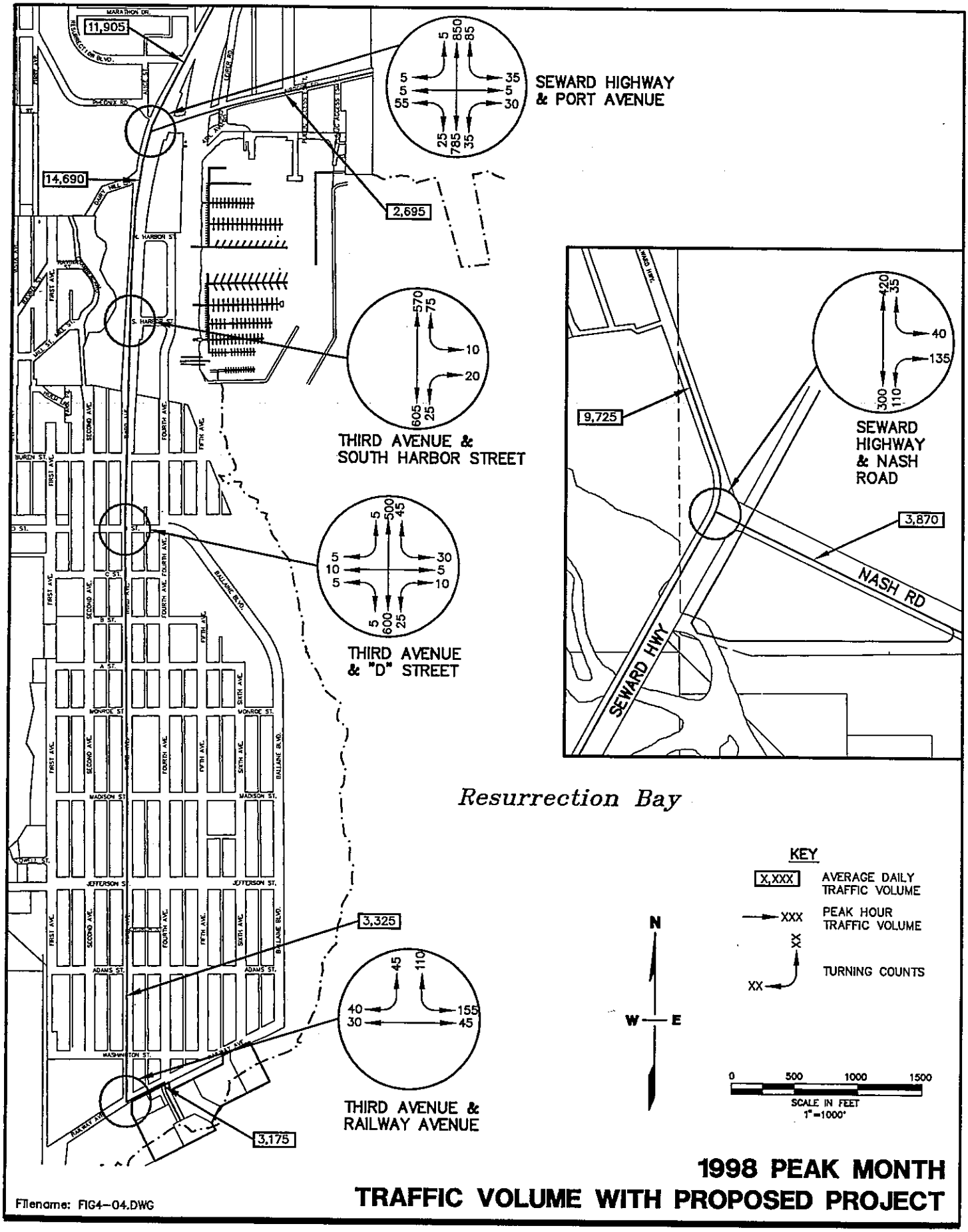
Travel Mode	Daily Persons	Daily Person Trips[1]	Percent
Auto	1,458	2,916	48
RV	114	228	4
Bus	1,072	2,144	37
Train	65	130	2
Ferry	23	46	1
Other	248	496	8
TOTAL	2,980	5,960	100

[1] Daily person trips reflects twice the daily number of visitors. Each person makes two trips, one trip in and one trip out.

TABLE 4-7
VEHICLE TRIP GENERATION

	Daily				Peak Hour			
	Auto	RV	Bus	Total	Auto	RV	Bus	Total
Seward Residents	18	----	----	18	7	----	----	7
Cruise Ship Visitors	----	----	34	34	----	----	10	10
Non-Resident/Non-Cruise	239	32	25	296	72	10	8	90
South Central/Alaska	672	44	----	716	202	13	----	215
Employees	126	----	----	126	----	----	----	0[1]
TOTAL	1,055	76	59	1,190	281	23	18	322

[1]There would be no employee trips during the peak hour since all employees are assumed to already be on-site prior to the peak visitor times and would not leave within the peak time period.



1998 PEAK MONTH TRAFFIC VOLUME WITH PROPOSED PROJECT

FIlename: FIG4-04.DWG

Job No. 28347-002-160

DAMES & MOORE

IMS PROPOSED INFRASTRUCTURE PROJECT
SEWARD, ALASKA
FIGURE 4-4

As shown, approximately 1,190 vehicle trips would occur to the proposed project's parking areas (driveways) on a daily basis (595 in; 595 out). Of these, 126 vehicle trips (63 in; 63 out) would be related to project employees who would use the proposed employee parking area adjacent to the existing Rae Building. The remaining 1,064 daily trips would be related to visitors of the facility's education component. Approximately 87 percent of project vehicle trips would be auto trips; seven percent would be recreational vehicle trips; and six percent would be buses.

Peak hour traffic volumes are estimated to be approximately 30 percent of the volumes occurring during the entire day. This translates into 322 vehicle trips (161 in, 161 out) for the peak-hour time period, which would generally be expected to occur in mid-afternoon.

Figure 4-4 illustrates the net effect of assigning the site traffic to the local street system. As described in Appendix F, only 12 percent of all visitors to the proposed facility during the summer season are anticipated to be new visitors to Seward; all other visitors (88 percent) would be in Seward with or without the proposed project. Trips associated with these visitors would be trips redirected or extended from other destinations in Seward, such as the Small Boat Harbor. The traffic volumes shown in Figure 4-4 reflect these trip characteristics for existing visitors, as well as trips associated with new trips to Seward via the Seward Highway. New trips to Seward are estimated to account for only about 17 percent of all project vehicle trips occurring at the proposed projects parking areas (driveways) on a design day. The project traffic volumes were added to 1998 baseline horizon year forecasts described previously in Section 3.12.

Proportional Traffic: The first measure of the potential traffic effect of the proposed project is the actual change in traffic volumes in the project area that would occur if the facility were developed. Table 4-8 summarizes the changes in daily and p.m. peak hour traffic volumes at intersections in the project vicinity that are forecast for 1998 horizon-year conditions as a result of the project. Existing 1994 traffic volumes also are shown for comparison.

The 1998 traffic volumes with and without the project, together with the project percent of future 1998 cumulative traffic, provide an indication of the relative effect of the project on area traffic volumes. In addition to the range of conservative assumptions used in the development of travel mode splits, the peak hour traffic volumes cited reflect the assumption of activity levels occurring over a *1 hour* period instead of the *1½ hour* time period which corresponds to the anticipated average duration for visitors. As a result, the proportional project volumes shown in this table could overestimate even a summer peak-month, peak-hour condition. This approach was used to assure that actual impact levels were not underestimated.

As shown in Table 4-8, increased traffic volume as a result of the project would be highest at intersections in the immediate vicinity of the proposed site and would decrease with distance from the site. On a daily basis, project traffic as a percent of the total roadway traffic would range from 34 percent at the project driveway on Railway Avenue to two percent at the Seward Highway and Nash

Road. At the same intersections during the peak hour, traffic volumes would range from 65 percent at the project driveway to six percent at the Seward Highway and Nash Road. For the vicinity street system, peak hour traffic accounts for approximately seven to eight percent of total daily traffic.

TABLE 4-8
PROJECTED PEAK MONTH TRAFFIC VOLUMES WITH AND WITHOUT PROPOSED PROJECT

Location	Daily				Peak Hour			
	1994 Existing	1998 w/o Project	1998 with Project	Project Percentage of Volume	1994 Existing	1998 w/o Project	1998 with Project	Project Percentage of Volume
Project Driveway/ Railway Avenue	1,675	2,260	3,450	34	120	175	497	65
Third Avenue/ Railway Avenue	3,075	3,750	4,360	14	215	260	425	39
Third Avenue/ D Street	11,430	13,370	13,980	4	935	1,085	1,248	13
Third Avenue/ S Harbor St	12,270	14,350	14,760	3	1,010	1,185	1,295	8
Seward Hwy/ Port Avenue	19,060	22,305	22,525	1	1,570	1,840	1,878	3
Seward Hwy/ Nash Road	10,720	12,540	12,760	2	840	980	1,038	6

Source: ADOT/PF, unpublished data, 1994.

CONCLUSION: The effect of Alternative I operations on traffic volumes is expected to be MODERATE adjacent to the project site and LOW at locations outside of the downtown area.

Traffic Operations

After understanding the relative changes in traffic volumes and patterns that would occur on a average peak summer day as a result of the proposed project, it is important to understand whether these changes in traffic volumes would substantially change the operations of the local street system. The most objective measure of this performance is the LOS changes that occur at key intersections in the vicinity of the proposed project.

Table 4-9 summarizes the change in LOS that would occur at vicinity intersections as a result of peak month, peak hour traffic added by Alternative I. For comparison, both 1998 baseline and 1994 existing LOS are included. LOS conditions are defined in Section 3.12 of the Draft EIS.

As indicated in the table, there would be no changes to intersection LOS as a result of the proposed project. Adjacent to the proposed project, the intersections of Railway Avenue with the project driveway and Third Avenue are forecast to operate at LOS A in 1998 with or without the proposed project, indicative of little or no delay at these intersections. The intersections of Third Avenue/D Street and Third Avenue/South Harbor Street would operate at LOS C with or without the proposed project. The LOS C conditions are indicative of average delays with no unusual congestion levels.

TABLE 4-9
INTERSECTION LOS EFFECTS
PEAK MONTH / PEAK HOUR PROJECT CONDITIONS

Intersection	1994 Existing		1998 w/o Project		1998 w/Project		Project
	LOS[1]	R/C[2]	LOS	R/C[3]	LOS	R/C	Effect
Project Driveway/ Railway Ave	N/A[4]	N/A	N/A	N/A	A	495	N/A
Third Ave/Railway Ave	A	754	A	712	A	554	158
Third Ave/D Street	B	331	C	269	C	208	61
Third Ave/S Harbor St	B	374	C	274	C	217	57
Seward Hwy/ Port Avenue	E	84	F	-2	F	-3	1
Seward Hwy/Nash Road	C	229	E	88	E	61	27

[1]LOS conditions are defined in Section 3.12 of this EIS.
[2]Reserve Capacity, R/C.
[3]Project Effect defined in terms of the decrease in 1998 reserve capacity of the intersection due to the project.
[4]Not Applicable - Driveway does not exist without project.

The intersections of the Seward Highway with Port Avenue and with Nash Road are projected to operate at LOS E and LOS F during the peak hour in the peak summer month regardless of the proposed project. LOS E and LOS F conditions are indicative of near capacity or capacity conditions.

Site Access Considerations: Access for site visitors would occur via Railway Avenue. All transportation modes would be served on or near Railway Avenue. These include buses dropping off passengers, visitors arriving in autos and RV's, and bicyclists. If joint operations with the ferry occur, ferry traffic would also be directed to Railway Avenue. In either case, peak activity periods will be managed on-site by parking managers, according to a parking management plan.

Buses would pick-up and drop-off passengers in a bus loading zone adjacent to the building, on the south side of Railway, between Third Avenue and a point approximately 80 feet east of Fourth Avenue. After dropping off passengers, buses would circulate back to existing layover locations in other areas of Seward, via Fourth or Fifth Avenues. The bus loading zone would be a pullout type of space, which

would eliminate the potential for encroaching on the eastbound through travel lane. As described later in this section, a maximum of 18 buses would arrive and depart during the peak hour of a high visitor day, which equates to an average of one bus movement every 3 minutes in the peak hour. It is recognized that bus activity may occur in surges from a cruise ship, which would result in short periods of higher intensity, followed by extended periods with little or no bus activity.

Visitor access is planned via two driveways on Railway Avenue, one at the eastern periphery of the site and the other approximately 200 feet to the west, between Fifth and Sixth Avenues. While the driveways would operate in both directions, on-site parking managers could operate them as inbound (westerly) and outbound (easterly) during peak demand days to facilitate the management of site vehicle access, and reduce conflicts between entering and exiting vehicles during this period. The LOS of the driveways on Railway Avenue would be LOS A, which means vehicles turning left from the driveways would seldom experience any delays. The operation of the street intersections with Fourth, Fifth, and Sixth Avenues would also be LOS A, during these high visitor days during the peak month of the year.

Concern was expressed by the City of Seward City Engineer regarding the configuration of Railway Avenue, if additional widening beyond the existing two lanes were not done with this project. The above analysis which indicates LOS A at driveways and street intersections along Railway assumed the two lane section, with on-street parking maintained on the north side of the street. A configuration was also examined which resulted in three lanes on Railway Avenue. A center left turn lane would facilitate through traffic by removing left turns from blocking through vehicles. It would also provide a refuge lane for vehicles turning left from the project driveways or intersecting streets. All access driveways and street intersections would also operate at LOS A in this configuration.

The three lane section would maximize the ability of Railway Avenue to process traffic, while reducing potential delays associated with turning traffic. However, an additional 24 on-street parking spaces would be lost to accommodate a three lane facility within the existing curb-to-curb pavement width. The two lane configuration which maintains on-street parking on the north side of the street would operate very well.

The bicycle/pedestrian path that extends east along the waterfront extends to the plaza at the foot of Fourth Avenue, in front of the proposed IMS building. It would cross the driveways parallel to Railway Avenue; it's driveway crossings would be protected by bollards and other demarcation to alert trail users of the driveway crossing. During high visitor days, the on-site parking management staff would be responsible to assure that potential conflicts at these crossing points are well-managed. However, this type of crossing, considering the driveway volumes and range of potential trail volumes, is a condition found at many busier facilities throughout the United States. As a result, no unusual problems or conflicts are anticipated.

CONCLUSION: The effect of Alternative I project operations on traffic operations is expected to be LOW. LOS for key intersections would not change due to the proposed project, although Railway Avenue may experience congestion during peak operating times due to site access delays.

Remote Effects on the Seward Highway

In addition to intersection LOS within Seward, the effect of project traffic outside of Seward was reviewed. These increases are summarized in Table 4-10. As indicated earlier, new vehicles traveling to Seward represent about 17 percent of the total daily or peak-hour project traffic. Most project traffic would already be in, or traveling to, Seward for other purposes.

TABLE 4-10
PROJECTED TRAFFIC VOLUMES
ON SEWARD HIGHWAY NORTH OF SEWARD

Location	Daily				Peak Hour			
	1994 Existing	1998 w/o Project	1998 with Project	Project Percentage of Volume	1994 Existing	1998 w/o Project	1998 with Project	Project Percentage of Volume
Seward Hwy north of Nash Road	8,145	12,215	12,425	2	630	965	1,020	5
Seward Hwy north of Exit Glacier Rd	7,960	9,315	9,500	2	630	830	885	6
Seward Hwy north of Bear Lake Rd	5,310	6,215	6,400	3	470	550	605	9
Seward Hwy at Moose Pass	3,780	4,590	4,785	4	360	440	495	11

Approximately 185 daily (55 peak hour) vehicles would be added to the Seward Highway traveling from other Southcentral Alaska locations. In the vicinity of Moose Pass, approximately 20 miles north of Seward on the Seward Highway, these volumes would be added to the 4,590 daily and 440 peak hour vehicles forecast on that road section for 1998. The project would thus represent four percent of the daily, and 11 percent of the afternoon peak hour, traffic on this section of roadway. Traffic increases in this range, while noticeable, are unlikely to inconvenience travelers or disrupt traffic conditions projected for this roadway as compared to what is expected even without the proposed project.

CONCLUSION: Effects related to traffic volume increases or intersection operations from Alternative I operations in outlying portions of the Seward Highway are expected to be LOW. While the project at times of peak visitor activity would increase traffic volumes, it would not result in a degradation below the levels forecasted to occur without the project.

It is recognized, however, that general growth in Seward visitor and tourism activity could cumulatively degrade the operation of Seward streets during peak periods of the summer tourist season. Cumulative effects are presented in Section 4.5.

Traffic Safety Effects

Traffic accidents are difficult to accurately forecast, because their occurrence is due to a wide range of factors and influences. Generally, if no specific traffic hazards exist, it is thought that accidents occur in some relation to the amount of traffic at an accident location. This relationship is often represented by the accident rate (accidents per million entering vehicles at intersection; accidents per million vehicle mile along roadway segments). Existing accident rates for the Seward area are provided in Section 3.12. Future accident occurrence without the proposed project would be expected to occur at the same rate.

The percentage change in traffic volumes forecasted to occur as a result of the proposed project are presented in Table 4-10. This table provides an indication of the relative change in the number of accidents which could occur as a result of the project. The relative percentage change in traffic which would occur due to the proposed project would be noticeable, but should not significantly affect traffic safety.

CONCLUSION: The effect of Alternative I operations on traffic safety in the Seward area is expected to be LOW.

Parking Effects

Effects of the proposed project on parking are evaluated by the relationship between site parking supply, parking code requirements, and the actual parking demand anticipated.

Parking Supply

The parking supply for the proposed project currently totals 216 spaces. This includes 166 parking spaces accessed from the south side of Railway Avenue at Fifth Avenue for visitors to the proposed facility. All these parking spaces will accommodate RVs. Of these, 151 spaces would accommodate RVs up to 20 feet long; 15 would accommodate RVs up to 30 feet long. The remaining 50 spaces are designated for employees and would be located immediately north of the existing Rae Building parking lot. Access would be from Washington Avenue.

The parking lots developed for the project would be fully available to visitors to the proposed facility and staff; parking by non-facility visitors would be strongly discouraged through on-site parking management and enforcement. Parking management measures would include a time limit commensurate with a normal site visit.

Site development would result in on-street parking being removed from Railway Avenue. If Railway Avenue is striped for two lane operations, approximately 24 on-street spaces would be removed from the south side of the street to accommodate the bus loading zone and provide a widened eastbound lane to facilitate easy right turns into the project driveways and allow other vehicles easy maneuvering around turning vehicles. If Railway were restriped as a three-lane street, 24 additional parking spaces would be removed from the north side of the street, resulting in a total removal of 48 spaces.

In addition to on-street parking spaces, approximately 57 RV camping slots would be removed from the Iditarod Campground on the site. These campers would either be required to camp in alternative camping sites, undesignated areas, or could be discouraged from camping in Seward. These effects would be most noticeable during the peak summer weekends, holidays, and other special event periods.

The peak parking demand for the project is calculated to be 152 spaces, including approximately 12 RV's of all sizes. This peak demand would typically occur on a weekend during the peak summer season. Of this peak, approximately 28 vehicles would be "new visitors to Seward". These vehicles are likely to leave the site and seek parking in some other location within Seward, after visiting the IMS facility. It is unlikely that trips attracted to Seward for the primary purpose of visiting the IMS facility would make a single purpose trip without also visiting other Seward attractions. The net effect of the parking demand associated with Alternative 1 would be the secondary effect of dual trip purpose parking, totaling a peak of 28 vehicles.

Weekday peak demand, which would typically occur during a mid-afternoon period, is estimated to be approximately 25 percent less than the peak weekend demand. This would result in a peak weekday demand level of 114 spaces. Other demand components would be proportionally less on a weekday than a weekend.

CONCLUSION: The effect of Alternative 1 on off-site parking demand would be LOW, based on the secondary impact described above. Taken together with the potential for displaced parking supply that may occur if Railway Avenue remains two-lanes, the effect of Alternative 1 would be MODERATE. Effects would also be considered MODERATE if Railway Avenue parking were removed from both sides of the street to facilitate a three-lane section on Railway Avenue.

Code Requirements: Title 15 of the City of Seward Planning and Land Use Regulations specifies off-street parking requirements based on land use. Of the land use categories listed in the regulation, the proposed facility would be most similar to the category which includes places of public assembly. For this category of land use, the regulation specifies one parking space for every four seats of capacity. In the case of the proposed facility, the requirement could be interpreted to be one space for every four visitors, or 219 spaces for the projected maximum peak of 875 visitors.

Code requirements for parking are typically intended to be guidelines to ensure that all parking demand is accommodated for a variety of facility types within broad categories of land uses. A determination of actual parking needs for a specific facility could be made based on an analysis of actual site use characteristics (number of visitors, employees, etc.) as summarized below for the proposed facility.

Parking Demand: Estimates of peak parking demand for the proposed facility were developed using assumptions consistent with those developed for the project traffic volume and operations analysis. As indicated previously, the assumptions were intended to provide conservative analysis results, so potential effects would not be understated. Parking demand for both visitors and employees were developed.

The peak number of visitors and employees anticipated at the site was converted into parking demand by considering the various components of person trip generation by travel mode, and average vehicle occupancies. The specific assumptions regarding person trips generated in each market, travel mode, and vehicle occupancies is described in detail in Appendix F.

A peak demand for 152 visitor parking spaces would be generated by the proposed project, comprised of 150 passenger vehicles and 12 RV's. An additional peak demand of 54 parking spaces would be generated by employees. This demand level would approximate the designed capacity of the site, with a calculated parking surplus of 14 spaces. The city would evaluate code compliance for parking spaces as part of local zoning approval.

When summer holidays and weekends coincide (estimated to be two to three weekends each year), visitor parking demand would likely exceed the peak levels indicated. On these days, the general demand for parking throughout the city is very high, with or without the project. Visitors who already are in Seward and who wish to visit the facility, would likely change their travel mode on these highest visitor peak days. Use of transit, pedestrian, and other non-auto travel for trips within the city would likely increase, since visitors may be uncertain about the likelihood of finding a parking space on or near the site. The parking area adjacent to the Rae Building would be designed to accommodate employee parking only.

No adverse effects on parking are forecast as a result of the proposed project. The parking supply is estimated to be adequate to meet anticipated traffic demand levels on all but a few days out of the year. During those days when the demand may exceed the supply, it is likely that changes in site travel would also occur and the actual overspill of demand into the surrounding area would be minor. This conclusion assumes the successful implementation of an on-site parking policy which restricts the use of the on-site parking to proposed project visitors only.

CONCLUSION: The effect of Alternative I operations on parking conditions in the City of Seward is expected to be LOW.

Transit Effects

Visitors arriving by charter buses associated with ground transportation tours from docked cruise ships, or from outside Seward, are estimated to comprise approximately 37 percent of the visitor person trips associated with the proposed facility (Table 4-6). On an average high-use day during the summer season, this would result in a total of approximately 60 bus trips daily (30 in; 30 out) with 18 bus trips (nine in; nine out) occurring during the peak hour of operation.

Buses likely would be required to layover at off-site locations to reduce the need for on-site bus parking. It is likely that buses would layover at the sites currently used for layover by the cruise ships and other tour buses. The most heavily used location for layover is currently a gravel lot by the railroad dock.

If all bus trips are made with a unloaded leg (leaving empty after drop-off; arriving empty for pick-up), the number of actual bus trips to and from the site would be increased by a factor of two. This would result in a total of 120 daily bus trips (60 in; 60 out), with 36 peak hour bus trips (18 in; 18 out). The actual number of bus trips on a peak demand day would likely be less as buses used to drop off tour groups could also pick up visitors who have finished their tours. Likewise, buses carrying a passenger load back to the staging area could be immediately loaded with another group of visitors. To be conservative, the traffic operations analysis has assumed that all bus trips would be made with an unloaded leg.

Buses would load and unload at the proposed bus service area between Third and Fourth Avenues. This area would accommodate eight to nine buses simultaneously. If the maximum potential bus arrivals occur, 18 buses would arrive during the peak hour of operation, which would result in an arrival every 3.3 minutes. If eight bus spaces are provided, buses would be required to vacate their space approximately every 26 minutes. This would adequately accommodate loading and/or unloading. Inbound buses would travel Third Avenue to Railway Avenue; outbound buses would turn onto Fourth Avenue and return to Third Avenue via Washington Street.

Visitors arriving in Seward by train or from the Small Boat Harbor area, as well as those visitors who drive to other parking destinations in Seward, would be likely to use other means of informal transportation to the site, which could include the use of shuttle bus service or taxis, depending on the convenience and LOS provided.

CONCLUSION: The effect of Alternative I operations on local transit is expected to be MODERATE.

Rail Effects

The Alaska Railroad is anticipated to carry approximately two percent of the total site visitors during peak month, design-day conditions (Table 4-6). This reflects approximately 65 visitors arriving via the train. Transport between the proposed facility and the Alaska Railroad Depot near the Small Boat Harbor area would occur via public transportation such as shuttle bus or non-motorized modes, including walking.

CONCLUSION: The effect of Alternative I operations on rail service is expected to be NEGLIGIBLE.

Ferry Effects

Approximately 45 visitors would be projected to travel via the Alaska Marine Highway System ferry on the peak month day used as the basis for this traffic analysis. This represents approximately two percent of the total visitors to the site. Of these, 1/2 are estimated to arrive by auto, and are included in the estimates of site auto traffic for the trip generation and parking analyses. The other half would, if the ferry service remains at the Municipal Dock, walk to the facility. If the ferry is moved to another site in Seward, project visitors would travel to the site by other public transportation (walking, shuttle buses, taxis). Few of the project visitors to the facility arriving by ferry would be new visitors to Seward; and an estimated one percent of project visitors would arrive by ferry with their car.

The potential for the site accommodating the joint use of the ferry and the IMS facility has also been evaluated. The analysis indicates that joint use of the property by the ferry system and the IMS facility is likely feasible. The joint use operation would result in the storage of all ferry vehicles in an area of the visitor parking lot temporarily cordoned off to separate ferry traffic from IMS visitor traffic.

Under the joint operations with the ferry and proposed project, access for the two site uses would be separated, to avoid the potential for access conflicts between the two uses. The ferry access would be directed to the easterly access driveway onto Railway Avenue, while the westerly driveway would continue to serve project visitors. Ferry traffic would be routed to the east, along Railway to Ballaine Avenue and to the Seward Highway via D Street; project traffic would be routed along Third Avenue/Seward Highway to Railway Avenue and into the westerly site driveway. Since the capacity of the M/V *Tustumena* is only 42 passenger vehicles, and typical loads at Seward are less, the impact of this rerouted traffic would not be significant, especially considering the time ferry traffic occurs.

The ferry system's current schedule for the M/V *Tustumena* indicates a potential for overlap between uses on Thursday mornings and Friday evenings, approximately three weeks per month during the peak summer season. The proposed facility would open at 10:00 AM, and close at 9:00 PM during the peak summer season. Thursday mornings, the ferry is currently scheduled to leave Seward at 11:45 AM, after a five to six hour layover, resulting in approximately two hours of overlap between the uses. On Friday evenings, the ferry arrives between 6:00 and 7:00 PM and leaves at 9:00 PM, which would result in a two to three hour overlap with operating hours of the facility.

The current site plan layout includes two project driveways onto Railway Avenue, one at a location between Fifth and Sixth Avenues, similar to the plan in the Draft EIS, and the other at the east edge of the site, opposite 6th Avenue. If ferry traffic were jointly accommodated on the project site, the parking supply for site visitors would be reduced by about 31 spaces, from 166 to 135 spaces, during time periods on days when a ferry arrival was anticipated. This reflects 28 spaces removed from the southwest portion of the parking lot, plus 3 of the large RV spaces to assure that large trucks could turn out to the access driveway from the southerly circulation aisle. Under this temporary site plan modification, 90 percent of the total vehicle capacity of the M/V *Tustumena* could be stored on-site without further impacting the remaining on-site project parking and use.

The Draft EIS indicated that peak parking accumulation on a high visitor day during the peak summer season would total approximately 152 spaces. This accumulation is likely to occur during mid afternoon on a weekend (Saturday or Sunday), when the highest number of weekend vehicle travelers to Seward occur. During a weekday, the peak parking accumulation would be less than would occur on a peak season weekend day. It is estimated that the daily peak parking accumulation on a weekday would be approximately 75 percent of the peak parking accumulation on a weekend. In this case, the peak weekday parking demand would be 114 spaces.

Peak parking demand for the facility for any day is likely to occur in the early afternoon, with other time periods resulting in parking demand at somewhat lower levels. On Thursday morning, prior to noon, parking demand would be unlikely to exceed 90 percent of the weekday demand, resulting in a parking

accumulation of 103 spaces. With 135 spaces available during joint use operations, the available parking supply would exceed the Thursday morning demand by over 30 spaces, resulting in nearly one-fourth of the available site parking remaining unused. On Fridays, after 6:00 PM, the IMS parking demand is estimated to be approximately 60 percent of it's peak weekday demand, resulting in a demand for 69 parking spaces. This would reflect about half of the parking available during joint operations with the ferry. Thus, no noticeable parking impact would appear likely during the Thursday morning or Friday evening periods of joint site use between the ferry and the project facility.

Discussions were undertaken with the Deputy Director of the Alaska Marine Highway System, Harold Moeser, to understand the current operations of the ferry system at Seward, as well as determine if flexibility existed in the ferry system schedule to shift arrivals and departures to minimize the potential for conflict between the project operation and the ferry. He indicated that there was likely some flexibility to adjust departure times on Thursday mornings, where currently a 5 to 6 hour layover occurs before leaving. Leaving earlier would reduce the Thursday overlap with project use. Other schedule refinements may be possible if the ferry system and the project agree to pursue joint use operations. Adjustments to the schedule should be carefully coordinated, since major adjustments would affect schedule operations at other ports of call.

CONCLUSION: If the ferry remains at the Municiapl Dock and is operated jointly with the IMS facility, the resulting impacts of Alternative I operations on ferry service would likely be LOW/MODERATE, if the on-site management of the visitor parking area is well-coordinated with the ferry schedule and operations. If the ferry is relocated to another facility in Seward, the impacts on operations would be NEGLIGIBLE.

Cruise Ship Effects

The proposed project is forecast to capture a substantial portion of its total visitor activity from cruise ships docking in Seward. For the peak day assumed as the basis for this traffic analysis, 21 percent of total daily visitors to the proposed facility would be from the increasing cruise ship market in Seward. This would reflect 600 daily site visitors from cruise ships (Appendix F). However, no additional cruise ships are forecast to berth at Seward as a sole result of the proposed facility. Therefore, the only impact on the cruise ship industry would relate to the potential ground transportation of site visitors between the project site and the cruise ships berthing at the Railroad Dock.

This traffic analysis assumes that *all* visitors from cruise ships would be transported to and from the proposed site by bus. In the event that formal charter buses are not provided, cruise passengers who visit the proposed facility would add to the demand for the local shuttle bus services or other informal transportation. It is assumed that any increase in demand for these services could be responded to by increases in the availability of transit/shuttle service over time. Such demand increases may be viewed as a positive impact by potential ground transportation operators, since they could benefit economically. Increased bus travel through downtown Seward would also increase the potential for retail operations. However, with the increase in transit, there could be an increase in traffic congestion, noise, and air pollution.

CONCLUSION: The effect of Alternative I operations on cruise ship service is expected to be LOW.

Non-Motorized Travel Effects

The proposed project would increase the amount of pedestrian activity in the general site vicinity, both as a result of those walking to the site, and as a result of informal pedestrian activity between the site and the downtown business district. Pedestrian trips to the site for visits could occur on sidewalks between the site and the central business district, or along the bicycle/pedestrian path which links the site with the Small Boat Harbor area. This could result in a beneficial effect to the downtown area with respect to economic opportunities.

Quantification cannot be made of the precise split between pedestrians making these trips as pedestrians, and those who use other transportation options, such as the shuttle bus or bicycles. Accommodations for bicycles will be part of the project design. In general, no adverse effects are anticipated to result from this potential increase in pedestrian travel.

CONCLUSION: The effect of Alternative I operations on non-motorized travel is expected to be NEGLIGIBLE.

The overall effect on traffic, circulation, and parking in the City of Seward and vicinity is expected to be LOW to MODERATE.

Air Travel Effects

The project could potentially increase the demand for air travel to Seward. The increase could effect either the scheduled service to/from Seward or charter service within Seward. Visitor projections for the facility did not identify a quantifiable demand associated with this travel mode. As a result, the effect on air operations at the Seward air strip are expected to be NEGLIGIBLE. if a quantifiable number of visitors were to arrive in Seward via this travel mode, then the effects of increased vehicle travel to Seward would be similarly overstated.

CONCLUSION: The effect of Alternative 1 operations on air travel is expected to be NEGLIGIBLE.

Small Boat Harbor Effects

A submersible and support vessel may be acquired for research purposes at some time in the future. The submersible would be stored on land at the IMS Seward Marine Center when it is not being used. The support vessel would use the existing IMS dock for loading and unloading the submersible, equipment, and supplies, and would moor at the dock when the R/V *Alpha Helix* is at sea. The R/V *Alpha Helix* is at sea approximately 180 days each year, and nearly continuously from May through October. The support vessel would likely be at sea for approximately 200 days per year. Most of the research cruises would be between 6 and 14 days duration and would be interspersed by two to four day intervals in port

for refitting and scientific crew exchanges. During the winter, the vessel would be in port for two to three week intervals between cruises. Every two to three years the vessel would be laid up for approximately 40 days in the winter for major maintenance at a ship repair facility such as the SMIC.

Based on this assumption, the support vessel would be at sea or at the IMS dock for the majority of the time during April through November and the need for transient storage would be minimal. Thus, the potential for impact on the limited transient moorage available at the Small Boat Harbor during the peak summer season would be minimal. During infrequent periods in the summer when both the R/V *Alpha Helix* and the research vessel are in port, it could use the Small Boat Harbor with the prior permission of the Seward harbormaster, or anchor in Resurrection Bay. Coordination of vessel schedules and moorage arrangements would occur to minimize the potential for impacts to available moorage space.

CONCLUSION: The effect of Alternative 1 operations on the small boat harbor is expected to be LOW.

4.3 ALTERNATIVE II - RESEARCH AND REHABILITATION ONLY, EFFECTS ON:

PHYSICAL CONSIDERATIONS

4.3.1 Soils and Geology

Alternative II would require modification to existing site terrain. It would eliminate the education and visitor component, which, in addition to indoor square footage, includes: the 90,000 square foot, 166-space visitor parking area; 67,000 square feet of plaza, sidewalk, and landscaping; and the associated stormwater drainage system. These areas would be graded, landscaped, and left for possible future expansion.

CONCLUSION: The effects to existing soils and geology as a result of Alternative II would be similar to Alternative I, and are expected to be LOW.

4.3.2 Hydrology and Water Quality

Domestic water supply demands for Alternative II would be approximately 8,600 gpd (versus 21,470 gpd for Alternative I), or an approximate 60 percent reduction as compared with Alternative I. In addition, stormwater discharges would be less, due to decreased impervious surface areas, most notably the 166-space visitor parking lot.

A part of Alternative II, the oil/water separator would not be installed and the city's existing stormwater drainage system in the vicinity of the project site would continue to discharge directly to Resurrection Bay without treatment. This beneficial effect from Alternative I would be eliminated if Alternative II were to be implemented.

CONCLUSION: The effects to existing hydrology and water quality as a result of Alternative II would be similar to Alternative I, and are expected to be LOW.

4.3.3 Air Quality

The construction-related activities of Alternative II would be reduced and, therefore, overall construction-related air emissions (from construction equipment and fugitive dust) would be reduced.

Since Alternative II does not include the visitor and education component, air emissions during operations also would be less. Air emissions associated with visitor traffic would be eliminated and, with a smaller overall building size, air emissions from heating fuels also would be reduced.

CONCLUSION: The effects to existing air quality as a result of implementing Alternative II would be similar to Alternative I, and are expected to be LOW.

4.3.4 Noise

Construction-related effects of Alternative II would be less than Alternative I and, therefore, overall construction-related noise would be reduced. Since the visitor and education component would be eliminated with Alternative II, noise effects from visitors and tourists in the vicinity of the proposed site would be reduced.

CONCLUSION: The effects to existing noise levels in the project vicinity as a result of Alternative II would be similar to Alternative I, and are expected to be LOW.

BIOLOGICAL RESOURCES

4.3.5 Wildlife and Marine Resources

Alternative II would eliminate the parking lot, sidewalks, and plaza component. The area would, however, be graded and landscaped, providing some additional habitat for terrestrial wildlife. Construction of the tide pool and wave barrier would still occur as short-term activities, so the effect of Alternative II on wildlife from this aspect of construction would be the same as Alternative I. After construction, research capabilities would remain the same, and would benefit wildlife through new and useful information for care of marine birds and mammals in the EVOS area.

CONCLUSION: The effects to wildlife and marine resources as a result of Alternative II would be LOW, and the same as those identified for Alternative I.

4.3.6 Vegetation, Wetlands and Habitat

Condition of the shoreline vegetation would be improved from its current condition due to landscaping and revegetation after construction. The armor rock wave barrier and tide pool would create a habitat for intertidal species.

CONCLUSION: With Alternative II, the effects to vegetation, wetlands, and habitat during construction would be LOW, and the same as those identified for Alternative I. Effects to wildlife, wetlands, and habitat as a result of Alternative II operations are expected to be NEGLIGIBLE.

SOCIAL SYSTEMS

4.3.7 Visual/Aesthetics

Alternative II would involve site clearing, demolition, construction equipment, stockpiling of construction materials, and related construction activities. However, these activities would be reduced, both in time and in extent, as compared with Alternative I because the education and visitation component would be eliminated. The facility would be of a lower scale and have a smaller footprint. It would be a one-story structure with the elimination of some of the visitor features such as the pedestrian walkway and viewing platform, the exhibit and display area, the plaza, some landscaping, and the visitor parking lot.

CONCLUSION: The effects to visual/aesthetic resources as a result of Alternative II are expected to be LOW for project construction, BENEFICIAL for project operation, and similar to those described in Alternative I.

4.3.8 Archaeological and Historic Resources

The AHRS lists no archaeological sites on, or in the vicinity of, the proposed project, and the Section 106 coordination with the SHPO has determined that there are no known archaeological properties in the vicinity of the proposed project. Therefore, project construction of Alternative II would have no effects archaeological resources.

The effects of Alternative II on historical resources would be similar to Alternative I, with two minor differences. First, the parking requirements would be designed for research and operational staff only. As with Alternative I, the 50 spaces for staff parking would be accommodated adjacent to the existing parking lot at the Rae Building. The land east of the proposed facility, used for visitor parking with Alternative I, would be left undeveloped and available for future use although some landscaping would occur. Second, without the public education and visitation component, the height of the proposed facility would be reduced from two stories to one. However, as stipulations of the MOA, final project design and landscaping plans will be reviewed by the SHPO, and appropriate measures developed to mitigate adverse effects on the Seward Machine Shop.

With Alternative II, there would be no effects to archaeological resources from the proposed project construction and operation. Construction of Alternative II would result in LOW indirect effects from construction noise and dust. There would be no adverse effects to four of the five sites on or eligible for inclusion on the NRHP; there would be potential adverse effects to the Seward Machine Shop. Review of final design and landscape plans by the SHPO under the MOA would result in the development of appropriate mitigation measures to minimize adverse effects.

4.3.9 Land and Shoreline Use

Land Ownership Status: The effects of Alternative II on land ownership status at the project site would be identical to Alternative I.

Land Use: The effects of Alternative II on land use at the project site would be similar to those described in Alternative I. With no education component, there will be no commercial uses on-site associated with visitors, and the amount of on-site parking would be reduced. Adverse effects on land use would be low.

Alternative II does not include a public education and visitation component. The affect of this alternative would be that the status quo of the pace of development would continue, especially in the adjoining downtown area. The area would continue to show a conversion and upgrading of existing uses to accommodate and attract increased economic activity, but at a slower pace than for Alternative I. Effects of this alternative would be NEGLIGIBLE.

Land Use Regulations: The effects of Alternative II on land use regulations at the project site will be identical to those described in Alternative I. The project would not conflict with the SCP. Alternative II would require replatting of the project site by the Kenai Peninsula Borough, and could require both rezoning and a conditional use permit from the City of Seward. Effects on existing land use regulations would be LOW.

CONCLUSION: Overall, construction and operation of Alternative II would have a NEGLIGIBLE effect on land and shoreline use and a LOW effect on existing land use regulations.

4.3.10 Socioeconomics

Construction: Effects of Alternative II construction would be similar to Alternative I ranging from NEGLIGIBLE to LOW. Payroll and project expenditures would be slightly lower, so that there would be fewer BENEFICIAL economic effects.

Operations: The effects of Alternative II operations on the City of Seward's socioeconomic elements, such as economy, population, employment, income, infrastructure, and service characteristics, fiscal and quality of life, are discussed below.

Local Economy

Alternative II would have effects on Seward's private sector economy similar to those associated with Alternative I. These include year-round employment, and local procurement of goods and services, with indirect employment based on this local spending, as discussed in Alternative I. Due to the smaller scale of operations, these effects would be less than with Alternative I, but would still constitute a BENEFICIAL effect on the local economy.

The primary difference between Alternatives II and I is the lack of visitor-oriented facilities and services with Alternative II. The project as such would focus on research and rehabilitation with more internally-oriented operations. Visitor traffic would not be attracted to the site or to the downtown vicinity, except for traffic associated with operating the laboratories, the rehabilitation component, and office functions. Effects of Alternative II on Seward's economy would be BENEFICIAL, though effects would be less beneficial than Alternative I due to the smaller-scale of the project.

Demographics

The year-round population of the Seward area would be increased by a smaller number of new residents moving to town for work at the facility, as compared to Alternative I. With 15 new employees hired from outside Seward, the total number of new residents, including family members, would be approximately 51 (assuming an average of 3.4 family members per family). This would be an increase of only 1 percent in population over the 1993 level.

The effect of Alternative II on the population of Seward would be NEGLIGIBLE.

Employment

Without the education component, the proposed facility would hire new employees for 26 full-time equivalent positions as shown in Table 4-11. Eleven full-time positions would be hired locally rather than 20, there would be no part-time hires, and 15 positions would be hired from outside Seward, rather than 25.

Alternative II would provide 39 percent of the new employment and 26 percent of the new local hiring planned for Alternative I. The facility would still rank among Seward's largest employers, and the new jobs would have a beneficial effect on Seward's unemployment rate, which has ranged from eight percent in summer to 18 percent in winter during recent years.

Indirect employment is likely to be created by the project in several sectors. New demand for food and lodging, transportation, retail trade, and service to operate the facility would be less than Alternative I, however, as the facility would be smaller and no visitor traffic would be generated.

TABLE 4-11
PROPOSED LOCAL AND NON-LOCAL HIRE FOR PROJECT OPERATIONS
COMPARISON OF ALTERNATIVE I AND ALTERNATIVE II

	Alternative I		Alternative II
	Full-time Equivalent	Part-Time	Full-time Equivalent
Local Hire	20	22	11
Out of Seward Hire	25	0	15
TOTAL	45	22	26

Source: Heery International, Inc., 1994, pp.10.

Income

Per capita income in Seward in 1990 was $16,615. Median household income was $37,049. The average salary of employees hired for Alternative II would be $42,371.15 (based on all positions, with benefits of 35 percent of base annual salary included). This average salary is 2.5 times higher than the 1990 per capital income.

Total payroll for Alternative II would be approximately $1,101,650 annually. The total 1992 payroll in Seward was $44,130,319 (see Table 3-7 in Chapter 3). This payroll added in 1997 would represent an increase of 2.5 percent over the 1992 payroll. This compares with an increase of 4.5 percent associated with Alternative I.

The increases in employment, income level, and total payroll would have a small degree of BENEFICIAL effects on Seward's economy and demographics. These effects would be less beneficial than with Alternative I.

Community Infrastructure and Service Characteristics

Utilities: Total utility expenditures per year for operation of Alternative II would be 27 percent less than the amount budgeted for Alternative I. The facility's requirement for each of the city utilities would be less than the requirements for the Alternative I. Seward's utility services for water, sewer, electricity, solid waste, and telephone could meet the demand of Alternative II with the current capacity. The one service which might not as easily meet increased demand is recycling, as discussed for Alternative I. Current operations are limited, regardless of the project's effect. Additional volunteers and equipment may be needed if this service is to remain effective. Fuel supply and prices should not be adversely affected by Alternative II.

The effects of Alternative II on Seward utilities would be LOW. The recycling program could be affected more than other services, but would be less affected than from Alternative I.

Housing: Alternative II would have similar effects on housing in Seward as Alternative I, but to a lesser degree. Fifteen new households would need to be established, instead of 25. The effect on the housing market would not be as strong, and rental and purchase prices would be less likely to rise. Nonetheless, new residents might increase the demand for new housing, depending on their satisfaction with existing housing. Construction of new housing would have beneficial effects on local employment and property tax revenues.

Demand for temporary overnight accommodations would be less without the education component, though there would be a slight increase due to visiting researchers and others who travel to Seward to meet with research and operations staff.

Effects on housing would be LOW with Alternative II.

School System and Education: This alternative would not include the public viewing areas or exhibit and educational facilities included with Alternative I. Educational opportunities would not be emphasized, but visits could be arranged through the research staff on a case-by-case basis. More research would be ongoing than is presently the case in Seward, so there could be increased opportunity for interaction between the research staff and residents, given the small population. The possibility for informal presentations would still exist, as it has with the K.M. Rae Building programs to date.

With this alternative, 15 new employees would be hired from outside Seward to staff the facility, as compared to 25 with Alternative I. The number of school-age children moving to town would be lower, and enrollment in the elementary school and high school would likely not increase by the same number of students. The impact on school enrollment would hinge on how many school age students move to town. If more than 17 students enroll in the elementary school, a capacity problem may result for the elementary school, as discussed in Alternative I; however, this could occur regardless of the proposed project. This problem is less likely to arise with Alternative II, but may occur regardless of the proposed project.

Alternative II would have a BENEFICIAL effect on marine education opportunities in Seward, though less beneficial than with the education component included in Alternative I. The age groups of additional school age students is unknown. The junior high and high school likely would be able to handle the additional children generated by new families moving to Seward, and effects on the junior and high school would be NEGLIGIBLE. Current elementary school enrollment is higher, and additions of elementary-age students generated by new families moving to Seward could result in over-capacity, however, this may occur with or without the project. Overall, the effect of Alternative II on Seward's school system would be LOW; and marine educational opportunities presented by the facility would result in BENEFICIAL effects on education.

Health and Social Services: Some increase in demand would occur with the new employees in town, but the additional 50,000 tourists would not be drawn into the service area of Seward's medical providers, and associated demand for treatment would not occur.

Alternative II would have a NEGLIGIBLE effect on health and social services.

Police/Fire/Emergency Services: In Alternative II, none of these services would be called upon beyond their capacity. The need for police, fire protection, and emergency services would be lower with Alternative II than with Alternative I. The relatively orderly and self-contained nature of the research and rehabilitation components would require little attention from police compared with potential congestion of vehicle traffic, pedestrians, and other recreational visitors to downtown Seward associated with Alternative I. In the event of a fire, fire fighting would be a much simpler challenge at the facility if the average occupancy in the building is less than 30 researchers and staff, compared with up to 875 visitors during peak periods. Likewise, ambulance service would be in lower demand without the visitor orientation.

The effect of Alternative II on these services would be NEGLIGIBLE.

CONCLUSION: The overall effects of Alternative II on community infrastructure would be NEGLIGIBLE to LOW. MODERATE effects could occur to the school system. Some BENEFICIAL effects could result, similar to those identified for Alternative I.

Public Fiscal Characteristics

As with Alternative I, Alternative II would result in changes of revenues from lease fees, moorage fees, property tax revenues, and campground fees. The main difference with Alternative II would be the loss of sales tax revenues from admissions or retail sales.

Lease Revenues: The effect of Alternative II on lease fees would be the same for Alternative I. Losses of revenue would result from the displacement of NSHC and, potentially, the ferry service. If the ferry would no longer be allowed to use the Municipal Dock, lease revenue to the city would be lost unless the new ferry docking area is located on city-owned land.

Moorage Fee Revenues: The effect of Alternative II would be the same as for Alternative I: an increase from the project vessel periodically using the Small Boat Harbor.

Camping Fee Revenues: The effects of Alternative II would be the same as for Alternative I; a loss of revenue would occur from the displacement of up to 57 campsites on Tracts 5 and 6.

Utility Revenues: Operation of the facility under Alternative II would generate approximately $264,000 per year in city utility revenues, which is less than Alternative I. This is slightly more than the total revenues from Seward's industrial customers in 1993, so the facility would generate a 100 percent increase in industrial utility sales. Alternative II would not require acquisition of additional capacity.

Property Tax Revenues: The effects of Alternative II would be similar to those of Alternative I. However, city and borough property tax revenues on new homes would be slightly less due to the smaller number of new residents building homes. Also, other tourism-related property improvements that might be made with Alternative I would not be as likely to occur with Alternative II.

Sales Tax Revenues: With Alternative II, there would be no education component to attract visitors to the facility, and no retail outlet is planned. Therefore, no sales tax revenues would be generated directly from admissions fees or sales at the facility. The potential for sales tax revenues with Alternative II would be from indirect spending, primarily from new employment, with an annual payroll of about $1,101,650. This would result in higher local purchasing power, greater local spending, and higher city and borough sales tax revenues than are currently generated in Seward. The amounts generated would be lower than with the Alternative I.

City Expenditure Characteristics: The effects of Alternative II would be the same as Alternative I.

CONCLUSION: The effects of Alternative II would be similar to Alternative I, with the exception that Alternative II would generate no direct sales tax revenues and lower indirect sales tax revenues. Other revenues to the city would occur; this would constitute a BENEFICIAL effect. Effects on city expenditures would be LOW. Overall, the effects of Alternative II on the fiscal characteristics of Seward would be BENEFICIAL.

Social Environment/Quality of Life

With Alternative II, many of the factors which contribute to quality of life in Seward would not be adversely affected. Many Seward residents value a small town atmosphere, a relatively slow pace of life, lower congestion, and other qualities not found in more urban locations. The research and rehabilitation facility would be relatively self-contained on its waterfront site, and would not generate visible effects throughout the rest of town. Another quality of life factor in Seward - employment and job opportunities - would be enhanced by the addition of 11 locally-hired, year-round positions.

Notably, there would be lower effects to Seward's social environment and quality of life with Alternative II, due to the reduced number of visitors who would come to town. Social concerns which have been raised about the proposed project, such as crowding, congestion, and changes to the small town atmosphere, would not occur with Alternative II. There would be no additional tourists visiting the site or circulating through the downtown area.

CONCLUSION: Alternative II would have a LOW effect on Seward's social environment and quality of life factors.

4.3.11 Recreation and Tourism

Recreation Activities and Facilities

Resources and activities of Alternative II would have effects identical to Alternative I in terms of accommodating and displacing campground activities that currently occur on the project site. Without the public education and visitation component, Alternative II would not attract the estimated 50,000 new visitors to Seward that would create demand for use of municipal recreation facilities. The primary exception would be school field trips to the research facility. These would be similar to the current visits that occur at the existing IMS facility, though a higher number of visits to the improved research facility may be expected. Increased visitation would occur mainly during the school year, when adequate capacity exists at municipal campgrounds, parks, and hotels.

Tourism Activities and Facilities

Alternative II would create few tourism and visitation opportunities beyond the potential for school field trips. Any increased visitation during the school year would likely result in some in-town expenditures at restaurants and stores. This effect would be BENEFICIAL, but LOW.

CONCLUSION: The effect of Alternative II on recreation and tourism would be LOW, except for the effect on campground sites, which would be MODERATE, particularly during peak-use periods.

4.3.12 Traffic and Transportation

Traffic effects associated with Alternative II would be slightly less during construction and substantially less during operation than those of Alternative I because of the elimination of the visitor component. Potential impacts to the street system, traffic volumes and operations, traffic safety, parking, rail, ferry, cruise ship and non-motorized travel are described below.

Street System

The curb cut between Fifth and Sixth Avenues for the visitor parking lot would not be necessary to accommodate project traffic demand; however, it could be needed if the Alaska Marine Highway System operation is maintained at the Municipal Dock, to serve the occasional ferry traffic queuing prior to loading, as well as off-loading of ferry traffic.

The bus pullout/passenger drop-off zone described for the Alternative I on the south curb of Railway Avenue would be eliminated with this alternative. In addition, the 166-space visitor parking would not be required with this alternative.

The effect of Alternative II on the city street system is NEGLIGIBLE.

Traffic Volumes

Effects on traffic volume would be substantially less under Alternative II than described for Alternative I. A total of 26 people would be employed at the facility, compared with 67 employees associated with the Alternative I. Without the public education and visitation component, the peak hour of site activity would shift from a visitor-driven midday period to a more traditional commute hour (i.e., staff arrival and departure times). During this period, the 26 employee trips would represent less than 10 percent of the 322 peak hour vehicle site trips described for Alternative I. Also, daily vehicle trips would be similarly reduced.

Traffic patterns associated with this alternative would vary somewhat from those described in Alternative I; however, overall traffic increases can reasonably be estimated at less than 10 percent of Alternative I at all locations.

Effects on traffic volumes anticipated from Alternative II would be NEGLIGIBLE.

Traffic Operations

Because the traffic volume increases associated with Alternative II would be less than 10 percent of those described for Alternative I, the impacts to traffic operations would be similarly less. Because the character of the site traffic would reflect employee/residents, who are likely to be familiar with Seward, there would likely be less use of indirect routes for travel between destinations than described for the proposed project. No significant impact to traffic operations, intersection LOS, or delay is forecast in association with this alternative.

The effects of Alternative II on traffic operations would be NEGLIGIBLE.

Traffic Safety

Effects on traffic safety would be proportionally less than those described for Alternative I.

Parking

The site would be designed to fully accommodate the anticipated 26 facility employees. As a result, no Off-site effects on Seward's parking demand or supply are forecast as a result of this alternative.

Transit

No noticeable increase in the use of local transit or shuttles would occur as a result of this alternative. Most employees are likely to commute to the facility by car or other non-motorized travel modes, depending on how far from the site they reside.

Rail Service

No noticeable increase in rail activity would occur as a result of development of this alternative; no adverse effects would occur.

Ferry Service

As described for Alternative I, the Alaska Marine Highway System is assumed to be relocated by the time the proposed project opens. As a result, effects would be limited to the construction period when ferry traffic would be routed through the project site.

If the ferry continues to operate at its present location after the proposed facility begins operations, the area designated for use as a visitor parking lot in Alternative I would accommodate a diverted ferry access drive/parking area. The access to Railway Avenue would be relocated from its current point at Fourth Avenue to a location further east.

Cruise Ship

Without a public education and visitation component, there would be no effect to cruise ship activity as a result of this alternative.

Non-Motorized Travel

The effects on non-motorized travel would be reduced under this alternative. Some employee trips off the site into the downtown core would be likely to occur, especially during daytime periods; however, the additional activity level likely to occur would be NEGLIGIBLE.

CONCLUSION: Alternative II would have a NEGLIGIBLE effect on traffic safety, parking, local transit, rail, ferry, cruise ships, and non-motorized travel modes.

4.4 ALTERNATIVE III - NO ACTION, EFFECTS ON:

The No Action Alternative would mean that none of the construction and operation activities associated with Alternatives I or II would occur. With this alternative, none of the effects of the proposed project, including benefits, would be realized. Benefits include enhanced research capabilities, a larger seawater supply system than currently exists at the IMS Seward Marine Center, educational opportunities, a wildlife rehabilitation facility, increased employment, and aesthetic enhancement of the existing site conditions.

PHYSICAL CONSIDERATIONS

4.4.1 Soils and Geology

The No Action Alternative would not provide for the site development as proposed; thus, there would be no effects on soils.

4.4.2 Hydrology and Water Quality

With this alternative, effects on hydrology would be the same as currently exist.

Although samples from soil borings do not indicate that soils on the proposed project site are contaminated, the potential exists due to past use of the property. Should contamination of the soil exist, construction activity associated with Alternatives I and II would include the removal or cleanup of those soils. The No Action Alternative would mean that the soils stay in place, resulting in a continued potential hazard to ground water and Resurrection Bay. Additionally, Alternative I includes a stormwater drainage system with an oil/water separator to control the flow of runoff and to treat runoff before discharge to the bay. The system would intercept a city line crossing the proposed project site that currently discharges into the bay without treatment. This system would not exist under the No Action Alternative.

CONCLUSION: The No Action Alternative could result in a LOW effect on water quality.

4.4.3 Air Quality

The No Action Alternative would result in no effect on existing air quality conditions.

4.4.4 Noise

There would be no noise effects from the No Action Alternative. Noise conditions would remain as they currently exist.

BIOLOGICAL RESOURCES

4.4.5 Wildlife and Marine Resources

Wildlife

Wildlife species are scarce on the site at the present time and, with continued use of the site as it presently is, wildlife should continue at its present level (in numbers and species composition). If the site remains in its present condition, there will be no effects on the intertidal habitats or invertebrates in the nearshore area. There will be continued wildlife viewing from the Municipal Dock and in the general area of the site.

Marine

Under the No Action Alternative, the existing IMS Seward Marine Center, D.W. Hood Laboratory would continue to operate the present flow-through LSS, which takes in water from approximately 260 feet deep and discharges through a shallow outfall. Biofouling of the existing system does not appear to be a problem. In addition, the current level of discharge does not appear to cause any adverse effect on marine biota.

4.4.6 Vegetation, Wetlands, and Habitat

The sparse vegetation on the site would remain essentially the same as it exists at the present time. No additional clearings would occur in the area, except for possible clearing of brush in order to maintain open space. Shoreline habitat would remain as it is at the present time. The area would continue to be used for commercial and marine industrial uses without the need for site modifications in the near future.

SOCIAL SYSTEMS

4.4.7 Visual/Aesthetics

There would be no effect on visual conditions at the project site due to the No Action Alternative. Existing buildings are somewhat dilapidated and the site contains some debris, which tends to detract from the natural beauty of the surrounding settings in Resurrection Bay.

4.4.8 Cultural and Historic Resources

Archaeological Resources

The AHRS lists no archaeological sites on, or in the vicinity of, the proposed project, and the Section 106 coordination with the SHPO has determined that there are no known archaeological properties in the vicinity of the proposed project. There would be no effects from the No Action Alternative.

Historical Resources

The effects of the No Action Alternative on historical resources at the project site would be a continuation of status quo. The current visual setting surrounding the historical resources would not be improved, with the possible exception of the relocation of the NSHC activities. There would be no effects on cultural and historic resources from the No Action Alternative.

4.4.9 Land and Shoreline Use

Under the No Action Alternative, land ownership would remain with the City of Seward. However, the city has indicated that the lease with NSHC will be discontinued, regardless of the proposed action. The No Action Alternative will leave the existing land uses in place for the short term. The city has indicated

a commitment to move both the Youth/Teen Center and the ferry dock to another location. The No Action Alternative would have no effect on Seward land use regulations. There would be no effects on current land and shoreline use with the No Action Alternative.

4.4.10 Socioeconomics

The No Action Alternative would have no effects on the economic and social environments of Seward. Neither the adverse nor beneficial effects of the proposed project would occur.

4.4.11 Recreation and Tourism

Under the No Action Alternative, there would be no changes in current recreation and tourism activities and, therefore, no effects.

4.4.12 Traffic and Transportation

There would be no transportation effects to downtown Seward associated with the No Action Alternative. Existing traffic congestion during the summer near the Small Boat Harbor would continue to be a problem.

4.5 CUMULATIVE EFFECTS

PHYSICAL CONSIDERATIONS

4.5.1 Soils and Geology

The effects on soils and geology would result only from the proposed project. Projects considered in this cumulative effects analysis would not impact soils and geology on the proposed project site.

4.5.2 Hydrology and Water Quality

Assuming the mitigation measures of the proposed project, as described in Section 4.2.2, there would not be a cumulative effect from the proposed project.

4.5.3 Air Quality

Cumulative effects to air quality would be caused primarily by truck and equipment emissions during construction of the proposed project and other reasonably foreseeable projects. When combined with other projects in the Seward area, particularly those in the downtown area, such as the new hotel, the cumulative effects of construction would be LOW and only short-term. During operation, visitor traffic generated by the proposed project and heating fuel oil emissions would only effect the downtown area where only one hotel is considered in the foreseeable future. These effects are considered to be LOW.

4.5.4 Noise

As with air quality, construction noise would be amplified by other development in the downtown area. The cumulative effect would be LOW and short-term. Cumulative effects resulting from operation would be caused by an overall increase in tourism in Seward, and a small increase in population. These effects are considered to be LOW.

BIOLOGICAL RESOURCES

4.5.5 Wildlife and Marine Resources

The development of the proposed project would contribute to the trend of increasing visitor activity, including recreational boat traffic and wildlife viewing around the Seward area during the summer months. This increased activity would have an overall effect of an increase in disturbance of local wildlife species such as harbor seals, sea otters, and marine birds. Cumulative effects on wildlife and marine resources, however, would be LOW.

4.5.6 Vegetation, Wetlands, and Habitat

The development of the proposed project would not contribute to any cumulative effects to area vegetation, wetlands, and habitat, since effect levels are NEGLIGIBLE and no other shore line work in the downtown area is anticipated.

SOCIAL SYSTEMS

4.5.7 Visual/Aesthetics

Cumulative effects from the proposed project when combined with other anticipated development in Seward would be BENEFICIAL to the visual quality. New and well-designed facilities would contribute and complement the Seward area.

4.5.8 Archaeological and Historic Resources

There would be no cumulative effects from the proposed action on known archaeological resources. When combined with construction of the proposed hotel downtown, there is a potential for additional adverse effects to historic properties in the area. However, the proposed hotel is located to the east of the proposed project and would not affect the same properties. Cumulative impacts would be LOW.

4.5.9 Land and Shoreline Use

The direction of many current land use changes in Seward reflect the increased tourism currently occurring in the city. Because the proposed project contains an education segment, it would attract existing and new visitors, and would increase the pace at which these changes are taking place. This

would not establish a new trend in land use, but would add to an existing propensity to develop for the tourist industry.

The area would continue to show a conversion and upgrading of existing uses to accommodate and attract increased economic activity. The cumulative effect on land and shoreline use would be NEGLIGIBLE.

Much of the other proposed development that would result in cumulative impacts is recreation- and tourist-oriented. Two new hotels are proposed, one near the harbor and one downtown; these projects are reflective of the gradual change taking place in the land uses in Seward that are driven by the growing tourism industry. The hotel projects would complement the proposed project. They would provide accommodations needed for those travelers wishing to spend additional time in the city. Currently, most cruise ship passengers are taken directly to the Anchorage International Airport or to other lodging facilities outside of Seward. If they spent more time in town, it would help support and accelerate the changes and additions to land use patterns that are evidenced by the construction of these two hotels.

4.5.10 Socioeconomics

Cumulative effects of the several projects currently proposed for Seward would relate primarily to property values. Potential property tax rate increases are difficult to assess in relation to this project alone; however, given the other developments underway and improvements being made throughout Seward, the need for additional public services could result in an increased cost to taxpayers.

With regard to city utlities, a possible cumulative effect on the city water system could occur with the use of domestic water by this facility as well as the proposed new restaurant and 40-room hotel.

Construction of the proposed project would have a cumulative impact on the social environment and quality of life in Seward, particularly in southern waterfront and downtown portion of town. In conjunction with increasing tourism and specific proposed projects such as new hotels, increased visitation, traffic, crowding, and congestion will adversely affect the small town atmosphere during the busy summer period. During this period, cumulative impacts to the social environment, in terms of crime, user group conflicts, and demands on health and social services, might also be experienced.

4.5.11 Recreation and Tourism

Alternative I would increase tourism visitation to Seward, thereby increasing the cumulative demand for camping facilities. The loss of 50 to 57 camping spaces in the Iditarod Campground would aggravate this cumulative impact during peak periods such as the Fourth of July weekend and during Seward Silver Salmon Derby, when camping facilities are already at capacity. The same increase would have BENEFICIAL but unquantifiable cumulative effects for tourism-related services and businesses.

Overall, the cumulative effects would be MODERATE.

4.5.12 Traffic and Transportation

The cumulative effect of the proposed project, when added to other planned projects and tourist-related activities, would be congestion and noise from increased traffic. The downtown streets near the site are projected to have an LOS A in 1998 with or without the project. However, intersections farther north along the Seward highway are currently experiencing LOS E conditions, and are expected to decline in service by 1998 with or without the project. Additional development activities at the Small Boat Harbor or along Nash Road, such as the new marina or expansion of the SMIC, would have a considerable effect on the LOS at these intersections. Cumulative effects would be MODERATE.

The following potential mitigating measures are intended to reduce the cumulative effect of project traffic.

- Encourage higher vehicle occupancies for visitors: If a larger proportion of visitors arriving in vehicles came in proportionally fewer vehicles, overall traffic would be less than described in this document. This could be encouraged through various forms of incentives, such as parking pricing policies or discounted admissions for groups arriving four or more to a vehicle. This could encourage primary travel in higher occupancy vehicles, or encourage the consolidation of visitors making linked trips from the Small Boat Harbor or other attractions into a single vehicle.

- Encourage employees to walk, bike, or carpool to work: It could be the policy of the proposed facility to encourage site employees to arrive by a mode other than single occupancy vehicles, especially on days when peak visitor activity levels are expected. Developing a flexible policy in this regard would help to minimize traffic and parking demands.

- Encourage visitors to travel to Seward by train.

4.6 PUBLIC SAFETY CONCERNS

4.6.1 Effects of the Geologic Environment on the Proposed Project Site

Earthquakes/Tsunamis: The proposed site is located in a tectonically active area that can be expected to experience seismicity and resulting strong ground shaking at some time over the life of this proposed project. The proposed project lies within the Uniform Building Code Seismic Zone 4, and a significant number of small active faults are located within the region. PN&D (1993) summarized recorded earthquake activity occurring within 100 nautical miles of Seward and concluded that Seward is in a seismically active area.

The 1964 earthquake had a devastating effect on the City of Seward. Damage was sustained from ground shaking, surface ground rupture, liquefaction, and seismically induced slope instabilities. Additional damage was sustained from tsunamis (seismically-induced sea waves). Prior to the 1964 earthquake, the proposed project incorporated portions of the old Alaska Railroad Dock, which was completely destroyed by the earthquake and subsequent tsunami.

If another seismic event similar to the 1964 earthquake and resulting tsunami were to happen again in Seward during the life of the proposed project, the facility would likely sustain substantial structural damage.

Liquefaction: Liquefaction is the "quickening" of saturated, cohesionless, sandy soils during a seismic event. When soils undergo liquefaction during a seismic event, they behave more as a fluid which can result in settlement that adversely affects building integrity. Based upon the information presented by PN&D (1993), it appears that the immediate site area did not experience liquefaction during the 1964 earthquake. However, based on near-surface and groundwater conditions at the site, the potential for liquefaction of soils beneath the site is high.

Potential for Soil Contamination: As mentioned above, the proposed project was the site of the Alaska Railroad Dock prior to the 1964 earthquake. As a result of the earthquake and resulting tsunami, this facility was destroyed. The proposed site still has remnants of debris from the old depot. Although an initial site investigation was conducted by NORTECH (1993) and significant concentrations of petroleum hydrocarbons and other contaminants were not found, the potential exists for the site to contain contaminated soils.

If contaminated soils were found during construction, a remedial action plan would be developed based upon the type and extent of contamination. The plan would have to be approved and implemented prior to initiation or continuation of construction activities, which could delay construction and operation of the proposed facility.

4.6.2 City of Seward's Emergency Preparedness Plan

The City of Seward has developed an Emergency Preparedness Plan that provides for maximum protection of life and property, and to repair and recover from injury and damage caused by natural or manmade disasters. It also includes an evacuation plan in the event of a disaster, such as a tsunami. This plan has been prepared in conjunction with the city's fire department, and is incorporated into this document as Appendix G. The plan would be applicable to the IMS project area as well, but may require updating to address the new facility.

4.6.3 On-Site Chemical Use

The proposed facility would store chemical products used for the LSS and research purposes. These chemicals are similar to those currently used at the IMS Seward Marine Center.

UAF has developed and published a Chemical Hygiene Plan for the existing IMS Seward Marine Center, the R/V *Alpha Helix*, and Kasitsna Bay facilities. The objective of this plan is to publish laboratory safety procedures, to implement the State of Alaska's "Right-to-Know" provision, and to establish an effective hazardous chemical management system for laboratories, among them the IMS Seward Marine Center as well as the R/V *Alpha Helix*. It is fully anticipated that this plan would be modified to incorporate the proposed project prior to its operation and startup. MSDS sheets would be kept on file at the proposed facility as required by federal regulations. These sheets provide appropriate methods for disposal of each hazardous material. This plan is included as Appendix G to this document.

4.7 UNAVOIDABLE ADVERSE EFFECTS TO:

PHYSICAL CONSIDERATIONS

4.7.1 Soils and Geology

While implementation of a Stormwater Pollution Prevention Plan would include measures to limit soil erosion both during and after construction activities, excavation and earthwork within surficial soils during construction would result in a low effect on soils at the site from erosion.

4.7.2 Hydrology and Water Quality

The proposed project requires 150 gpm of freshwater for genetic fish studies, coupled with other domestic water demands of 21,470 gpd from the city's water supply system. The water-related requirements of the proposed project for genetic fish studies and domestic purposes can be met by the city's water supply system and a spring on Lowell Point Road, or a well(s) to be drilled near the Rae Building. There would be no unavoidable adverse effects from the proposed project on hydrology and water quality.

4.7.3 Air Quality

Mobile and stationary construction equipment, the requirement for approximately 100,000 gallons of fuel oil per year for facility heating, and additional vehicles associated with visitors and tourists to the facility would create additional emissions of regulated pollutants to the atmosphere. Although these emissions would not approach regulatory limits, they would be unavoidable and adverse.

4.7.4 Noise

Noise generated as a result of mobile and stationary construction equipment, additional vehicles, and from visitors and animals at the facility when it becomes operational, would result in unavoidable adverse impacts to existing noise levels. Increased noise levels would result from construction-related activities (which would vary with specific construction tasks) over the period of November 1994 through March 1995. Animals housed at the proposed facility during operation would contribute to elevated noise levels, but the effect would vary with the number and type of animals.

BIOLOGICAL RESOURCES

4.7.5 Wildlife and Marine Resources

The proposed project would require the placement of structures in the tidal/intertidal shoreline area fronting the project site. This would result in a small loss or displacement of tidal/intertidal marine life in the immediate area where these structures are placed. In addition, the water intake system could entrain small marine microorganisms in the water column. The loss of these marine resources during the construction and operation of the proposed facility would be an unavoidable and adverse effect.

4.7.6 Vegetation, Wetlands and Habitat

Small losses to existing marine habitat would occur as a result of placing structures in the tidal/intertidal area. In addition, small losses to terrestrial habitat would occur as a result of constructing buildings and other impervious surfaces. These effects would be adverse and unavoidable.

SOCIAL SYSTEMS

4.7.7 Visual/Aesthetics

Existing views would be altered during construction of the proposed facility as a result of earthwork, site grading and preparation, and building construction. These activities would create a short-term, unavoidable degradation of visual quality in downtown Seward. Once constructed, the proposed facility would enhance the scenic quality of the project area and be considered BENEFICIAL to existing vistas.

4.7.8 Archaeological and Historic Resources

The AHRS lists no archaeological sites on, or in the vicinity of, the proposed project, and the Section 106 coordination with the SHPO has determined that there are no known archaeological properties in the vicinity of the proposed project. Therefore, project construction would not be expected to have any unavoidable adverse effects on archaeological resources. The aesthetic setting in the vicinity of historic properties along Railway Avenue would be subject to temporary unavoidable adverse effects from construction dust and noise. However, once constructed, the proposed action would likely result in a BENEFICIAL effect by upgrading the visual environment in the vicinity of Railway Avenue.

4.7.9 Land and Shoreline Use

Unavoidable adverse effects of Alternative I and II on land use entail the loss of 50 to 57 RV spaces at the municipal Iditarod Campground. This effect is discussed in the Recreation and Tourism (Section 4.7.1). Access to shoreline east of the Municipal Dock, currently used for public fishing, would be lost, though this shoreline contains (1964) earthquake debris, and is not heavily used for fishing.

4.7.10 Socioeconomics

During construction, a LOW, unavoidable adverse effect on the quality of life would result from the noise, dust, and construction traffic. This effect would be short-term. During operation, an increase in pedestrian and vehicular traffic, primarily during the 15 weeks of the peak summer season (Memorial Day through Labor Day), would create a MODERATE unavoidable adverse effect. Another unavoidable adverse effect could be the added enrollment of elementary school students, filling to capacity the current school facility. The effect would depend on the number of elementary school children associated with the 15 to 25 new households brought to Seward by project employment, which cannot be determined at this time. An increase in housing demand for the 15 to 25 households would add pressure to an already tight local housing market.

Unavoidable adverse effects to the City of Seward would be the loss of lease revenue from its current uses. However, the city would recover this revenue from the collection of sales tax from admission and retail revenues. The adverse effect would be LOW, representing one percent of the city' revenues from leases.

4.7.11 Recreation and Tourism

The only unavoidable adverse effect created by the proposed project would be the displacement of an estimated two-thirds to three-fourths of the city's Iditarod Campground, located on Tracts 5 and 6. This would result in the loss 57 of the 75 RV camping slots (K. Sturdy, personal communication, 1994). This represents approximately 13 percent of city campground RV capacity and estimated annual use. This loss would be considered a MODERATE adverse effect, particularly during the summer season (June through mid-September).

4.7.12 Traffic and Transportation

No unavoidable adverse effects would result from construction of the proposed project. Once the facility opens, the project would generally increase traffic volumes and congestion. However, the increase would not result in changes to levels of service at vicinity intersections or changes to other traffic operations. The unavoidable adverse effect on traffic and transportation would be LOW.

4.8 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

In this section, the short-term effects and uses of various elements of the environment in the Seward project area are related to the long-term effects and the maintenance and enhancement of long-term productivity. The effects of the proposed project would vary in kind, intensity, and duration, beginning with construction activities and ending when natural environmental balances would be restored at the end of the project's useful lifetime.

In general, short-term refers to the useful lifetime of the proposal; but some even shorter-term uses and effects are considered. Long-term refers to the time beyond the lifetime of the proposed project. The overall life of the proposed project is estimated to be 30 years (the average life of structures and infrastructure).

Many of the effects discussed in previous sections of Chapter 4.0 are considered to be short-term and could be reduced by the assumed, in-place mitigating measures and the potential mitigating measures discussed in Section 2.5.

The construction phase would cause changes in both the short- and long-term, with very localized, though potentially long-term effects on the nearshore habitat. Some species of aquatic resources may have difficulty repopulating altered habitats and could be permanently displaced by other species from the immediate offshore area. In the short-term, biological productivity onshore is not expected to be affected, as the site is already disturbed and developed.

In the short-term, air quality and noise quality may decrease due to an increase in visitors with increased traffic and transportation. Short-term changes also include a change in land use for the site, and the potential for an improved aesthetic design for the site over existing structures. Long-term effects in land use could result if use of the infrastructure or facilities continues after the lifetime of this proposal. Potential users would be other researchers or commercial laboratories.

Loss of lease fees for the site and for the adjacent campground could have short-term effects on the City of Seward. This loss of revenue may be partially offset by possible increases in sales tax revenues from an increase in visitors in Seward. The increase in visitors, with attendant increases in spending at local businesses, have the potential for both short-term and long-term beneficial effects in the local economy.

Alternatives to the proposed project, such as Alternative II (Research and Wildlife Rehabilitation Only), and Alternative III (No Action) would reduce to varying degrees both the long- and short-term environmental effects. The overall, long-term effect of the proposed project would be a minor change from the existing site usage.

4.9 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The use of electrical energy and fuel for the construction and operation of the proposed facility would be the only irreversible and irretrievable commitment of resources.

5.0 REVIEW AND ANALYSIS OF COMMENTS RECEIVED

CHAPTER 5.0

RESPONSES TO COMMENTS RECEIVED

5.1 INTRODUCTION

During the Draft EIS comment period, written comments and oral testimony were provided by various Federal, State, and local agencies; groups and organizations; and individuals. A total of 31 letters were received that addressed issues related to the Draft EIS -- eight from Federal agencies, four from state agencies, one from the City of Seward, three from groups or organizations, and 15 from individuals. Public hearings were held in the cities of Anchorage and Seward. A total of four individuals presented testimony at these hearings -- three in Seward and one in Anchorage.

Most of the comments on the Draft EIS addressed concerns regarding (1) traffic and transportation, (2) quality of life, (3) recreation resources, (4) cultural and historical resources, (5) feasibility of the project, and (6) the ferry service relocation.

All written and oral comments on the Draft EIS were reviewed, and responses were prepared for 231 comments. Where comments warranted changes or presented new, substantive information, the text of the EIS was revised accordingly; a reference to the revised section(s) is made in the responses to the specific comments.

5.2 LETTERS, COMMENTS, AND RESPONSES

The following section presents a reproduction of all letters received during the Draft EIS comment period. Specific comments in each letter are bracketed and numbered. Comment letters are grouped by Federal Agencies, State Agencies, Local Agencies, Groups and Organizations, Public Hearing Testimony, and Individuals. Response to the specific comments follow each grouping.

5.2.1 Commenter

Federal Agencies:

Army Corps of Engineers
Department of Agriculture, Forest Service
Department of Commerce, National Oceanic and Atmospheric Association
Department of the Interior, Bureau of Reclamation
Department of the Interior, Fish and Wildlife Service
Department of the Interior, Minerals Management Service
Department of the Interior, National Biology Survey
Environmental Protection Agency

State Agencies:

Department of Fish and Game
Department of Natural Resources, Division of Parks and Outdoor Recreation
Department of Transportation and Public Facilities
Department of Transportation and Public Facilities, Alaska Marine Highway System

Local Agencies:

City of Seward, Office of Community Development

Groups and Organizations:

Indigenous People's Council for Marine Mammals
Sierra Club
Alaska Center for the Environment

Public Hearing Testimony:

Seward

Stu Clark
Rick Smeriglio
Carol Griswold

Anchorage

Carl Hild

Individuals:

Kevin Walker
Mr. and Mrs. James Denison
K. Baxter
Richard Houghton
Diana Rigg
Katherine West
Timothy Sczawinski
Mark Luttrell
Stu Clark
Carol Chaudiere Clark
Bernard C. Hulm
Jerry Dixon
Raymond and Wanita Williamson
Richard A. Link
Nancy Bird and Karl Becker

FEDERAL AGENCIES

Army Corps of Engineers
Department of Agriculture, Forest Service
Department of Commerce, National Oceanic and Atmospheric Association
Department of the Interior, Bureau of Reclamation
Department of the Interior, Fish and Wildlife Service
Department of the Interior, Minerals Management Service
Department of the Interior, National Biology Survey
Environmental Protection Agency

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
P.O. BOX 898
ANCHORAGE, ALASKA 99506-0898

REPLY TO ATTENTION OF:

Regulatory Branch
Project Evaluation Section - South

Ms. Nancy Swanton
949 East 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

Dear Ms. Swanton:

This letter provides our comments on the Draft Environmental Impact Statement (DEIS) for the Proposed Institute of Marine Science Infrastructure Improvement Project, Seward, Alaska.

We have reviewed the DEIS for its coverage of concerns related to Department of the Army (DA) jurisdiction and what will be needed for a complete DA application.

Since the University of Alaska at Fairbanks is reported to not be modifying its permit, file number 2-870035, Resurrection Bay 81, or transferring it to the Seward Association for the Advancement of Marine Science, an individual DA permit application is needed for the proposed work. FA-1

On page 1-7 in Section 1.4.1 the reference to Section 404 should refer to the Clean Water Act and note that it applies to the discharge of dredged or fill material into waters of the United States. Wetlands are a subset of the waters of the United States to which Section 404 applies. The area between mean high water (MHW) and the extreme high water (EHW) is considered to be waters of the United States and is subject to Section 404. No wetlands are involved in this project. FA-2

On page 1-11 in Table 1-1 it should be noted in the "Description" associated with Section 404 that the Corps of Engineers (Corps) must authorize not only the discharge of dredged or fill material, but also mechanized land clearing and excavation that are proposed in waters of the United States. FA-3

Table 2-1: "Estimated Excavation or Fill Materials" (page 2-14) is helpful; however, for the determination of the amounts and activities subject to DA jurisdiction these quantities should be partitioned to indicate the area to be filled or excavated between EHW and MHW and the quantities involved, the quantities that would be placed or excavated below MHW, and any structures that would be placed below MHW, including those that may be above the water surface. FA-4

Clarification is needed for the DA permit application about the dimensions, location, and materials of the "sea wall" which the construction schedule in Figure 2-12 indicates is proposed for construction this winter (December 1, 1994 though March 1, 1995). To meet that schedule detailed information on all activities subject to DA jurisdiction is needed as soon as possible. It is assumed that the "sea wall" is the same as the sheet pile bulkhead referred to on page 2-14. It would be helpful to use the same expressions throughout the Environmental Impact Statement. In Appendix D of the DEIS, "Phase I Site Assessment", reference is made to a "permeable wave barrier" in Appendix A; as this is not under consideration it would be helpful to remove it and associated drawings showing a dock, dolphins, and catwalk which are also not under consideration. Would any excavation be conducted in association with the sheet pile bulkhead to anchor it or for any other reason? As it is highly likely that a timing window restricting inwater excavation between April 15 and September 30 would be required; it would be advantageous to be able to meet a winter construction schedule. Drawings showing all of the features proposed for the shoreline area with EHW and MHW marked would greatly clarify what is being proposed in the Environmental Impact Statement. FA-5

A complete description is needed of both excavation and fill associated with construction of the proposed "tide pool" (page 2-15), particularly with reference to the location of these activities relative to EHW and MHW. This artificial tide pool was not described at the scoping meeting. Information is needed about what success has been had elsewhere in establishing artificial tidal pools. FA-6

In the DA permit application information will be needed about the nature and quantities of "debris resulting from the 1964 earthquake and tsunami" (page 2-14) to be removed relative to MHW and EHW.

Full information about the dimensions and location of the armor rock as it relates to EHW and MHW is also necessary. It is highly likely that a silt curtain shall be required around all areas to be excavated and wherever there may be a source of turbidity, such as during placement of the armor rock. FA-7

The intake and outfall structures would require authorization under Section 10 of the Rivers and Harbors Act of 1899. Prior to construction Nondomestic Wastewater Discharge Plan Approval from the Alaska Department of Environmental Conservation must be obtained; further, these must be in compliance with regulations issued under the National Pollutant Discharge Elimination System program (Section 402 of the Clean Water Act). FA-8

As soon as a complete DA permit application with location and cross sections for the proposed project components requiring a DA permit and a Coastal Project Questionnaire have been received, we will issue a 30-day public notice to solicit comments and begin our review of the proposed project. We would expect

to incorporate the DEIS by reference in our permit evaluation or tier it off the Final Environmental Impact Statement if that is approved by the time of our DA permit decision. Waiting until the Final Environmental Impact Statement's anticipated publication in September may make meeting the proposed start of construction in early December difficult. If the project components subject to Corps jurisdiction would qualify for nationwide permits, those may be applied for at any time when sufficient information is available.

We appreciate this opportunity to review the DEIS. If you have any questions concerning these comments or the DA permitting procedure, please contact me at the above address, or by calling (907) 753-2720, by FAX at (907) 753-5567.

Sincerely,

Mary Lee Plumb-Mentjes

Mary Lee Plumb-Mentjes, Ph.D.
Senior Project Manager
Project Evaluation Section - South

United States Department of Agriculture
Forest Service
Alaska Region
P.O. Box 21628
Juneau, AK 99802-1628

Reply to: 1590 Oil Spill

Date: August 5, 1994

Nancy K. Swanton
IMS/EIS Project Manager
U.S. Department of the Interior
949 E. 36th Ave., Room 603
Anchorage, AK 99508-4302

Dear Ms. Swanton:

We have revieved the June, 1994 Draft Envrionmental Impact Statement concerning the proposed Institute of Marine Sciences (IMS) Infrastructure Improvement Project at Seward, Alaska. Personnel from the Forest Service have attended several meetings concerning the proposed infrastructure improvement project and have provided specific comments to Livingston Slone Inc., the contract designers and to representatives from the Seward Association for the Advancement of Marine Science (SAAMS). Thus, our comments in this letter will be more general in nature.

In the second floor space needs, there are identified space needs for ecosystem modeling and oceanography. What duplication exists in the 1994 Trustee Council funded work in Prince William Sound for these two activities? The Trustee Council specifically funded ecosystem modeling and oceanographic work with the University of Alaska and the Prince William Sound Science Center in 1994 and more is proposed in 1995. FA-9

In several locations throughout the document, the statement is made that revenue from public education and visitation would be used to help offset the operation costs of the proposed improvements. Several times at Trustee Council meetings, it has been presented that revenue from the project would provide complete funding for future operation and maintenance costs and that the Trustee Council would just be committing to initial construction costs. Has this premise changed? An additional consideration is the scenario that the project is not self-sufficient. Does SAAMS presently or will a yet to be determined operating board be organized to cover any shortfalls in operating and maintenance costs if they occur? FA-10

Which Trustee Council agencies have committed to participate in either the research or rehabilitation activities at the IMS facility? It would seem that if Trustee Council Agencies committed to conducting research or monitoring activities at the facility, perhaps existing overhead costs for floor space, etc. presently included in projects funded by the Trustee Council could be reduced. FA-11

The two-person research submersible and the associated 130-foot research vessel/tender proposed to be purchased as part of the project seems to be very costly. It would perhaps be more cost efficient to lease the use of a submersible and tender vessel. Leasing would eliminate the initial investment costs, the operation and maintenance costs, and the need to find other contractual uses for the vessels when not in use. FA-12

If the project is funded by the Trustee Council and other funding obtained from private sources for construction, coordination and integration with other existing research facilities will be essential, such as with the Auke Bay Laboratory and the Prince William Sound Science Center. FA-13

If you have any questions, please contact Dave Gibbons at (907) 586-8784.

Sincerely,

PHIL JANIK
Regional Forester

RECEIVED
AUG 8 1994
Region
LEASING
OFFICE

cc: Trustee Council

UNITED STATES DEPARTMENT OF COMMERCE
Office of the Under Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

July 21, 1994

Ms. Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement Project
U.S. Department of Interior
949 East 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

Dear Ms. Swanton:

Enclosed are comments on the Draft Environmental Impact Statement for Proposed IMS Infrastructure Improvement Project Seward, Alaska. We hope our comments will assist you. Thank you for giving us an opportunity to review the document.

Sincerely,

Donna S. Wieting
Acting Director
Ecology and Conservation Office

Enclosure



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Silver Spring, Maryland 20910

JUL 19 1994

MEMORANDUM FOR: Donna Wieting
Ecology and Environmental Conservation Office
Office of the Chief Scientist

FROM: Rear Admiral J. Austin Yeager, NOAA
Director, Coast and Geodetic Survey

SUBJECT: DEIS 9407.04-Proposed Institute of Marine Studies Infrastructure Improvement, Seward, Alaska

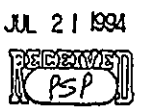
The subject statement has been reviewed within the areas of Coast and Geodetic Survey's (C&GS) responsibility and expertise and in terms of the impact of the proposed actions on C&GS activities and projects.

All available geodetic control information about horizontal and vertical geodetic control points in the Seward district is provided on the diskettes accompanying this memorandum. This information should be reviewed for identifying the location and designation of any geodetic control monuments that may be affected by the proposed project. FA-14

If there are any planned activities which will disturb or destroy these monuments, C&GS requires not less than 90 days' notification in advance of such activities in order to plan for their relocation.

C&GS recommends that funding for this project include the cost of any relocation required for C&GS monuments. For further information about these monuments, please contact John Spencer, NOAA, NGS, N/CG174, SSMC3, Station 9202, 1315 East-West Highway, Silver Spring, Maryland 20910-3282, telephone 301-713-3242.

Attachment



UNITED STATES DEPARTMENT OF COMMERCE
Office of the Under Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

August 16, 1994

RECEIVED
SEP 7 1994
MMS-Alaska OCS
Region
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Ms. Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement Project
U.S. Department of Interior
949 East 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

Dear Ms. Swanton:

Enclosed are additional comments on the Draft Environmental Impact Statement for Proposed IMS Infrastrucutre Improvement Project Seward, Alaska. We hope our comments will assist you. Thank you for giving us an opportunity to review the document.

Sincerely,

Donna Wieting

Donna S. Wieting
Acting Director
Ecology and Conservation Office

Enclosure

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

August 9, 1994

RECEIVED
SEP 7 1994
MMS-Alaska OCS
Region
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MEMORANDUM FOR: Donna S. Wieting
Acting Director, Ecology and Conservation Office

FROM: Steven Pennoyer S Pennoyer
Director, Alaska Region

SUBJECT: DEIS-9407-04--Proposed IMS Infrastructure Improvement Project Seward, Alaska

Attached are our comments on the subject Draft Environmental Impact Statement.

RECEIVED
PSR
AUG 15 1994

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

August 8, 1994



Nancy Swanton
U.S. Department of the Interior
949 East 36th Avenue
Room 603
Anchorage, Alaska 99508-4302

Dear Ms. Swanton:

Thank you for the opportunity to review the draft Environmental Impact Statement (EIS) for the proposed IMS Infrastructure Improvement Project at Seward, Alaska (IIIP). We are familiar with the proposed site on Resurrection Bay and do not believe the construction or operations associated with the project would present any significant environmental concerns.

We recommend that Section 4.2.5.2 is expanded to consider the following effects of marine mammal rehabilitation. The potential for introduction of disease pathogens from rehabilitated marine mammals to wild populations should be acknowledged and preventative steps outlined. In addition, it is an assumption that released rehabilitated animals will survive or that they will add to local populations by successfully reproducing. Further, the possibility of animals acclimating to humans and resultant consequences, such as interaction with commercial fishing vessels or approach of persons who may wish to harm marine mammals, should be evaluated. Because information on the fate of released rehabilitated marine mammals is lacking in Alaska, the IIIP could address these questions with a radio/satellite tracking and monitoring program. FA-15 FA-16 FA-17

Finally, we have a few specific comments on Section 3.5.5. The gray whale was officially removed from the endangered species list on June 16, 1994. Therefore it is not threatened, as stated in the text. The humpback whale is also referenced as a threatened species, however, it is listed as endangered. FA-18

Sincerely,

Steven Pennoyer
Director, Alaska Region

United States Department of the Interior

BUREAU OF RECLAMATION
Upper Colorado Region
Glen Canyon Environmental Studies
P.O. Box 22459
Flagstaff, Arizona 86002-2459

IN REPLY REFER TO:

Ms. Nancy K. Swanton
Program Manager
United States Department of the Interior
Office of the Secretary
949 East 36th Avenue
Room 603
Anchorage, AK 99508-4302

Dear Ms. Swanton:

Thank you for providing me with a copy of the Draft Environmental Impact Statement entitled Proposed IMS Infrastructure Improvement Project, Seward, Alaska, dated June 1994. I have found the document very well written and informative. The objective of the document is stated as being: (1) to improve the existing research infrastructure at the University of Alaska, Fairbanks (UAF) Institute of Marine Sciences (IMS) in Seward, Alaska; (2) to enhance the EVOS Trustee Council's capabilities to study and rehabilitate marine mammals and marine birds; and (3) the ecosystem injured by the Exxon Valdez oil spill. The document specifically addresses the development of a research facility and the alternatives associated with that project.

Overall the document provides a very good explanation of the options and alternatives. However there are several items that may require some additional thought and input.

1. Data Management and Reports. It is my assumption that the IMS facility would provide a common location for all technical reports and data that are developed through the restoration program. It is essential that the library that is developed at the IMS be designed to handle the large volumes of information that is to be generated (and already has).

   Consistent with this statement is the need to ensure that a portion of the IMS facility be designed to handle the large volumes of data, both in hard copy and computer form. In our handling of the Grand Canyon data sets we are currently developing an archival program to handle the information. This program is part of a larger Scientific Information Management Program that guides the collection and maintenance of information collected. This is essential for future scientists, researchers, and decision-makers. FA-19

2. Geographic Information System. A good way to consider handling the data and its location, and a positive way to show the public the overlays and areas of concern is through a Geographic Information System. We are in the processing of developing one for the Colorado River and the Grand Canyon. The long-term benefit of being able to not only document sampling location sites but also overlay specific study impacts is tremendous. I would strongly urge the IMS development group to consider this element in the proposed structure.

3. Public Education. This must be a high priority. The question is whether it should be a drive in facility as identified in the EIS or whether it should operate on more of an information dissemination office is what needs to be considered. One idea that you may wish to consider is if a "public coordinator" could be part of the IMS staff in Seward to show those publics around that wander by and that another coordinator for distribution of information be established to mail out/computer link materials to other interested publics and researchers. FA-20

   It is important that the information be provided to the public and outreach is the way to do that. Outreach today though can mean a whole plethora of ideas ranging from computer downlinks, CD-ROM, airport displays, to annual meetings/symposia. The money may be better spent once the specific objectives of the public outreach is better defined.

4. Direction. No discussion is really held on the management of the IMS infrastructure. Is this to be accomplished by the University of Alaska? Will it be associated with a National Biological Survey or National Marine Fishery coordinator also? FA-21

5. Equipment. The justification for the purchase of a submersible seems a bit lacking. Equipment of this sort might be better off leased. Savings in time, money, liability and upkeep could be better off allocated to cooperative student and other research programs. FA-22

I appreciate the opportunity to offer my comments. I am very interested in the progress you are making as I believe that it has a great deal of applicability to efforts going on in the Colorado River and the Western United States. I hope that you will provide me a copy of the final documents. Thanks.



Sincerely,

David Wegner
Glen Canyon Environmental Studies

United States Department of the Interior

TAKE PRIDE IN AMERICA

FISH AND WILDLIFE SERVICE
Alaska Maritime National Wildlife Refuge
2355 Kachemak Bay Drive, Suite 101
Homer, Alaska 99603

IN REPLY REFER TO:

June 30, 1994

Ms. Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement Project
U.S. Department of the Interior
949 East 36th Avenue, Room 603
Anchorage, AK 99508-4302

Dear Ms. Swanton:

We have reviewed portions of the *Draft Environmental Impact Statement for the Proposed IMS Infrastructure Improvement Project, Seward, Alaska.* In response to your request for comments on the draft EIS:

Page 4-48:"Recreation and Tourism, 4.2.11.2. Effects of Operation; Federal and State Lands and Facilities: The proposed action would have no direct effects on federal and state lands and facilities." and page 4-86: "4.7.1. Recreation and Tourism: The only unavoidable adverse effect created by the proposed project would be the displacement of...a campground..." FA-23

The proposed action would have two direct effects on the Alaska Maritime National Wildlife Refuge. The substantial increase in visitors to the Seward area will consequently increase the amount of tour boats and visitors going to the Chiswell Islands and Pye Islands, which are refuge property. The refuge is mandated to conserve fish and wildlife populations and habitats in their natural diversity. This increase in tourism will have an unknown effect on the marine wildlife in Resurrection Bay and the potential effects should be addressed. As long as visitation is by vessel with off-shore viewing, the effect should be negligible. If your proposal does increase public desire to view wildlife in a natural setting, which we believe it will, it is incumbent upon you to provide the correct public education to prevent disturbance to wildlife by the viewing public.

The proposed action would also effect planning for the refuge headquarters and visitor center in Homer. The U.S. Fish & Wildlife Service would not plan a live seabird exhibit if one already existed in Seward. While the purpose of the Service's Homer facility will be to educate the public about the refuge and refuge resources, it would not be prudent to incur the expense of duplicating exhibits. You should consider the effect your proposal will have on refuge resources, education programs, and any effects on the community of Homer. FA-24

Page 3-67: "Numerous sport fishing and marine charter companies operate out of Seward providing half-day and full day tours of Resurrection Bay and the Kenai Fjords National Park." The report should add that tours also include the Alaska Maritime National Wildlife Refuge. FA-25

Thank you for the opportunity to comment on this project.

Sincerely,

John L. Martin
Refuge Manager



United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Washington, DC 20240

JUL 21 1994

Memorandum

To: Nancy Swanton, EIS Project Manager

From: Acting Chief, Environmental Policy and Programs Division

Subject: Environmental Impact Statement (EIS) for the Proposed Infrastructure Improvements at the Institute for Marine Science (IMS), Seward, Alaska

We have reviewed the draft EIS for the proposed IMS Infrastructure Improvement Project in Seward, Alaska. This document is generally well organized and written. Our comments, suggesting some limited clarifications and improvements, are attached.

We appreciate the opportunity to review this draft EIS. If there are questions regarding our comments, please contact George Valiulis at (703) 787-1662.

Attachment

ATTACHMENT

MMS COMMENTS ON
DRAFT EIS FOR
PROPOSED IMS INFRASTRUCTURE IMPROVEMENT PROJECT
SEWARD, ALASKA

Assessment Definitions

The definitions assumed in the effects assessment (Table 2-4) appropriately indicate a degree of change (effect) relative to existing (ambient) conditions, except in the "MODERATE" and "LOW" cases for "Air Quality." This departure for air quality results in some confusion under the "No Action Alternative" (p.4-76) where the effects for No Action/existing conditions are described as "LOW." It is recommended that these definitions for air quality be modified (e.g., "emissions would result in pollutant concentrations that would . . . ") in line with the other definitions. FA-26

Also, since these definitions (Table 2-4) are used in describing the "Cumulative Effects" (p.78 and Table 2-5), it would seem more appropriate if the effects definitions avoided the project-specific language (e.g., "project would . . . "). Instead, it is recommended that, in these cases, language like "activities would result in . . . ," as used in some of the definitions, be substituted. FA-27

Summary of Effects

The comparison between Alternatives I and II in Table 2-5 (Summary of Effects) on page 2-56 would be enhanced if the identification of effects were presented in a similar fashion for both alternatives, as is done in the rest of the table (pp.2-56 to 57). The presentation (e.g., for "Soils and Geology") now separates the effects due to construction and operation under Alternative I, but only presents a single effect under Alternative II. FA-28

Also, the "LOW/HIGH" effects for "traffic and transportation" and the "NEGLIGIBLE/HIGH" for "Ferry" need accompanying footnotes to explain this great diversity of effects, as is done for "BENEFICIAL/HIGH" for "Education." FA-29

No Action Alternative

The "LOW" effects conclusion for air quality under the No Action Alternative and the statement that this effect is "the same as for existing conditions" (p.4-76) seem incorrect. This relates to a need for modifying the "air quality" definitions slightly, FA-30

as mentioned earlier in the comments under Assessment Definitions. A conclusion of no effect seems more appropriate here and consistent with the analyses used for other resources under the No Action Alternative.

Cumulative Effects

The major projects considered in the cumulative effects are presented on page 4-5 and the conclusions in Section 4.5. However, the basis for some of these conclusions (e.g., related to "Soils and Geology" or "Hydrology and Water Quality" or "Air Quality") are not presented. FA-31

Also, the consistency in cumulative effect level (e.g. NO EFFECT, LOW) should be checked between Table 2-5 and the text in Section 4.5. There appears to be some discrepancies (e.g., in "Water Quality" and "Land and Shoreline Use"). FA-32

Editorial Comments

The location of Seward in the map inset in Figure 2-1 is incorrect. FA-33

The heading on page 4-24 (presumably "4.2.8 Archaeological and Historical") is missing. FA-34

United States Department of the Interior

NATIONAL BIOLOGICAL SURVEY
Washington, DC 20240

MEMORANDUM

AUG [illegible] 1994

To: Nancy K. Swanton
EIS Project Manager
Proposed IMS Infrastructure Improvement Project
Department of Interior, Anchorage, Alaska

From: Doyle Frederick
for H. Ronald Pulliam, Director

Subject: Draft Environmental Impact Statement (EIS) for the Proposed Infrastructure Improvements at the Institute of Marine Science (IMS), Seward, Alaska - Review Comments

This is in response to your request to comment on the Environmental Impact Statement (EIS) for the Proposed Infrastructure Improvements at the Institute of Marine Science (IMS), Seward, Alaska. Upon review of the document, our comments will be restricted to issues related to the research component of the project.

We believe that the IMS project will provide a needed site to facilitate research on marine mammal and bird health issues. In addition, its unique abilities to maintain marine animals because of its saltwater system will provide facilities and opportunities for research that do not presently exist. These two aspects of the proposed action will have a positive impact on the marine resources of the Northern Gulf of Alaska. However, our understanding, based both on statements in the introduction (Chapter 1.1) and from numerous meetings, is that the research role of the proposed project will be much greater. It is unclear from the document if additional research emphases will be included and, if so, how these activities will impact existing ecological, population, and species research being conducted in the northern Gulf of Alaska. Also, it is not clear what need or roles the submersible and 130-foot research vessel will fill. This may be a programmatic issue and inappropriate for discussion through the EIS process, but we believe it warrants future discussion. FA-35

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

AUG 04 1994

REPLY TO ATTN OF: WD-126

Nancy Swanton
EIS Project Manager
U.S. Department of the Interior
949 East 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

Re: **Proposed IMS Infrastructure Improvement Project, Draft Environmental Impact Statement, Seward Alaska**

Dear Ms. Swanton

The Environmental Protection Agency (EPA) has reviewed the draft Environmental Impact Statement (EIS) for the Proposed IMS Infrastructure Improvement Project, Seward Alaska. Our review was conducted in accordance with the National Environmental Policy Act and our responsibilities under Section 309 of the Clean Air Act.

The purpose of the proposed project is to provide infrastructure for long-term research and monitoring of the ecosystem affected by the *Exxon Valdez* oil spill, with the goal of benefiting long-term health and restoration of affected resources. This draft EIS evaluates two alternatives, including the No-Action Alternative. The proposed action would have two components: (1) a research and wildlife rehabilitation component; and (2) an education and visitation component. Alternative II would have only one component, research and wildlife rehabilitation.

Based on our review, we are rating this draft EIS LO (Lack of Objections). However, we would like additional information and clarification on the following issues. The draft EIS states a Stormwater Pollution Prevention Plan (SPPP), that complies with the EPA National Discharge Elimination System permit, is being prepared. EPA requests this SPPP be included in the final EIS. Also, we request the final EIS discuss types of chemicals planned to be used in the research laboratories and methodology for their disposal. FA-36 FA-37

An explanation of the EPA rating system for draft EISs is enclosed for your reference. This rating and a summary of these comments will be published in the Federal Register.

Printed on Recycled Paper

We appreciate the opportunity to review and provide comments on this draft EIS. If you have any questions about our review comments, please contact Larry Brockman at (206) 553-1750.

Sincerely,

Joan Cabreza, Acting Chief
Environmental Review Section

Enclosure

SUMMARY OF THE EPA RATING SYSTEM
FOR DRAFT ENVIRONMENTAL IMPACT STATEMENTS:
DEFINITIONS AND FOLLOW-UP ACTION *

Environmental Impact of the Action

LO--Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC--Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA intends to work with the lead agency to reduce these impacts.

EO--Environmental Objections

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1--Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3--Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment

February, 1987

FEDERAL AGENCY RESPONSES

Army Corps of Engineers:

Response FA-1

Table 1-1, (page 1-14) has been revised to reflect that an individual Department of the Army (DA) permit application has been submitted to the U.S. Army Corps of Engineers.

Response FA-2

Section 1.4.1 (page 1-8) has been revised to reference the Clean Water Act and to reflect that there are no wetlands involved with this project.

Response FA-3

Section 1.4.1 (page 1-13) was revised to reflect that, in addition to authorizing the discharge of dredged or fill material, Section 404 must authorize proposed mechanized land clearing and excavation in the waters of the U.S. Table 1-1 has been edited to reflect the description of this regulated activity.

Response FA-4

Text on pages 2-16 has been updated to reflect quantities of excavation and fill between extreme high water and mean high water. Table 2-1 has been revised to reflect this information.

Response FA-5

Terminology has been corrected to reflect that the seawall is the same as the sheet pile bulkhead referred to in the Draft EIS. Detailed information about the seawall has been provided in the COE permit application submitted subsequent to the publication of the Draft EIS.

Response FA-6

Only a portion of the tide pool infrastructure is proposed for construction at this time. This portion would be a part of the sea wall. The remainder of the tide pool would be constructed in a later phase of the project. Text on pages 2-18 and 2-19 has been edited to address tide pool and debris excavation location. Information regarding quantities of excavation and fill associated with construction of the proposed tide pool is now included in Table 2-1.

Response FA-7

Text on page 2-19 and Table 2-2 have been edited to address the location of armor rock. Consideration of silt curtains was included to minimize the effects of turbidity from erosion due to construction activities.

Response FA-8

Text has been edited on pages 1-9 and 1-10 to include Nondomestic Wastewater Discharge Plan information. Table 1-1 on page 1-13 has been revised to include this updated information. Application would be made for a state wastewater permit and a NPDES permit.

Department of Agriculture, Forest Service:

Response FA-9

The University of Alaska, IMS representatives on the Scientific Work Group (SWG) identified the need for space for Ecological Modeling and oceanography at the proposed facility. The research projects identified by the SWG involve laboratory and field studies of marine mammals, marine birds, fish, and invertebrates. It is anticipated that these projects would be interdisciplinary and would have need for an ecological modeler (probably UAF faculty and graduate student) to help with designing studies and establishing data collection protocols. The ecological modeler will also help to synthesize and integrate the research conducted at the facility.

Oceanographers (probably UAF faculty and graduate student) would be involved in collecting and interpreting oceanographic data from the northern Gulf of Alaska. It is expected that the existing Seward oceanographic baseline would be expanded to include sampling stations in Price William Sound, the outer Kenai Peninsula coast, the Barren Islands, and Kodiak. More oceanographic information is needed to understand and forecast factors affecting marine mammal, marine bird and fish populations in the EVOS area. It is not anticipated that the ecological modeler or oceanographer would duplicate existing or planned work by the Prince William Sound Science Center.

Response FA-10

This EIS assumes that revenues from the public education and visitation component would offset operation costs of the proposed improvements. Further, this EIS assumes that the operator of the proposed facility, a non-profit Board of Directors (SAAMS), would be responsibility for the operation and maintenance of the proposed facility, including all related budgetary matters. The EIS text has been edited on page 2-35 to reflect this response and Figure 2-16, has been added to show the proposed organizational structure.

Response FA-11

Both the Alaska Department of Fish and Game and the U.S. Department of Interior, National Biological Survey have expressed the intention to conduct research and/or to collaborate with research at the proposed facility. Anticipated research associated with EVOS restoration would include studies on fish genetics related to recovery of injured pink salmon and herring stocks, health studies related to recovery of injured marine mammal and bird species (e.g., harbor seal, sea otter, common murre, pigeon guillemot, marbled murrelet, harlequin duck), and telemetry, physiological, feeding energetics, and drug studies related to recovery of injured marine mammals and birds. Opportunities would exist to offset overhead costs for those projects which relocate from existing facilities to the proposed facility.

Response FA-12

This EIS analyzes the potential effects of basing a research vessel and submersible in Seward. A decision on whether an EVOS dedicated research vessel and submersible would be purchased, leased, or chartered would reflect the specific requirements of the long-term research mission and the cost effectiveness of the various options. Such a decision would be made by the EVOS Trustee Council as part of its budget review process.

Anticipated long-term research and monitoring in the EVOS region might identify the need for a dedicated research vessel and submersible to help carry out an integrated research program that includes oceanographic sampling, fish trawling, hydroacoustics, population surveys, and basing for scientific crews. Additionally, there are anticipated research projects that would involve the use of a submersible and tender (see Section 2.2.3).

Response FA-13

Section 1.2 (pages 1-3 through 1-6) has been revised to better describe coordination with existing facilities.

Department of Commerce, National Oceanic and Atmospheric Association:

Response FA-14

The National Oceanic and Atmospheric Association (NOAA) provided data on geodetic markers located in the Seward area. An analysis of this data confirmed that the proposed project would not disrupt any geodetic markers as there are none in existence at the proposed site. These findings were consistent with research conducted by U.S. Geological Survey (USGS) and information provided by Greg Druocher of USGS.

Response FA-15

Section 4.2.5 (page 4-17) has been expanded to acknowledge the issue of disease pathogens from rehabilitated marine mammals potentially affecting wild populations and to mention the steps that would be in place to minimize or eliminate adverse effects.

Response FA-16

Section 4.2.5.2 (page 4-17) has been expanded. Rehabilitated animals likely to be released would be handled in a manner to minimize habituation to humans. That is, these animals would have minimal contact with humans.

Response FA-17

Section 4.2.5 (page 4-17) has been revised. Rehabilitated animals released to the wild would be tagged and their behavior would be monitored.

Response FA-18

Section 3.5.5 was corrected to reflect that the gray whale is no longer on the endangered species list and the humpback whale is listed as endangered.

Department of the Interior, Bureau of Reclamation:

Response FA-19

The proposed library would consist of approximately 1,500 square feet of library stack area and would be designed to store a variety of research information including books, papers, and maps. Work spaces would be provided for staff that includes a librarian, a technician, and an information specialist. The library would be capable of storing large volumes of research information with an established catalogue system. Additional details are yet to be developed, and a Geographic Information System would be considered.

Response FA-20

While research is the main thrust of the proposed facility, public education is an important component. Staff positions include an education director, a chairman of the volunteer program and a director of marketing and education (see Figure 2-16). The responsibilities of these staff positions include providing information to the public.

Response FA-21

The text has been edited to further describe the management of the operating facility and coordination with agencies and organizations. For further information refer to comment responses F-10 and F-11.

Response FA-22

See the comment response to FA-12 and Section 2.2.3 of the EIS for text revisions related to the anticipated research and monitoring need for a dedicated research vessel and submersible.

Department of the Interior, Fish and Wildlife Service:

Response FA-23

It is acknowledged that public education is important to prevent disturbance to wildlife by the viewing public. Management of increased visitation to the refuge, as well as other parks and locations in and near Seward, should be coordinated between appropriate parties to protect wildlife resources.

Response FA-24

The decision to plan and fund a seabird facility in Homer is one the USFWS must make whether the proposed project is funded or not. As stated in comment response FA-23, coordination between appropriate parties should occur to protect wildlife resources. The proposed project would have no adverse effect on the community of Homer, and should have no adverse effect on refuge education programs.

Response FA-25

Reference to recreation tours of the Alaska Maritime National Wildlife Refuge has been added to the text on pages 3-65 and 3-69.

Department of the Interior, Minerals Management Service:

Response FA-26

Table 2-4 (page 2-61) has been edited to clarify air quality definitions to be more in line with the other definitions provided. The text in Section 4.7.3 has been revised to reflect this comment.

Response FA-27

Table 2-4 (page 2-61) has been edited to remove project-specific language in the definitions.

Response FA-28

Effects of construction for Alternative II would be similar to those of Alternative I. The duration of effects would be less with Alternative II, but the conclusions for effects would remain the same. A footnote has been added to Table 2-5 (page 2-65) to reflect this.

Response FA-29

Table 2-5 (page 2-65) has been edited to include a footnote for "Traffic and Transportation" including the "ferry" to explain diversity of effects.

Response FA-30

The air quality definition has been revised in Table 2-4 (page 2-61). The conclusion in Section 4.4.3 was changed from LOW to no effect to reflect that there would be no measurable change in ambient air quality with the No Action Alternative.

Response FA-31

The assessments of cumulative effects on Soils and Geology, Hydrology and Water Quality, and Air Quality have been revised on page 4-85 to address this comment.

Response FA-32

Section 4.5 (pages 4-85 to 4-88) has been revised to provide consistency between the effect level definitions in Table 2-5 to eliminate discrepancies.

Response FA-33

Figure 2-1 has been revised to show the correct location of Seward in the map inset.

Response FA-34

Page 4-22 has been revised to provide the heading "4.2.8 Archaeological and Historic Resources".

Department of the Interior, National Biological Survey:

Response FA-35

Page 1-4 has been revised to clarify activities to be included in additional research and their impacts. For further information review comment response FA-11. Comment response FA-12 addresses needs and roles fulfilled by the submersible and research vessel.

Environmental Protection Agency:

Response FA-36

A telephone conversation between Ms. Nancy Swanton and Mr. Larry Brockman of the Environmental Protection Agency, Region 10, on August 24, 1994, determined that a Stormwater Pollution Prevention Plan (SPPP) need not be included in the EIS. However, it was agreed that the EIS would provide information regarding Best Management Practices that would be considered for inclusion in the SPPP to minimize the effects of erosion from stormwater runoff (see Section 2.2.4).

Response FA-37

Appendix G provides a list of chemicals typically used for the types of research anticipated at the proposed facility. The list contains chemicals that may be used at the proposed facility. Substances that are used would not necessarily be stored at the facility but may be transported to and from the facility by researchers. Material Safety Data Sheets (MSDS) would be kept on file in the administrative offices of the proposed facility as required by federal regulation. These sheets provide appropriate methods for disposal of each chemical.

STATE AGENCIES

Department of Fish and Game
Department of Natural Resources, Division of Parks and Outdoor Recreation
Department of Transportation and Public Facilities
Department of Transportation and Public Facilities, Alaska Marine Highway System

STATE OF ALASKA

WALTER J. HICKEL, GOVERNOR

DEPARTMENT OF FISH AND GAME

Commercial Fisheries Management and Development Division

P.O. Box 25526
Juneau, Alaska 99802-5526

PHONE: (907)465-4160
FAX: (907)465-4168

June 27, 1994

Ms. Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement Project
U.S. Department of the Interior
949 East 36th Avenue, Room 603
Anchorage, AK 99508-4302

Dear Ms. Swanton:

I have reviewed the *Draft Environmental Impact Statement for the Proposed IMS Infrastructure Improvement Project.* As the Alaska Department of Fish and Game's (ADF&G) project manager for the Mariculture Technical Center and Shellfish Hatchery (MTC/SH) project I am very interested in the IMS improvement project process because of the potential interactions between the two facilities.

You may be aware that ADF&G received funding for construction of a mariculture technical center and shellfish hatchery in 1993. The funding source was via the Alaska legislature's appropriation of a portion of state EVOS criminal settlement monies. This facility will be used to conduct research on the culture of shellfish and aquatic plants for mariculture purposes. It will also be a commercial shellfish hatchery. One of the sites being assessed is the University of Alaska IMS facility in Seward. Therefore I am quite interested in a project at the same location of the scale proposed for the improvement project.

I offer the following comments for your consideration:

1. Section 1.4.2 State Approvals A permit, issued by ADF&G, is required to transport, possess or release any live fish into the waters of the state for scientific, educational or propagative purposes (5 AAC 41.001). This permit is called a *Fish Transport Permit* (FTP). Some of the projects mentioned in the report involve the transport and possession of live fish. You should contact Ms. Jeri Museth, ADF&G, 465-6149, for more information if your projects involve finfish. I can provide additional information on shellfish or aquatic plants. You should list the FTP as a required permit so that facility and project planners can incorporate it into their schedules. SA-1

The ADF&G also issues a permit to collect fish for scientific or educational purposes. Ms. Museth or I can also provide detailed information on this type of permit, depending on whether the projects are finfish or shellfish related.

2. Page 4-7, Environmental Consequences The MTC/SH development schedule calls for construction to begin in 1995. The site feasibility study report is due July 1, 1994. A site will be selected soon thereafter. The project is a possibility in the foreseeable future. As written, the reader is given the impression that it is a project not to be forthcoming in the near future. SA-2

3. Page 4-10, Effect of Operation on Water Quality The success of the MTC/SH complex is dependent on having high quality sea water available at all times. Pollutants, including fresh water, may have deleterious effects upon facility operations. The facility will have both a shallow (approx 6m) and deep (80m+) intake if the Seward site is selected. The EIS and the IMS improvement project design should take these requirements into consideration. If you need detailed information, please contact me. SA-3

4. Page 4-19, Environmental Consequences I am concerned about the volume of untreated flow-through water and the contaminated water releases. If the IMS site is selected for the MTC/SH, we should work together to insure non-interference between the two facilities. I'm sure it is possible, but it must be accomplished during the early design phases. For now, the potential of a high-quality seawater user in the near vicinity should be acknowledged. SA-4

Thanks for the opportunity to comment on the DEIS. If you have any questions or I can be of assistance, please don't hesitate to contact me.

Sincerely,

James O. Cochran
Mariculture Coordinator

cc Kim Sundberg (H&R, Anchorage)

RECEIVED
JUL 5 1994
Region
LEASING
OFFICE

WALTER J. HICKEL, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF PARKS AND OUTDOOR RECREATION
Office of History and Archaeology

3601 C STREET, Suite 1278
ANCHORAGE, ALASKA 99503
PHONE: (907) 762-2622

MAILING ADDRESS:
P.O. Box 107001
ANCHORAGE, ALASKA 99510-7001

July 11, 1994

File No.: 3130-1R Department of the Interior

Subject: DEIS, IMS Infrastructure Improvement Project

Ms. Nancy Swanton
EIS Project Manger
IMS Infrastructure Improvement Project
U.S. Department of the Interior
949 E. 36th Ave., Rm. 603
Anchorage, AK 99508-4302

Dear Ms. Swanton;

Thank you for the opportunity to comment on the referenced document. Generally, it reflects a good-faith effort to deal with historic resources, but in a very unorthodox and misinformed way. We have the following comments:

Pg. 3-22, section 3.8.2, Historic Resources - The first sentence says that the City of Seward applied for Certified Local Government status, implying that they are not yet certified. It is more accurate to say that in May of 1992 the City of Seward was designated as a Certified Local Government by the State Historic Preservation Officer (SHPO) pursuant to Section 101(c) of the National Historic Preservation Act (NHPA, 16 USC 470). SA-5

Pg. 3-22, section 3.8.2, National Historic Resources - The first sentence says that Seward has 8 sites that are on, or are eligible for, inclusion on the National Register of Historic Places. This is correct but implies that the list is complete. Most of Seward's potential historic properties are not yet evaluated for National Register eligibility. The sentence should read that the city has 8 sites that are currently listed on or determined eligible for National Register listing and that many others are unevaluated at this time. SA-6

Pg. 3-23, section 3.8.2, State Historic Resources - The second sentence says that the AHRS was established to inventory sites that receive protection under the Alaska Historic Preservation Act (AHPA, A.S. 41.35). This is incorrect. The AHRS was established to include all sites regardless of land ownership and means of protection, if any, pursuant to A.S. 41.35.070 and Section 101(b)(3)(A) of the NHPA. SA-7

The latter part of the sentence says that proponents of actions that would affect AHRS-listed sites are required to consult with the SHPO. This not correct either. Proponents of Federally funded, permitted, or licensed projects must consult with the SHPO. That is required by Section 106 of the NHPA without regard to whether sites are listed on the AHRS or any other list.

In fact, enumerating the historic resources by Federal, state and local lists is not useful at best and is misleading because it implies that the Federally listed sites are the most important and the City of Seward-listed sites are least important. All of the historic sites in the area of potential effect of the project must be evaluated for eligibility for inclusion in the National Register of Historic Places pursuant to 36 CFR 800, the implementing regulations for Section 106 of the NHPA. At this time, most are unevaluated. SA-8

We recommend completely redoing this section (3.8.2) without any reference to which laws apply to what sites and simply state that Section 106 compliance (see below) will be completed in parallel with the FEIS, followed by the list of sites in the vicinity.

Pg. 3-24 (Fig. 3-4) - The number after the Brosius-Noon Building ("AHRS 77060914") relates to the now-defunct Alaska State Clearinghouse project number. Some years ago, National Register nominations were reviewed by the clearinghouse pursuant to OMB Circular A-95 meant to coordinate state and Federal government activities. The number is meaningless now and should not be used. The AHRS number is SEW-151. SA-9

Section 106 is finally mentioned on pg. 4-25, but is poorly presented. The author of this section is referred to 36 CFR 800 for the basic steps, as follows: 1) the lead Federal agency first determines the area of potential effect (APE) of the undertaking; 2) the agency makes efforts to identify potentially historic properties in the APE; 3) the agency evaluates those properties for National Register eligibility, in consultation with the SHPO (unresolvable disagreements on eligibility are resolved by the Keeper of the National Register); 4) the agency assesses the project's effect on each eligible property, in consultation with the SHPO; 5) if any properties are adversely affected, the agency consults with the SHPO, the Advisory Council on Historic Preservation, and interested parties on actions to be taken to minimize the effects, and; 6) the agreed-upon actions are incorporated into a Memorandum of Agreement which legally obligates the agency to take the actions. SA-10

This project is still very early in the 106 process. The APE has not been defined although the "vicinity" shown on Figure 3-4 would be a reasonable approximation of it. The identification work appears to be satisfactory - it is based on the City of Seward inventory. Several properties need to be evaluated for National Register eligibility. The other steps remain to be done. Please contact Tim Smith at 762-2625 if there are any questions or if we can be of further assistance.

Sincerely,

Judith E. Bittner
State Historic Preservation Officer

JEB:tas

RECEIVED
JUL 13 1994
Region
LEASING
OFFICE

STATE OF ALASKA

WALTER J. HICKEL, GOVERNOR

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

CENTRAL REGION – DIVISION OF DESIGN AND CONSTRUCTION
CONTRACTS SECTION

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August 8, 1994

Ms. Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement Project
U.S. Department of Interior
949 East 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

Dear Ms. Swanton:

We just received your Draft Environmental Impact Statement for comment at 4:15PM Wednesday, August 3, 1994. Considering that the official comment period closes on Monday, August 8, 1994, we have had to limit our comments to discussions of issues rather than specifics. Time has not permitted us to suggest solutions. We met with your consultants on Friday, August 5,1994 to discuss the general concerns outlined below. We will be following up over the next two weeks with more specific comments and hopefully ideas for resolving them.

Our general concerns include:

FERRY

The issue of what happens with the ferry needs to be resolved. The Environmental Impact Statement, while factual, leaves the reader with the impression that the City will take care of the problem. Neither our Department nor the City of Seward have the financial resources immediately in hand with which to solve the problem. We do not share the optimism expressed in the EIS concerning resolution. While options have been discussed, each has unresolved problems such as: SA-11

- A new "B" Street dock - infeasible due to seismically unstable foundation.
- North Dock - not a year round facility until a breakwater is installed and funding for that may be years in the future. Improvements to the dock would be required, upland access needs to be upgraded, service areas need to be created, and ticketing/office space would all be required before the site would be viable. The amortization of those costs would have a direct impact on fares. The Seward docking fees are already the highest on the run and increasing the costs further to amortize these improvements influences the economic feasibility of continued Seward service.
- The Alaska Railroad Dock - restrained due to existing preferential berthing commitments to cruise ships and other vessels and constrained due to siltation requiring dredging for which funding has not been secured. Also some improvements for access, ticketing, and service areas would be required and the amortization costs addressed in wharfinger fees.

  Both remote locations would require consideration of connectivity to Seward Bus Lines and other transportation systems for walk-on passengers.
- Homeporting in Homer - Moving the homeport from Seward would result in the loss of several families from the community and represent a significant loss in economic benefit currently enjoyed by Seward. Such a loss would be politically unpopular by local officials and businesses but may enjoy favorable consideration within the Department.
- Joint Use (Maintaining the current dock as part of the Sea Life Center) - This option may require more consideration as it has possible benefits to the Sea Life Center and to the Marine Highway System. For example, the ability to bring animals directly from a vessel into the center or from the center to a vessel, docking for the research ship and submarine, day cruise boats making the center part of their excursion, etc.

OFFICE

Any relocation of the ferry would result in the need for replacement of offices currently housed in the old railroad terminal. This was not discussed in the DEIS. SA-11

SEAWALL

The location of the seawall needs to be coordinated such that it does not interfere with maneuvering of vessels at the dock. This comment pre-supposes that the dock remains. If the dock is removed, then this comment goes away. SA-12

INTAKES AND OUTFALLS

The intakes and outfalls are vunerable to fouling and damage from bresting anchor operations at the dock. Since the dock is broadside to prevailing southerly winds, it is often necessary for vessels to drop a bresting anchor on their way in and to use that to kedge themselves off the dock in bad weather. It may be possible to place a permanent mooring offshore as a substitute for bresting anchor operations. This comment goes away if the dock is removed. SA-13

ACCESS

Access to the existing ferry dock would be significantly restrained by any of the schematic road access drawings that we have been shown. None have been developed to the point where we can be assured that trucks could make the turn, that queuing space is adequate, etc. SA-14

GARBAGE

The ferry needs access to garbage disposal facilities at the dock. SA-15

SERVICE LEVEL DEMAND

Discussion is needed about the impact the project will have on demand for ferry service. Will demand increase or decrease? Will locating the ferry away from the downtown area impact current ridership? SA-16

RESEARCH VESSEL MOORAGE

The Seward Small boat Harbor is owned by DOT&PF and managed by the City of Seward. We have not been given the specifics on the ship, but as described in the DEIS it is too large to be moored in a small boat harbor. If it really is of appropriate size, it would still be subject to availability of space. Government vessels are not given preferential rights against those already on the rather long waiting list. The past practice of allowing overloading of the transient floats has been curtailed. Overcrowding has reached the point where vessels, especially those of large size may be required to moor or anchor outside the harbor. SA-17

PARKING

The Department has an ongoing dialog with the City of Seward concerning parking issues. As tourism and other activities have increased in Seward, the issue of parking has been consistently underrated to the point where it is becoming a serious problem. Of specific interest to the Department is the fact that the Small Boat Harbor users and businesses have inadequate parking now. Adding another 50,000 visitors to the area coupled with the loss of 57 critical overnight camping spots places additional pressure on an already inadequate and volatile parking situation. We believe the EIS does not adequately reflect the true magnitude of either the present dilemma or that which will result from the increased usage. SA-18

Another issue is the fact that overflow parking now ends up on the shoulders of the Seward Highway. This is not desirable from either the Department's perspective nor the City's.

The correct location for the new 200 space boat launch and trailer parking is near the grid not on the east side of the ARR dock. SA-19

AIRPORT

The discussion of transportation infrastructure fails to mention the existing DOT&PF airport. While it does not seem to be significantly impacted, that fact might be worthy of note. SA-20

PEDESTRAIN AND NON-MOTORIZED VEHICLES

The discussion of this needs to be expanded. We have noted that many of the motorhomes and campers along the waterfront are using bicycles for local transportation and recreation. The semi-transient population at Seward Skill Center walk or use bicycles for their primary means of transportation. Many boaters in the harbor are also using bicycles as recreation and for local transportaion. As a minimum, bicycle parking should be provided adequacy of existing bike trails and sidewalks, site access and conflicts with motorized traffic should be discussed. SA-21

NEW HARBOR

The proposed Nash Road Harbor discussion should be updated to reflect the current status of the project. The location shown is incorrect. SA-22

HIGHWAY LOADS

Local borrow and rip rap sites are proposed for use. We are concerned that these loads be of legal weights such that they will not damage our highway. Your construction schedule should also be reviewed in terms of when load restrictions are in effect on the Seward Highway and the impact that will have on your ability to deliver materials and equipment to the site. SA-23

QUARRY SITE

The description of the site is not clear. Is this a DOT&PF quarry? If so, some coordination needs to taker place regarding availability of rock for this project. The City has access to a rip-rap source at Jap Creek. Has that been investigated? SA-24

PAYMENT IN LIEU OF TAXES

The City, in its negotiations with the Department for the management of the Small Boat Harbor, has insisted on PILT and an administrative fee totaling 12% of operating revenues. Even though the boats in the harbor pay property tax, fees for slip rental and harbor services are taxed, and business operations within the harbor are taxed, the City claims that PILT and the administrative fee are necessary. The expectation that the City will waive PILT for the Sea Life Center should be revisited. SA-25

ALTERNATIVE SITES

The document does not discuss any effort that has been made to look at alternative sites for the Sea Life Center. What were the environmental consequences at those sites that leed to this site being the preferred alternative? SA-26

We will have additional comments during the next few weeks but they will in general simply provide detail on the topics listed above.

Future communications with the Department concerning this project can be routed directly to me for coordination. Issues specific to the Alaska Marine Highway System may be addressed to Mr. Harold Moeser, Ms. Mary Ashmore, or Mr. Gregory Dronkert, the Director. Normally, our Department charges for other agency reviews. Please contact Mr. Robert Wilson at 266-1723 to arrange payment for our services.

Sincerely,

Jerome R. George, P.E.
Chief of Engineering Operations
& Public Facilities

cc: Tyler Jones - Manager, City of Seward
Murph O'Brian - Chief of Leasing
Harold Moeser - Deputy Director, AK Marine Highway System
Steven R. Horn, P.E. - Preliminary Design & Environmental Supervisor
John S. Tolley - Chief of Planning and Administrative Services
Mary Ashmore - Planner, AK Marine Highway System
Rowe D. Redick - Director, Design and Construction
Ronald L. Thiel - Team Leader, Traffic

RECEIVED
AUG 8 1994
Region
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MEMORANDUM

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
Alaska Marine Highway System

TO: Harold Moeser
Deputy Director

DATE: August 10, 1994

FILE:

TELEPHONE: 465-8880

FROM: Mary Ashmore
CIP Planner

SUBJECT: Draft Environmental Impact Statement, Proposed IMS Infrastructure Improvement Project

I have reviewed the Draft Environmental Impact Statement for the proposed IMS Infrastructure Improvement Project and the response of Jerome R. George, Chief of Engineering Operations and Public Facilities. Mr. George has done a thorough job of representing our concerns and I have only one area of additional comment.

The Draft EIS gives the impression that the current dock is satisfactory and that with a few minor inconveniences the ferry can continue to use this dock indefinitely. This is simply not the case. I have attached a copy of the 1993 Shore Condition Survey for Seward which clearly outlines major defects in the dock which are in no way addressed by the Draft EIS. I would add that on a recent trip aboard the M/V Tustumena the crew clearly agreed with the Condition Survey and perceived the need for Seward to make major improvements to the dock if we are to continue to use the dock. AMHS is already being called upon to pay for upgrades to the terminal building in addition to lease costs. The solution to the dock deficiencies for AMHS may be to move or discontinue service but the EIS contains other proposed uses for the 4th street dock after completion of this project without a discussion of the useful life span left in this dock.

SA-27

Attachments: 1993 Condition Survey-Seward

CC: Pat Eberhardt, Marine Engineering

Condition Survey Information

SEWARD	City Bulkhead	Leased
	City Building	Leased

The City of Seward facility is what was left of the Alaska Railroad Seward dock at Railroad Avenue after the 1964 earthquake. This facility's structures are the remains of a soil-filled sheet pile cell concrete-capped bulkhead constructed circa 1955. It was originally intended to serve as a ship-to-rail transfer complex.

The facility acts as the staging area, transfer wharf, and layover berth for the M/V TUSTUMENA. A terminal building exists in Seward, but it is approximately one city block from the staging and transfer area. The facility was used by 6,176 passengers and 2,548 vehicles in 1992, about half the volume of the Homer facility.

With the exception of the terminal building (the old railroad depot) and the transfer wharf (about 200 feet of the original railroad wharf), the balance of the railroad transfer/warehousing complex was destroyed in 1964 by the Good Friday Earthquake.

The transfer/staging area is bounded on the west by the University of Alaska Marine Center and on the east by a geophysical hazard area. The geophysical hazard area is presently being utilized by the City as an RV/camper park.

The leased terminal building is improperly located for convenient use, and there have been problems in the past with the City needing the building for other purposes. Since the building is 30+ years old and was designed as a railroad depot, it is not energy or use efficient. AMHS participation is likely in the cost of upgrades in the roof, windows, and interior and for handicapped access if use is to continue.

The staging area is improperly laid out and not delineated or properly signed and guardrailed. It is now paved but is still illuminated inadequately. In reality, the adjacent roadway shoulder becomes the defacto staging area.

Utilities for the ship's use are located underground and are limited to telephone and TV hookups. Three phase power is available approximately one city block away. Operations has seasonally requested a ship shore power tie at this berth for layover and now that the access to the wharf is paved, the cost for provision will increase. Due to broadside orientation of the moorings, ships personnel are required to stand watch in order to fire up and stand offshore should weather threaten.

Therefore, the ship power tie (and attendant minimum security tie-up) may not be required until a more secure berth is available.

The transfer wharf and fender systems attached thereto are extremely marginal. The layout is broadside to swells from Resurrection Bay. At times traffic transfer is difficult due to the ship rolling at berth. Also as previously mentioned, at times the ship must

leave the berth during layover due to the weather and swells and may not be able to transfer and be forced to use an alternate facility operated by the Alaska Railroad. An effort to bolster the timber fender piles with untreated 12" x 12" timbers was made in the spring of 1993, however, some of them have already been broken. Continued use of this fendering system represents a significant risk to AMHS.

AMHS should not become involved in funding of the needed fender repairs at Seward. City should be requested to repair/replace them as all current damage is the result of use by others.

The cells and wharf are 30+ years old and have corroded extensively. An underwater inspection undertaken in the spring of 1993 revealed that the westerly cell was totally breached and the diver was able to swim inside below the concrete cap beam. He described a 6' x 10' void. The entire seaward wall of the dock appears to be leaning outward. The useful life of this structure has been exceeded and AMHS should make arrangements as soon as possible to vacate. A seismic event of low to moderate intensity could be enough to finish off what is left of this structure.

The City of Seward has retained a consulting engineer to provide a preliminary design of a new multipurpose dock for use by AMHS and tour ships. AMHS should support this effort in every way possible.

Ratings and Action Required

SEWARD

The following activities need to be commenced or issues need to be considered at this facility to maintain traffic or to bring the facility to an appropriate standard.

Issues

Upgrade Seward facilities to meet the operational requirements at this stop.

Support City of Seward in their effort to construct a multipurpose facility in Seward.

Reevaluate the level of service required in Seward and whether continued home-porting here is justified.

Request City to repair fenders and advise them sailings will be disrupted/missed as a result of the condition of their facility.

STATE AGENCY RESPONSES

Department of Fish and Game:

Response SA-1

The requirement for a *Fish Transport Permit* (FTP) has been added to Table 1-1 on page 1-14.

Response SA-2

Although the City of Seward has been selected as a potential site for the proposed Mariculture Technical Center and Shellfish Hatchery (MTC/SH), the actual location has not been chosen. A feasibility study is currently in progress. The project will not proceed until the site selection process is completed.

Response SA-3

The exact location and design configuration of the outfall structure has not been finalized at this time. The final design would consider the potential for reasonably foreseeable future projects with intakes along the shoreline of Resurrection Bay. Coordination with future projects would be essential to prevent potential problems of water quality conflicts.

Response SA-4

Please see the response to the previous comment.

Department of Natural Resources, Division of Parks and Outdoor Recreation:

Response SA-5

The City of Seward was designated as a Certified Local Government by the SHPO in May of 1992. Section 3.8.3 (page 3-25) has been edited to include this information.

Response SA-6

Eight sites are currently listed or are considered to be eligible for listing on the NRHP, but many other sites are unevaluated at this time. Most of Seward's potential historic properties have yet to be evaluated for National Register eligibility. Section 3.8.2 (page 3-25) has been edited to include this information.

Response SA-7

Section 3.8.3 (pages 3-25 to 3-26) has been revised to include an accurate description of the AHRS. The text in Section 3.8.3 has been corrected to reflect that proponents of federally funded, permitted, or licensed projects must consult with the SHPO.

Response SA-8

The area of potential effect for the proposed project area has been identified. All of the historic sites in the area of potential effect have been evaluated for eligibility for inclusion in the NHRP (see Appendix A for correspondence with the SHPO and Section 3.8.3 for text revision). Section 3.8.3 has been revised to eliminate implications of site importance.

Response SA-9

Figure 3-4 (page 3-22) and the text in section 3.8.3 has been revised to provide the correct AHRS number for the Brosius-Noon Building.

Response SA-10

The Section 106 procedure was not accurately described in the Draft EIS. The explanation of Section 106 has been rewritten and revisions throughout the document have been made. Refer to Chapter 1 and Archaeological and Historic Resources sections for correct information.

Department of Transportation and Public Facilities:

Response SA-11

The EIS has considered the relocation of ferry service and its support network with two scenarios. The first scenario is ferry service remaining at its present location, the Municipal Dock, through the construction phase. The second scenario is ferry service remaining for some period of time during the proposed project operation. The text of the EIS has been modified throughout to reflect these two scenarios, particularly pages 2-3 to 2-5, and the Traffic and Transportation sections 4.2.12, 4.3.12, and 4.4.12.

It is not necessary for the issue of the ferry to be resolved in this EIS. It is not the role of the EIS to resolve issues between the City of Seward and the ADOT/PF.

Response SA-12

The location of the seawall has been designed to be adjacent to the shoreline at the site of the proposed facility. At this location, the seawall would not interfere with the maneuvering of vessels at the existing dock.

Response SA-13

The intake and outfall lines for the life support system would be securely attached to the bottom of Resurrection Bay and would not be vulnerable to fouling and damage from breasting anchor operations at the dock. These lines would not pose a safety problem for vessels approaching the dock.

Response SA-14

The EIS text has been revised throughout the document to include an analysis of the potential for joint use of the Municipal Dock with the proposed IMS facility after construction is complete. Section 4.2.12 provides the analysis and possible solutions to potential problems from joint use (also refer to comment response SA-11).

Response SA-15

Figure 2-9 (page 2-21) illustrates the staging and queuing area for the maximum capacity of the ferry (42 vehicles), ferry loading and unloading, and ferry service area. The service area has been designed to include space for ferry trash disposal, electrical hookup, and other required services.

Response SA-16

Relocation of ferry service may affect ridership depending on the convenience of the relocated service. The extent of effect is difficult to quantify, as the potential future site is unknown. It appears unlikely that any effect would be notable, if the relocated facility is well designed and remains proximate to the primary activity areas of Seward. Potential effects the proposed project may have on the ferry service have been addressed in the EIS (page 4-67).

Response SA-17

Should a vessel be part of this proposed project, the need for transient moorage in the Small Boat Harbor during peak crowding would be minimal. Further discussion is presented in Section 2.2.3 of the document.

Response SA-18

The EIS text has been modified to indicate that current parking in the Small Boat Harbor area is not adequate to serve existing demand during peak summer conditions (Section 3.12.5, page 3-82, and Section 4.2.12, page 4-59). The text has been revised to reflect the potential for secondary impacts to Seward vicinity parking caused by the proposed project.

Response SA-19

Figure 4-1 has been revised to illustrate the correct location of the new 200 space boat launch and trailer parking lot.

Response SA-20

Section 3.12.11 (page 3-86) has been modified to reflect the existing airport and service schedule. As indicated on page 4-68, Section 4.2.12, visitor forecasts for the facility did not identify any travel to/from the project to occur via air transportation to Seward.

Response SA-21

Section 3.12.10 (page 3-86), has been expanded to indicate that pedestrian and bicycle travel within Seward is an important component to current mobility, especially during peak summer tourist season. The proposed project design includes bicycle racks at both the visitor and staff parking lots and access for the existing bike path will continue across the project site.

Response SA-22

The most current information provided to EIS analysts by the City of Seward indicates the proposed 1,200-slip marina project off of Nash Road would not occur within the foreseeable future. Figure 4- 1 (page 4-6) has been revised to reflect the correct location of this potential project on the east side of Resurrection Bay.

Response SA-23

Section 4.2.12 (page 4-54) has been revised to include information on highway load restrictions. The proposed construction schedule for the project considers these load restrictions.

Response SA-24

Section 2.2.4 (page 2-19) has been revised to include five potential quarry sites. The project contractor, upon selection, will evaluate each site and coordinate use of the selected site as required.

Response SA-25

As previously noted, lease negotiations are continuing between the City of Seward and SAAMS for use of the proposed project site. Preliminary agreements indicate SAAMS' intent to collect sales tax on admissions revenues and retail sales which would be paid to the city and the borough. Because the land will be leased, rather than transferred from the city, property tax would not be the responsibility of the project.

Pages 2-3 and 4-45 provide information on the current status of the tax issue.

Response SA-26

In January 1994, the State of Alaska put forward a proposal to the EVOS Trustee Council for a research and wildlife rehabilitation facility in Seward. As adopted by the City Council, Resolution 90-095 identifies Tracts 2 through 6 as the future construction site for the proposed project. Section 1.5.5 (page 1-26) provides additional information on alternative locations suggested, but not selected for inclusion in the EIS.

Response SA-27

The EIS has been revised to include a Condition Survey of the Municipal Dock in which the AMHS evaluates the dock's useful life span. For detailed information, refer to Section 2.2.1 (page 2-3) and Appendix A.

LOCAL AGENCY RESPONSES

City of Seward, Office of Community Development

CITY OF SEWARD

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July 25, 1994

Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement Project
U.S. Department of the Interior
949 East 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

Subj: Draft Environmental Impact Statement Proposed IMS Infrastructure Improvement Project Review

Dear Nancy,

Attached are my comments on the above referenced EIS. Considering the fast track mode, I thought the EIS was very comprehensive. However, I am always concerned that documents written about Seward are accurate as they tend to be quoted for years to come. With that in mind, most of my comments are accuracy oriented. Also, I included some additional comments that were not in the draft that Darryl Schaefermeyer picked up last week or that I faxed to Gordon Lewis.

THE CITY OF SEWARD, ALASKA

Kerry T. Martin

KERRY T. MARTIN
COMMUNITY DEVELOPMENT DIRECTOR

Draft Environmental Impact Statement Proposed IMS Infrastructure Improvement Project Review Comments

LA-1	Tab 1 .1	local authority permits - did not list CUP state authority - fire marshall review
LA-2	Fig 2-1	map is incorrect - using pre-earthquake shoreline ALL MAPS Railway Ave vs Railroad Ave and Ballaine Blvd vs Seventh Ave. Pre-earthquake shore line has no relevancy, especially if not labeled. Remove all platted lots east of Ballaine Blvd.
LA-3	2-3	Youth-teen center - "...would assist in the relocation.." Does this mean financial assistance? on 2-42 it says it means financial assistance.
LA-4	Fig 2-2	Bike path title arrow pointing to the street rather than the path Remove old right of way line from Block 5A
LA-5	2-6	It is specified SAAMS will assist in the financial responsibility with NSHC lease
LA-6	2-12	last two paragraphs seems contradictory to me
LA-7	2-15	be more specific about exterior building design being compatible with the historic downtown
LA-8	2-15	what public transportation?
LA-9	2-29	it is assumed these are annual membership rates
LA-10	2-41	1st paragraph third word "pipe" versus "pips" last line of page "an" versus "a" armor rock
LA-11	2-42	Land and shoreline use: what about campground replacement
LA-12	2-43	Do not allow on-site construction housing - use local campgrounds, apartments, mobile home parks, etc. - put additional funds into the community
LA-13	2-43	Definitely like the idea of collecting sales tax. This says "could" - I like "will" a lot better. Should be in some binding document like a lease or coop agreement
LA-14	2-46	2.6.2 domestic water wells. code says you must hook to city utilities if within 200 feet for domestic use. It is assumed that the wells are not for domestic use, but to provided non-chlorinated water for the labs and tanks..
LA-15	2-48	2.6.9 agree that short term housing during construction will be at a premium, but only during summer. Also hope that many workers will be local people already living here.
LA-16	2-49	2.6.11 this is part of the Waterfront Campground. It is not the Iditarod Campground
LA-17	3-5	no private wells within the city on the west side of the bay.
LA-18	3-6	3.2.3 length of Resurrection bay - 18 miles or 25 miles as stated at top of page 3-2
LA-19	3-9	except for 4th Ave dock there are no waterfront structures predating the earthquake

LA-20	3-20	3.7.2 city has "identified the property as being available for use by the project. No formal document or agreement has been made about how the property will be transferred - lease, sale, gift, etc. What is the "Port of Seward" referred to in this paragraph?
LA-21	3-22	8.8.1 middle of page - originally the Alaska Skill Center - now the Alaska Vocational Technical School not Vocational and Technical . Don't forget the shipyard and sawmill and most importantly creation of national park and growth of visitor industry
LA-22	3-23	Old maps on file in this office indicate that most of Tracts 3 and 4 were filled in during the '50's to allow for construction of the dock face as it is today. The old maps indicate buildings on piling in this area. No record of what became of them. (see copies of attached maps)
LA-23	3-25	3.91 current description of the properties are Tracts 2,3,4,5, and 6 Waterfront Tracts. This is an unrecorded land division for lease purposes. The underlying land ownership is made up of portions of Alaska Tideland Survey 174 and former Alaska Railroad Land acquired through metes and bounds description deed from the U.S. Government. They are called "tracts" rather than "parcels"
LA-24	Fig 3-5	The label says this is Land Ownership. The legend is more use oriented, and the uses on the map do not match the legend. Except for the U of A parcel the legend refers to residential and commercial uses rather than ownership. Additionally, the majority of the map indicates residential in areas that are the central business district.
LA-25	3-27	3.9.2 legal description of the IMS site is Block 5A Oceanview Subd Addition No. 1
LA-26	Fig 3-6	The title says Existing Land Use. This needs to be clarified that it is actual use of each individual parcel and not the Land Use Plan. Needs major corrections
LA-27	3-29	Adjoining lands: Waterfront campground vs Iditarod Campground. There is not a tourist information center in the ferry building - only brochure racks. The park is not used for the community Xmas tree. The tree is placed in the center of the 4th Ave extension to the dock - between the Ladies' park and the teen center. How can you be to the north of Fourth Avenue when it runs north and south. The area north of Jefferson, west of Third and east of 6th is principally residential uses.
LA-28	3-30	Zoning code was modified in 1990 or so to make zoning and planning districts identical. A new district was added in 1993 - urban residential. Total of 13 districts. AVTEC Center vs College
LA-29	3-31	Zoning - Administrative permits generally issued by City Clerk . Ord 94-25 adopted 6/27/94 revises Land Uses Allowed table which includes a category for Major Visitor Attractions by Conditional Use Permit
LA-30	Fig 3-7	Ord 94-27 adopted 6/27/94 changed some zoning on this map - some R3 to UR. Also R3 on 6th should be AC
LA-31	3-33	Zoning on Adjacent Lands: 2nd para 5th sentence - Original Townsite versus USS 1116

LA-32	3-35	5th para - Inlet Fisheries was to build a canning facility, but lease restructured in 2/94 to delete that requirement. Operation now only consists of receiving and freezing plant
LA-33	3-36	2nd para the name of the coal company is Suneel Alaska Inc.
LA-34	3-40	Fig 3-8 why the tremendous decline in trade employment in first half '93?
LA-35	3-41	3.10.3 <u>water</u> - two new wells installed at Ft. Raymond and at least one old well upgraded.
LA-36	3-47	Table 3-9 -line four - city of Seward - these are totals including part time and seasonal. Actual Full Time equivalent -89. Line 12: Seward General Hospital and Wesley Rehab are two different entities. Wesley is private and Seward General is City. Last line - Delete - Seward Marine Industrial Center is a place, not an employer.
LA-37	3-49	<u>sewer</u> - Fourth of July Creek area (SMIC) is served by a separate sewer system. Only airport area and small portion of Cliff Addition not served within the community <u>Electric</u> - city has five versus three generators. Power line from mile 3-18 also upgraded to 115KV capacity but energized only to 69 KV. <u>Solid Waste and recycling</u> - Recyclable collected by local volunteer groups and delivered to KPB Seward transfer site
LA-38	3-53	Health and Social Services: Resurrection Bay Health Center purchased and operated by Seward General Hospital. The optometrist visits Seward from Kenai.
LA-39	3-60	Camping . Note that the various campgrounds (Iditarod, Marathon, N&S Resurrection) are all within the Waterfront Park and the names have been generated internally by the Parks and Recreation Dept for record keeping purposes. No one in the general public will know what these names mean.
LA-40	3-61	Fig 3-12 Map is not correct - remove the platted blocks shown east of Seventh Ave (actually Ballaine Blvd). The Waterfront park and its campgrounds are between Ballaine Blvd and the shoreline. The dot-dash heavy line out in the water is the pre-earthquake shoreline - it really doesn't need to be on the map. If it is needed, it ought to be labeled. Resurrection is spelled incorrectly in the legend. The bike path is shown incorrectly.
LA-41	3-62	Table 3-16 The names of the campgrounds are misleading. Show all the campgrounds within the waterfront park as being within that park. Other campgrounds such as Forest Acres and Spring Creek are in different areas of town. I think what is referred to as Seaview the beach area south of the harbor breakwater and is not in the Waterfront Park. Day use: The Ladies park and the Iditarod Park are one and the same. Also historically known as Niles park.
LA-42	3-63	Table 3-17 Park Service visitors. Second line is way off. See attached list. paragraph below table. The Army and Air Force operate the Seward <u>Military</u> Recreation camps. The camps are located on the west side of the Seward Highway between the entrance to the cemetery (Aspen Lane) to the south and Hemlock St. to the north. (Resurrection Blvd is a mile south of this location.

LA-43	3-64	Municipal Facilities: Correct last sentence. " Camping areas are included in the Waterfront Park, the beach south of the harbor breakwater, Forest Acres Campground and the Spring Creek area within the Seward Marine Industrial Center across Resurrection Bay."
LA-44	3-66	1st para - Regency has moved their docking to the Seward effective May 94. 3rd para - Princess Lines' presence on the Kenai Peninsula includes the Princess Lodge at Cooper Landing.
LA-45	3-67	See attached list for all lodging in Seward. Note that the Sea Inn Hotel has not been built - not even funded. Probably not best to name specific charter or day cruise operators - they change to quickly. In your list - some are out of business already..
LA-46		2nd Para. The museum is on the corner of Third and Jefferson. The chamber operates the Information Cache which is located in a rail car.
LA-47		3.12.1 Seward Highway is the only highway route in and out of Seward. Saying it is the principal route leads one to believe their are other secondary routes. The posted break between 55 and 35 mph is at the Airport, about a mile north of Coolidge Dr. The name of Old Airport Road was changed to Port Ave by Council Resolution a number of years ago because too many people tried to get to the airport on that road because of the name.
LA-48	3-68	Fig 3-13 correct shoreline. The railroad dock label is in the middle of the airport. This map fails to even show the outline of the railroad dock.
LA-49	3-69	1st para - change Old Airport Rd to Port Ave. This text refers to fig 3-13 as to the location of this road and its intersection with the Seward Highway, but the road is not labeled.
LA-50		4th para - Railway Ave is a 66 foot wide right of way. See attached map for sidewalk locations.
LA-51	3-70	2nd para - Seward Highway becomes Third Ave at the intersection of Port Ave at the north end of the boat harbor area. Perhaps it should be referred to as Seward Highway/Third Ave.
LA-52	3-72	Fig 3-15 Change Old Harbor Road to Port Ave.; change Seward Highway to Third Ave at South Harbor Street; correct base map shoreline and platted lots out of Waterfront Park
LA-53	3-74	Fig 3-16 Change Old Harbor Road to Port Ave.; change Seward Highway to Third Ave at South Harbor Street; correct base map shoreline and platted lots out of Waterfront Park
LA-54	3-75	Table 3-23 Change Old Harbor Road to Port Ave.; change Seward Highway to Third Ave at South Harbor Street In the two paragraphs below the table Change Old Harbor Road to Port Ave.; change Seward Highway to Third Ave at South Harbor Street
LA-55	3-76	3.12.4 "...Third Avenue/Seward Highway intersection..." - I assume you are talking about intersections along Third Ave/Seward Highway.
LA-56		Table 3-24 Change Old Airport Road to Port Ave

LA-57	3-77	3.12.5 last line 1st para. the 200 new parking spaces are in conjunction with a new boat launch ramp are located on the east side of the harbor, not the east side of the railroad dock
LA-58		3.12.6 - the chamber of commerce operates a trolley. There is no local bus service.
LA-59	3-78	3.12.7 the depot is a simple unenclosed shelter
LA-60	3-79	bottom para: The city does not plan to relocate the "dock". We are looking for alternate berthing locations for the M/V Tustumena, which include a new dock along the waterfront at B Street in addition to the railroad dock and the SMIC North Dock.
LA-61	3-80	3.12.9 - first line - change to read "cruise ships that make ports of call.." or "... call in Seward are using ...."
LA-62	4-2	mid page - Waterfront Park Iditarod camping area
LA-63	4-3	Traffic & Transportation: 3rd point - don't forget Salmon Derby weekends in August.
LA-64	4-4	Economic Assumptions: does sales tax collection enter into any of the assumptions with regard to offsetting city impacts
LA-65	4-5	4.1.4 3) best to describe the boat launch ramp and associated parking spaces as being on the east side of the harbor rather than west side of railroad dock. The project has not association with the dock. The project is underway and will be functional before this document is completed.
LA-66	4-6	Fig 4-1 Correct map - railroad dock shown in the middle of the airport area. Delete pre-earthquake shoreline and platted lots inside the waterfront park. Move number 3 to east side of the boat harbor. With regard to map location No. 5. there are no proposed residential or multi use developments talked about for these areas. The norther most arrow points to the one of the ball fields. There has been unofficial discussions that should an alternate site become available and a new ball field could be built the city would entertain disposal of this property through sale or lease for private development. The middle arrow points to the little league field. At this point there has been no discussion about disposing of this property. The southernmost arrow points to private lands with single family residences.
LA-67	4-7	Item 6) see notes above from fig 4-1 Item 9) refer to this area as the Seward Marine Industrial Center not Park
LA-68	4-2	4.2.6.1 note that the Sitka Spruce on the site are young seedlings and saplings intermixed with the alder. There are no "tree" size specimens on site.
LA-69	4-24	a title line 4.2.8 Cultural and Historic Resources is missing
LA-70	4-24	
LA-71	4-28	Revenue lost to city is a minimum $38,415. Lease is due for reappraisal which would adjust the rental rate (see table 5-3)
LA-72		It has not been determined who will be responsible for removal of any NSHC

		Improvements.
LA-73		2nd para. If the TUSTUMENA relocates to other than a city dock, the city will lost $28,000 in berthing fees and $5300 for depot lease (see table 4-3)
LA-74		Land Use Regulations: the platting does not require public hearing (PH). The CUP requires a PH only before P&Z. The rezone would have a PH at both P&Z and Council.
LA-75	4-29	Change "Iditarod Campground"
LA-76	4-31	3rd para - change "Iditarod Campground"
LA-77	4-38	Kerry Martin Community Development Director versus Planning Director
LA-78	4-43	City expenditure Characteristics Who made the value determination? It would appear that if these are correct the 12% represents property value, not property area.
LA-79	4-44	last line change Iditarod Campground - capitalize Iditarod
LA-80	4-45	last line Iditarod
LA-81	4-46	2nd para - city code and UBC will probably not allow on site housing of workers
LA-82	4-48	2nd para - with loss of part of the Iditarod Campground and increased demand, private enterprise may move into develop additional campground capacity
LA-83	4-52	2nd para - city sign code does not allow for off site signing. Such signing as discussed here will require P&Z Commission variance
LA-84	4-55	Fig 4-4 Correct map - pre-earthquake shoreline, remove all lots east of Ballaine Blvd, and railroad dock location
LA-85	4-56	Fig 4-5 correct map - shoreline and remove lots east of Ballaine Blvd
LA-86	4-57	Table 4-8 change Old Airport Road to Port Ave
LA-87	4-58	Table 4-9 Change Old Airport Road to Port Ave. Also change Seward Hwy to Third Ave at S Harbor St. In last para - change Old Airport Road to Port Ave
LA-88	4-61	remove extra blank line in middle of page.
LA-89	4-62	why is the existing Rae Bldg parking included as overflow parking for SAAMS. It is not used to capacity for Rae Bldg and as I read this, there will be additional employee parking developed between the existing Rae Bldg parking and Washington St. I also assume visitation to Rae building will be terminated with SAAMS project.
LA-90		last para - where would the anticipated off site bus lay over area be located
LA-91	4-63	top full para - what effect would the bus noise have on the office occupants of the Seaview Plaza across the street?
LA-92	4-64	Non-Motorized Travel - considering the general limited number of sidewalks, what would be he benefits if the sidewalk were to be finished on both sides of 4th Ave between the

		boat harbor and downtown. Also what about sidewalks along Ballaine or along Adams, and Jefferson between Ballaine and 5th
LA-93	4-66	If the earthquake debris is cleaned up and the tidepools are installed, why is the proposed alternatives BENEFICIAL
LA-94	4-67	considering the industrial nature of the site, the project should be BENEFICIAL on the aesthetics of the site.
LA-95	4-71	Schools - elementary school will most likely reach an over populated status without the project within a few years. The project may just accelerate the situation.
LA-96	4-80	2nd par under 4.5.9. Only one hotel proposed in downtown. The other is in the harbor. No new action on either in the last year.
LA-97		3rd para under 4.5.9. The new boat launch ramp is on the east side of the small boat harbor which is west of the railroad dock
LA-98	4-81	1st full para - the city P&Z issued the new hotel a conditional use permit for an off site parking lot. Subsequently the Council changed the land use plan and zoning to CBD which requires no CUP.
LA-99	4-82	2nd and last para under 4.6.1: The proposed site included the old ARR dock and associated engine houses, and other buildings. The 4th Ave dock is a remnant of the old ARR dock. The ferry office is the old railroad depot building which still stands. The large warehouse on the IMS site is part of one of the old ARR buildings.
LA-100	4-85	under 4.7.9 the public fishing area is to the east of the 4th Ave dock. To the west is the Northern Stevedoring lease site which is not open to the public.
LA-101		under 4.7.10 2nd para - I doubt that the recycle program will be too affected. The volunteer groups collect only aluminum which they turn in to the Borough Transfer site for credit. They are supposed to receive funds for the aluminum. The Borough transfer facility contractor operates the large recycle dumpsters
LA-102	4-85	Last para - the land involved here represents much less than 12% of city land.
LA-103	Appendix B	Nortech Report Table of Contents - 4.3.1 - Community Development Dept instead of. Planning Dept.
LA-104		page 22 - What gas station - there has never been a gas station on this site. There was one across the street on the north side of Railway Ave at 4th. It was last in operation prior to the '64 earthquake
LA-105	D-10	Middle para: South of Port Ave, the Seward Highway becomes Third Ave; South Harbor Street not "Drive" or "Avenue". Correct all five reference.
LA-106	D-10	3rd para : Railway Ave and Ballaine Blvd
LA-107	D-10	Figure D-1 -Fig 4-4 Correct map - pre-earthquake shoreline, remove all lots east of Ballaine Blvd, and railroad dock location

LA-108 Concept

Site Plan: Where is the employee parking to be added between the Rae Building parking lot and Washington St. as stated in the EIS? Also, the bus turn out is described in the EIS as being between Third and Fourth rather than Fourth and Fifth.

LOCAL AGENCY RESPONSES

City of Seward, Office of Community Development:

Response LA-1

Section 1.4.2 (page 1-16) has been revised to include the Life and Fire Safety Check performed by the State Fire Marshall and the Department of Public Safety. Section 1.4.3 (page 1-11) has been edited to reflect the current status of the Conditional Use Permit, Variance, and Replat. Table 1-1 (page 1-16) has been revised to include this information.

Response LA-2

Figure 2-1 (page 2-2) and all following figures have been revised to illustrate the post earthquake shoreline, Railway Avenue, and Ballaine Boulevard. All platted lots east of Ballaine Boulevard have been removed.

Response LA-3

Preliminary lease negotiations between the City of Seward and SAAMS have determined that SAAMS will financially assist in the relocation of Teen Center activities. Discussion of SAAMS' involvement in the relocation of the Teen Center activities is addressed on pages 2-5 and 2-59.

Response LA-4

Figure 2-2 (page 2-4) and all appropriate figures has been corrected to accurately illustrate the location of the existing bike path. The old right-of-way line has been removed from block 5A.

Response LA-5

Preliminary lease negotiations between the City of Seward and SAAMS have determined that SAAMS will purchase the existing lease and buildings from NSHC as part of this project. Discussion of SAAMS' involvement in the lease buyout is addressed on pages 2-3, 2-8, and 2-59.

Response LA-6

The last two paragraphs of the Research and Wildlife Rehabilitation Component (page 2-14) have been revised to clarify rehabilitation goals of the proposed facility.

Response LA-7

The Exterior Building Description (page 2-19) has been expanded to address the visual compatibility of the proposed facility with existing downtown buildings. In coordination with the SHPO, integration of

traditional non-industrial architectural elements will be compatible with the surrounding landscape and habitats;

Response LA-8

The text in the Parking and Traffic Section (page 2-21) and Transit Service (page 3-79) have been revised to eliminate references to existing "public transportation."

Response LA-9

The text in Section 2.2.5 (page 2-50) has been revised to clarify membership revenue is based on annual memberships.

Response LA-10

Typographical errors on page 2-51 have been corrected.

Response LA-11

The proposed project would not replace campground space displaced by the construction and operation. With the exception of peak weekend periods during the summer, it is likely that adequate camping sites are provided by other municipal campground areas. To minimize the effect on city campground capacities, a condition of the construction bid package would be that the contractor provide temporary housing for construction workers. Refer to Table 3-16 (page 3-66) and Table 4-4 (page 4-50) for additional information.

Response LA-12

A condition of the construction bid package for the proposed project would be that temporary housing for construction workers be provided by the contractor. In compliance with city code, on-site construction housing would not be occur. Available housing in the community and space from private campground operators will be utilized. Pages 2-52 and 4-50 provide additional information.

Response LA-13

Preliminary agreements indicate SAAMS' intent to collect sales tax on admissions revenues and retail sales which would be paid to the city and the borough. Please refer to comment response SA-25 for more information.

Response LA-14

Water for domestic use at the facility would be supplied by the city. The most likely source of freshwater for research purposes would be a spring on Lowell Point Road. The text on page 2-55 was modified to clarify water sources.

Response LA-15

Section 2.6.9 (page 2-59) has been revised to clarify that the limited availability of short-term construction housing would occur primarily during the summer. Approximately 1/3 of the construction work force would be local hire with existing housing in Seward.

Response LA-16

The EIS has been edited throughout to clarify that the Iditarod Campground is part of the Waterfront Park.

Response LA-17

Groundwater is the sole source of drinking water in Seward. Municipal wells are located in the unconsolidated soils beneath Seward. No private wells exist within the city on the west side of the bay. Section 3.2.2 (page 3-5) has been revised to include this information.

Response LA-18

Section 3.2.3 (page 3-6) has been edited for consistency to reflect that Resurrection Bay is approximately 18 miles long.

Response LA-19

Section 3.2.3 (page 3-9) of the Draft EIS refers to the Municipal Dock as a pre-earthquake structure. The text has been changed on page 3-9 to eliminate reference to other waterfront structures.

Response LA-20

As adopted by the City Council, Resolution 90-095 identifies Tracts 2 through 6 as the future construction site for the proposed project. Negotiations are in progress between the city and SAAMS to finalize a lease agreement for use of the project site. The text throughout the EIS document has been revised to address the lease status.

Section 3.7.2 (page 3-20), mistakenly refers to the Small Boat Harbor as the Port of Seward. The text has been revised to read Small Boat Harbor.

Response LA-21

The text has been revised throughout the EIS to reflect the correct name of the Alaska Vocational Technical Center (AVTEC Center). Section 3.8.1 has been revised to add the shipyard, sawmill, and visitor-related facilities.

Response LA-22

Discussion has been expanded in Section 3.8.1 (page 3-24) to address the history of buildings on Tracts 3 and 4.

Response LA-23

The text throughout the EIS, specifically Section 3.9.1 (page 3-28) has been edited to more correctly describe Tracts 2, 3, 4, 5, and 6 of the Waterfront Tracts which include portions of Alaska Tideland Survey 174 and former Alaska Railroad land acquired through a deed from the U.S. Government.

Response LA-24

Figure 3-5 has been revised to more correctly represent existing land ownership.

Response LA-25

Section 3.9.2 (page 3-30) has been revised to correct legal description of existing IMS site, Lot 5A, Oceanview Subdivision, Addition No. 1.

Response LA-26

Figure 3-6 has been changed to include both the Land Use Plan designations and existing land use of individual parcels.

Response LA-27

Reference to the relationship of the Iditarod Campground as part of Waterfront Park has been corrected throughout document. The text has been revised to address the correct use of the ferry building, which is not used as a tourist information center; the location of the community Christmas tree; and the reference to street locations.

Response LA-28

Reference to the zoning code was revised to reflect changes in the zoning code modifications since 1990 (see Section 3.9.3, page 3-36). References to AVTEC College have been changed to AVTEC Center throughout the EIS.

Response LA-29

Text in Section 3.9.3 has been revised to reflect that Administrative permits are generally issued by the city clerk. Additionally, reference to Ordinance 94-25 has been added to reflect the inclusion of Major Visitor Attractions by Conditional Use Permit.

Response LA-30

Figure 3-7 was revised to reflect Ordinance 94-25 that changed current zoning designations.

Response LA-31

Text on page 3-30 was revised to correct reference to USS 1116.

Response LA-32

Correction made to text on page 3-37 to reflect current operations of the inlet fisheries.

Response LA-33

The text on page 3-42 was revised to reflect that the coal company name is Suneel Alaska, Inc.

Response LA-34

Specific jobs lost during the first half of 1993 are not known. If 1993 employment followed the same trend as 1992 employment, the losses were likely wholesale jobs as opposed to retail jobs. Table 3-7 (page 3-46) "Payrolls and Average Wages by Industry in Seward" illustrates wholesale quarterly payroll declined each quarter throughout 1992, while retail payroll rose from the first quarter to second quarter.

Response LA-35

The text was changed on page 3-53 to reference new and upgraded wells at Fort Raymond.

Response LA-36

The text and Table 3-9 were edited on page 3-52 to reflect the 89 full-time employees at the City of Seward. Although the Seward General Hospital is a city-owned facility, the total number of employees is combined with the Wesley Rehabilitation and Care Center for the purposes of this table. The Seward Marine Industrial Center has been deleted from the table as it is not considered an employer.

Response LA-37

The text in Section 3.10.3 (pages 3-52 to 3-53) has been revised to clarify the extent of Seward wastewater system service.

The text in Section 3.10.3 (page 3-54) has been revised to reflect the city's five generators, and the upgrading of city power lines.

The text in Section 3.10.3 (page 3-54) has been revised to clarify the solid waste and recycling volunteer program.

Response LA-38

Text was added to Section 3.10.3 (pages 3-57, 3-58) which explains that Resurrection Bay Health Center is owned and operated by Seward General Hospital and that the local optometrist travels into Seward from Kenai.

Response LA-39

Text throughout the EIS was revised to acknowledge the relationship between the Waterfront Park and the individual campgrounds. For more information, see comment response LA-27.

Response LA-40

Figure 3-12 (page 3-67) has been edited to illustrate correct Waterfront Park and bike path locations; remove pre-earthquake shoreline; correct typographical errors; and remove platted blocks.

Response LA-41

Section 3.11.2, Table 3-16 (page 3-65) has been revised to show the campgrounds which are all part of the Waterfront Park. The day use recreational area referenced in the text in Section 3.11.2 (page 3-62) has been referred to throughout the document as Ladies Park (also known as Niles Park or Hoben's Park).

Response LA-42

Table 3-17 in Section 3.11.2 (page 3-68) has been revised to more accurately depict the number of visitors to the Kenai Fjords National Park.

The text has been edited in Section 3.11.2 (page 3-68) to correctly describe the location of the Seward Military Recreation Camps.

Response LA-43

The text has been revised in Section 3.11.2 (page 3-68) to correctly identify municipal camping areas.

Response LA-44

Reference has been added to Section 3.11.3 (page 3-69) explaining that Regency Cruise Lines moved their operations to Seward in May 1994 and that Princess Lines' operations include the Princess Lodge in Cooper Landing.

Response LA-45

In Section 3.11.3 (page 3-72), the description of lodging in Seward has been modified to include new information provided by the city which includes referencing the Sea Inn and Sleep Inn Hotels as proposed facilities.

In Section 3.11.3 (page 3-71) the charter/day cruise information has been edited to read "Charter companies that have operated in Seward in the past include:" to avoid any reference charter companies which may no longer be in existence.

Response LA-46

The text has been edited in Section 3.11.3 (page 3-72) to correctly describe the location of the Seward Museum at the corner of Third Avenue and Jefferson and to describe the Chamber's information cache operated from the railcar at Third Avenue and Jefferson.

Response LA-47

Section 3.12.1 (page 3-72) has been edited to clarify that the Seward Highway is the only route into and out of Seward and that the 35 mph zone is from the airport southward. Old Airport Road has been changed to the current name, Port Avenue.

Response LA-48

Figure 3-13 (page 3-71) has been revised to correctly illustrate the shoreline and location of the railroad dock.

Response LA-49

Text has been changed throughout section 3.12 to change Old Airport Road to Port Avenue. The figures relating to the transportation analysis have been revised to show the study area at a larger scale, which allows the designations of street names with the Seward study area. This includes Figure 3-13, 3-15, 3-16, 4-4, 4-5 and D-1.

Response LA-50

The text on page 3-74 has been modified to specify that the "paved" width of Railway Avenue is 40 feet, and the right-of-way width is 66 feet.

Response LA-51

The text has been changed on page 3-671 and throughout section 3.12 to reflect the correct designation of Third Avenue/Seward Highway.

Response LA-52

In Section 3.12.2, Figure 3-15 has been revised to show Port Avenue instead of Old Airport Road, Third Avenue instead of Seward Highway at South Harbor Street, the correct shoreline and the platted lots which no longer exist at Waterfront Park.

Response LA-53

In Section 3.12.3, Figure 3-16 has been revised to show street labels and base map corrections as appropriate. See comment response LA-52 for more information.

Response LA-54

Text in Section 3.12.3 (page 3-80) and Table 3-23 have been modified to reflect correct street names. See comment response LA-52 for more information.

Response LA-55

Text in Section 3.12.4 (page 3-80) has been revised to indicate that the reference is to intersections along Third Avenue/Seward Highway.

Response LA-56

In Table 3-24 (page 3-80), Old Airport Road has been changed to Port Avenue.

Response LA-57

Section 3.12.5 (page 3-82) has been revised to provide the correct location of the new parking and boat launch ramp to the east of the harbor.

Response LA-58

Section 3.12.6 (page 3-83) has been modified to clarify the Chamber of Commerce operates a trolley and there is no local bus service.

Response LA-59

Section 3.12.7 (page 3-83) has been revised to correctly describe the existing railroad depot as a "simple unenclosed shelter."

Response LA-60

Section 3.12.8 (page 3-83) has been revised to clarify that the city is exploring alternate berthing locations for the M/V *Tustumena*. These alternatives include a new dock at B Street, the existing railroad dock, and the Seward Marine Industrial Center dock.

Response LA-61

Section 3.12.9 (page 3-85) text has been edited to read "Cruise ships that make ports of call in Seward will use the railroad dock...."

Response LA-62

The relationship between Iditarod Campground and the Waterfront park is explained in previous sections of the EIS. See comment response LA-27 for more information.

Response LA-63

Section 4.1.1 (page 4-3) has been modified to include the Silver Salmon Derby weekends in August as major summer holidays.

Response LA-64

The City of Seward and SAAMS have agreed sales tax revenues would be paid to the city as a potential condition of the land use agreement. This is considered a mitigating measure to offset the effect of lost revenue to the city. It was moved from the Potential Mitigating Measures on page 2-54 to Mitigating Measures that are a part of the project, page 2-55.

Response LA-65

Based on information provided in the comment that boat launch improvements would be completed this summer, it has not been considered in the cumulative effects.

Response LA-66

Figure 4-1 (page 4-6) has been revised to correctly illustrate the railroad dock, shoreline, platted lots, and proper project identifications.

Response LA-67

Section 4.1.4 (page 4-5) has been revised to remove reference to three city-owned parcels as being considered for residential or multi-use development.

Response LA-68

In Section 4.1.4 (page 4-5), the reference to Seward Marine Industrial Park has been changed to Seward Marine Industrial Center.

Response LA-69

Section 4.2.6 (page 4-20) has been revised to clarify on-site vegetation.

Response LA-70

The title line for Section 4.2.8 has been inserted, although it has been revised to "Archaeological and Historic Resources" from "Cultural and Historic Resources."

Response LA-71

The text in Section 4.2.10 has been edited to clarify that future lease revenues to the city from the NSHC lease would be a minimum of $38,415; this amount could be adjusted with new lease arrangements.

Response LA-72

Section 2.2.1 (page 2-5) Northern Stevedoring Warehouse and the Welding Shop, describes SAAMS involvement in NSHC lease buy out.

Response LA-73

Table 4-3 has been revised to reflect partential berthing of the *Tustamena* and rental of the Railroad Depot Building.

Response LA-74

The text in Section 4.2.9 (page 4-34) to more accurately describe the public hearing process with regard to platting, CUP, and rezoning. Section 3.9.3 (page 3-31) addresses Land Use regulations.

Response LA-75

The relationship between Iditarod Campground and the Waterfront park is explained in previous sections of the EIS. See comment response LA-27 for more information.

Response LA-76

The relationship between Iditarod Campground and the Waterfront park is explained in previous sections of the EIS. See comment response LA-27 for more information.

Response LA-77

Section 4.2.10 (page 4-40) has been revised and title of Planning Director for Kerry Martin deleted.

Response LA-78

The text was revised in Section 4.2.10 to revise property value reference.

Response LA-79

The relationship between Iditarod Campground and the Waterfront park is explained in previous sections of the EIS. See comment response LA-27 for more information.

Response LA-80

The relationship between Iditarod Campground and the Waterfront park is explained in previous sections of the EIS. See comment response LA-27 for more information.

Response LA-81

Text in Section 4.2.11 (page 4-48) has been edited to state that housing would not be provided as part of the project, see comment response LA-12 for more information.

Response LA-82

Development of a private campground in response to increased tourism generated by the proposed project may occur, but is speculation at this time.
Response LA-83

Response LA-83

Street System (page 4-55) text has been edited to include variance requirement by the P&Z Board for offsite signing as it is not currently allowed in the city code.

Response LA-84

Figure 4-4 has been edited to illustrate correct shoreline, dock location and removal of all platting east of Ballaine Boulevard.

Response LA-85

Figure 4-5 in DEIS has been deleted from EIS document.

Response LA-86

Table 4-8 (page 4-60) has been revised to reflect the current use of Port Avenue instead of Old Airport Road.

Response LA-87

Table 4-9 (page 4-61) and text in Section 4.2.12 have been revised to reflect correct usage of Port Avenue instead of Old Airport Road, and Third Avenue at South Harbor Street instead of Seward Highway.

Response LA-88

Extra line space has been deleted from page 4-62.

Response LA-89

The existing Rae Building would continue to operate as a visitation center for UAF IMS Seward Marine Center. An addition to the existing Rae Building parking lot would be constructed to accommodate parking for staff of the proposed project (approximately 50 spaces).

Response LA-90

Text in Section 4.2.12 (page 4-66) has been revised to state that it is likely that buses would layover at the sites currently used for layover by the cruise ships and other tour buses.

The most heavily utilized location is a gravel lot by the railroad dock, for staging buses associated with the cruise ship operations. Discussions with Kerry Martin, Community Development Director, indicate that buses have been observed at the gas station near the Eagle store on the Seward Highway, and McDonald property on Nash Road, approximately eight miles from town. Bus owners will be responsible for continuing current layover practices.

Response LA-91

Increased bus and vehicle traffic to the site would result in an increased noise level along the travel route. Third Avenue, which is the beginning segment of the Seward Highway to Anchorage, is a state highway which currently experiences a considerable amount of traffic noise, both commercial and local. The 10 to 15 minutes for a bus to unload or load, may create an annoyance to local neighbors within hearing distance of the bus loading zone. When compared to existing conditions, the effect of project traffic noise levels would be low.

Response LA-92

Sidewalks would provide an added measure of safety, comfort, and continuity for pedestrian travel in the downtown Seward area. The project would add pedestrians to the downtown area and existing pedestrian/bike path along the waterfront. The increase in pedestrians occurring as a result of this project would contribute to the use of pedestrian facilities within Seward, but would not result in a need for additional off-site pedestrian facilities.

Response LA-93

The comment was not understood.

Response LA-94

The text in Section 4.3.7 (page 4-73) has been revised to describe effects to visual/aesthetic resources as BENEFICIAL for operations.

Response LA-95

Text revised on pages 4-41 (Alternative I) and 4-77 (Alternative II) to address the elementary school capacity issue. Potential effects on school enrollment would hinge on how many school age students move to Seward as a result of the proposed project construction and/or operation. A capacity problem may result at the elementary school, however this could occur regardless of the proposed project.

Response LA-96

The paragraph in Section 4.5.9 (page 4-87) has been changed to reflect that there are two proposed hotels, one at the harbor and one downtown.

Response LA-97

The paragraph in Section 4.5.9 (page 4-87) referring to the new boat launch ramp in downtown Seward has been deleted from the EIS. As an existing project, the boat ramp is no longer considered under cumulative effects.

Response LA-98

Text on page 4-87 changed to delete reference to the conditional use permit and zoning status of the new hotel.

Response LA-99

The comment was not understood.

Response LA-100

Section 4.7.9 (page 4-91) the reference to fishing area located west of the Fourth Avenue Dock has been corrected to east of the Fourth Avenue Dock.

Response LA-101

Section 4.7.10 (page 4-92) the paragraph on recycling program affects has been deleted based on reevaluation. The comment provides an opinion that there would not be an adverse effect. Other opinions have been voiced stating that the recycling program would need greater capacity to fully recycle the increased volumes of material: This difference of opinion may depend on the goals for the completeness of the recycling program. On further consideration, the effect of additional recyclable materials generated by visitors to Seward does not effect the recycling program itself, it increases the volume which can be recycled. Therefore this is not considered an unavoidable adverse effect.

Response LA-102

Text was revised in Section 4.7.10 to reflect the collection of sales tax on admission and retail revenues to offset the loss of revenue from existing city leases.

Response LA-103

No text changes were made in Appendix B. This report was prepared by NORTECH, Inc. and was included as a reference document only.

Response LA-104

No text changes were made in Appendix B. See comment response LA-103 for more information.

Response LA-105

Appendix F (page F-10) which was formerly Appendix D (page D-10) text revised to reflect street name corrections.

Response LA-106

Appendix F (page F-10) which was formerly Appendix D (page D-10) text revised to reflect street name corrections.

Response LA-107

Figure F-1 (formerly Figure D-1) was revised to show correct shoreline, all lots removed east of Ballaine Boulevard and railroad dock location.

Response LA-108

The employee parking will be accommodated by expanding the existing IMS parking area at the Rae Building. References to the bus turn out have been corrected throughout the document as being located between Third and Fourth Avenues, rather than Fourth and Fifth Avenues.

GROUPS AND ORGANIZATIONS

Indigenous People's Council for Marine Mammals
Sierra Club
Alaska Center for the Environment



Indigenous People's Council for Marine Mammals

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MEMBERS:
Alaska Eskimo Whaling Commission
Alaska & Inuvialuit Beluga Whale Committee
Alaska Sea Otter Commission
Arctic Marine Resources Commission
Assn. of Village Council Presidents
Bristol Bay Native Association
Eskimo Walrus Commission
Inuit Circumpolar Conference
North Slope Borough Dept. of Wildlife Mgmt.
Pribilof Aleut Fur Seal Commission
Southeast Native Subsistence Commission
RurAL CAP STAFF:
Carl Jack
Subsistence Director
Carol Torsen
Subsistence Coordinator
Carl Hild
Marine Mammal Biologist

1 July 1994

Ms. Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement Project
949 East 36th Ave., Room 603
Anchorage, AK 99508-4302

Dear Ms. Nancy Swanton:

I appreciated the opportunity to receive the draft EIS for the proposed IMS Infrastructure Improvement Project. I was glad to see than many of the concerns I raised in my March letter were acknowledged although most were not addressed to the level I had hoped they would be. I believe there are two items which really do need additional clarification in the EIS based on this draft. I would also ask that the design process include local experts. G-1

#1. Will there be a large enough area that will be enclosed for recovering birds to exercise their flight muscles or will they need to be taken to another location? Likewise, will there be an ocean corral for marine mammals? No where in the DEIS did I see any mention of any larger containment areas for recovering animals to truly regain their strength and feed on their own prior to actual release to their natural environment. Again I refer you to Dr. Jim Scott of the Bird Treatment and Learning Center and similar facilities for marine mammals such as the one in Norfolk, England. There will be a need to be sure that these animals are strong prior to successful release. This takes space either on site or within easy transport. Where will these facilities be and what will be their impact is as much a part of this structure as what is to be constructed in downtown Seward. Unless the entire continuum of wildlife rehabilitation is taken into consideration from the start it is doomed to being inadequate and subject to public criticism on the humane handling of these animals. G-2

#2. Fresh water is needed for the facility at a rate of 200 gpm. It is proposed that a well be drilled to supply this volume. This does not make sense in this report unless there is some additional information on the ability of the local aquifer to sustain such a volume. 200 gpm is G-3

288,000 gpd or eight times the domestic water need for the balance of the facility. 288,000 gpd is between one forth and one fifth the total usage for the entire city of Seward according to your figures. That is a tremendous amount of water to take from a well or even wells. The salt water LSS from the bay has a back-up system and yet there is no mention of a back up for this well supplied fresh water. Of the various drains on local utilities it would appear that if such a quantity of water were required as a back-up that it would provide a moderate impact on the city's delivery system.

The DEIS states that current average community-wide water use is at 22% of capacity for the city. It is likely higher in the summer with yard watering, vehicle and vessel washing, and other such activities. By adding this 200 gpm that would go to roughly 28% on average.

I would request that data be given on local wells and their production ability over a sustained time period. I would also request that some back-up scenario be discussed for the fresh water research activities as was done for the salt water efforts. I would also like to know how much it would cost to purchase 200 gpm from the utility system. I would like to know if the current city water supply could deliver this volume of water to the facility given existing water mains without causing problems elsewhere in the community.

Concern - My on-going concern is involving the people of Prince William Sound, not just Seward in the design of the facility. You must still first answer the primary question of what is wanted by the public as a result of the impact of the Exxon Valdez oil spill. The overall concern I raised in my first letter and again here is one that requires your efforts to personally involve the people who live not only in Seward and Anchorage, but in all the other small communities around Prince William Sound. You need to involve the local populations, especially the Alaska Natives who know this area so well. You need to review what you have done to bring in the issues which are on the minds of the people of Prince William Sound. As I stated before a "mail-out" may not be the best way to gain that information when the only public meetings have been in Seward and Anchorage. Will their concerns be addressed by the currently planned facility? They can give you insight as to their needs, as well as assist

in the practical design of the facility. Knowing the wants and concerns of those people, who have for generations called Prince William Sound home, is critical to the success of your effort.

There should be incorporated Alaska Native traditionally held ecological knowledge. This can be designed into all research activities and every display. There should be a real effort made to assure that what is already known and held by local residents about the marine ecosystem of the region, be formally collected and incorporated into the facility. It should be part of the overall design. Local residents may be able to provide insight as to how to establish the correct "balance" for any habitat areas or displays which are planned for the facility. They may have specific ideas for the recovery of birds and marine mammals which have been injured, as often traditional medicines came from observing the behavior of injured animals. Perhaps now the favor can be returned.

I hope these comments are helpful. I am looking forward to the EIS and how the project will proceed from there. Thank you for providing the public with this draft EIS for comment. Please let me know if there is any way I can be of further assistance.

Sincerely,

Carl M. Hild

Carl M. Hild, M.S.Sci.Mgmt.
Biologist / Planner



Sierra Club
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August 8, 1994

Ms. Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement Project
U.S. Department of the Interior
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Anchorage AK 99508

RE: Proposed IMS Infrastructure Improvement Project, Seward, Alaska -- Draft Environmental Impact Statement, June 1994

Dear Ms. Swanton,

Thank you for the opportunity to comment on the DEIS for the proposed Institute of Marine Science Infrastructure Improvement Project in Seward. The Sierra Club favors Alternative III, the "No Action" alternative.

Exxon Valdez Oil Spill Restoration Funding Not Justified

Most of the planned funding for the proposed project is to come from Exxon Valdez Oil Spill (EVOS) restoration funds. However, the need for this project to restore oil spill injuries has not been demonstrated.

The "Memorandum of Agreement and Consent Decree" between the United States and the State of Alaska (March 13, 1991) states "The Governments shall jointly use all natural resource damage recoveries for purposes of restoring, replacing, enhancing, rehabilitating or otherwise acquiring the equivalent of natural resources injured as a result of the Oil Spill and the reduced or lost services provided by such resources" (Section V-A, page 12). The "Agreement and Consent Decree" with Exxon Corporation further describes the legal uses of the settlement, including the most relevant portion "(5) to reimburse or pay costs incurred by the United States or the State or both after March 12, 1991 to assess injury resulting from the Oil Spill and to plan, implement, and monitor the restoration, rehabilitation, or replacement of Natural Resources, natural resource services, or archaeological sites and artifacts injured, lost, or destroyed as a result of the Oil Spill, or the acquisition of equivalent resources or services;" (Paragraph 10, pages 9-11). G-4

The construction of this facility does not meet these definitions of restoration. Further research into EVOS injuries, recovery and restoration are clearly legal uses of restoration funds. However, using EVOS restoration funds to construct a research facility would be legal only if the facility is found to be necessary to conduct essential EVOS research. There has been no such finding. In fact, there is no clear tie between the facility and any particular research. Any advantages of such a facility for conducting non-EVOS related research does not justify expenditure of EVOS funds.

Need for Facility Not Demonstrated

In fact, the need for this facility has not been demonstrated at all -- neither for Exxon Valdez Oil Spill research, nor for any research. The appropriate approach to expenditure of funds would have been as follows: 1) plan the needed research; 2) assess the available facilities for conducting the needed research; 3) assess any gaps in necessary facilities; and 4) decide the most cost effective way to fill these gaps. This proposed facility took the exact opposite approach. First a tourist attraction was planned. When funding proved unavailable, the facility promoters next sought EVOS funds, and eventually redesigned the plans to be more appealing to the EVOS Trustees. The need for the facility -- either for EVOS research or for other research -- was never demonstrated. The facility is a solution to a non-existent problem. Alaska already has marine research facilities in Kodiak, in Cordova, and at its University campuses. There is no explanation of what research needs cannot be filled using these existing facilities. There are no alternatives in the DEIS which examine the possibility of expanding any of these other existing facilities. G-5

Revenue Projections Overly Optimistic

The proposed institute's plans for financial self-sufficiency are based on a long list of rosy assumptions. If one or more of these assumptions does not prove correct, the State will have a white elephant on its hands. Some examples:

Visitation: Operating funds would plummet if the cruise ship lines decide not to patronize the facility. (Even if they do patronize it, they would have the power to demand extraordinary cuts in the cost of tickets for their passengers.) Also, the proposed visitation rate from South Central Alaska residents seems highly inflated. G-6

Animal rehabilitation: Contracts for spill response capacity certainly cannot be assumed. Mobile units are far more appropriate for spill response in Alaska than a facility that is fixed in one place -- a place that may prove to be very far away from an actual spill. The DEIS acknowledges that "Because these sources of revenue are somewhat speculative at this time, an income estimate of $150,000 estimate [sic] for wildlife rehabilitation programs was used. It is clearly possible and G-7

probably that this number could be higher when a certified facility is in place." It is clearly possible, also, that it could be lower or non-existent.

Animal rehabilitation is extremely expensive per animal, and could prove very costly to facility operations. Rehabilitation during the Exxon Valdez oil spill cost $80,000 per otter. Evidence indicates that fewer than half these released otters survived the first winter. Release of rehabilitated animals is also very risky to wild animal populations. Evidence strongly indicates that the otters rehabilitated during the Exxon Valdez oil spill introduced disease to wild populations in Prince William Sound. Survival rates for birds and their effect on wild populations is completely unknown. G-8

Combining animal rehabilitation with research and tourist facilities also provides a strong potential for abuse. The demands for animals for research and for public display could put considerable pressure on facility operators to keep rehabilitated animals at the facility rather than release them. G-9

Research: The construction of this proposed facility would create a large and permanent demand for grants from the Trustee Council -- both to justify the use of EVOS funds for construction, and to pay for operation and maintenance. Strong political pressure on the Trustees to fund the Institute's research projects is likely. G-10

What happens if revenues from visitors or animal rehabilitation fall short of the optimistic projections? The answer is that the facility operators will turn even more desperately to the EVOS Trustee Council -- and also to the State Legislature. The facility will be under severe internal pressure to capture more funds from the EVOS Trustee Council, no matter how limited the value of further EVOS research. Operational appropriations from the State Legislature would likely come at the expense of operating funds for the University and other existing facilities.

Alaska has a history of boom and bust economies. The State has spent billions of dollars on capital projects which will be very difficult or impossible to maintain and operate as oil revenues decrease. Existing University of Alaska facilities are in a precarious long-term financial position. It does not make sense to use public funds to subsidize this large and risky new capital expansion.

Sincerely,

Pamela Brodie

Pamela Brodie
Alaska Rainforest Coordinator



ALASKA CENTER *for the* ENVIRONMENT
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August 1, 1994

Ms. Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement Project
US Dept. of the Interior
949 East 36th Avenue, Room 603
Anchorage, AK 99508-4302

re: DEIS Comments (Infrastructure, Seward)

Dear Ms. Stanton:

On behalf of Alaska Center for the Environment, I am providing comments on your DEIS. At ACE we feel that this project does not merit dollars that are so desperately needed to protect waters that were damaged in the Spill. G-11

We support Alternative III (No Action) and believe that there are many other projects and ways that the money can be better spent. We would be happy to furnish you with a list of these if you wish.

Sincerely,

Caryl Boehnert

Caryl Boehnert
Western Gulf Coordinator
Alaska Rainforest Campaign

cc: Trustee Council



Indigenous Peoples Council for Marine Mammals:

Response G-1

The project design team for the proposed facility consists of a Scientific Workgroup and an Education Workgroup. These groups were formed in March 1994, to define the needs of the research and wildlife rehabilitation component, and the public education and visitation component of this project, and to help guide the design program for the project architects. The groups consist of local experts and professionals from the scientific and education communities. The goal of establishing these work groups was to gain useful information from a broad base of interests capable of addressing local concerns as well as state wide interests.

Response G-2

One goal of wildlife rehabilitation services at the proposed facility is to restore the health of individual animals in order that they can be released to the wild. The outdoor wildlife habitat area would consist of tanks and pools for marine mammals and birds that covers approximately 30,000 square feet of the site. The habitat would provide areas for marine mammals and birds to exercise and would be an appropriate rehabilitation space for the transition of recovering marine birds and mammals. A flight area is unnecessary, as seabirds develop wing strength through underwater swimming. Section 2.2.3 (page 2-25) has been revised to expand the description of the habitat tanks.

Response G-3

Section 2.2.4 (page 2-27) has been revised to provide additional information on the location, quality, and quantity of potential freshwater sources for fish genetics studies. The most likely source is a spring located approximately 2,500 feet south of the project site on Lowell Point Road. Preliminary testing indicates that the quality and quantity of freshwater is suitable for the proposed project. Should this source prove unacceptable for some reason, the possibility of wells drilled on the existing IMS site would be further explored. The city's water system would not be used for a backup system.

A back-up system for the freshwater source is not part of the project design. The circulation and filtering system could keep adequate freshwater available for research purposes in the event that the freshwater source service is disrupted.

Water would be supplied by the city for domestic purposes of the proposed project. Page 2-26 provides information reflecting the proposed project's anticipated use.

Sierra Club:

Response G-4

The purpose of the NEPA process and this Environmental Impact Statement is to address the environmental and social effects of the proposed project, not to address the propriety of the Trustee Council's decision to fund the project. The Trustee Council has a process to consider all available public comments and legal opinions before it makes decisions concerning expenditures of joint restoration funds.

The joint restoration funds that are being sought for the proposed facility would be used to support and carry out a research and monitoring program that would, among other things, seek to restore, enhance, and rehabilitate natural resources injured as a result of EVOS. The research and monitoring program anticipated for the facility includes studies that are either directly or indirectly linked to the restoration of injured resources. Section 1.2 (pages 1-3 to 1-6) provides additional information on the purpose and need of this proposed project.

Although the use of the settlement funds is a significant issue to be addressed with public input, it is not an environmental issue for purposes of this EIS. A programmatic environmental impact statement on the EVOS Trustee Council's Draft Restoration Plan, prepared by the U.S. Forest Service on behalf of the Trustee Council, was published recently. That Draft EIS examines the research and monitoring needs of the overall restoration program. Moreover, through the annual work plan process, the EVOS Trustee Council seeks and obtains public comment on the appropriateness of the funding for this, and other projects, as part of the overall restoration program. Comments received regarding the issue of project funding have been directed to the EVOS Trustee Council for consideration. A Draft Fiscal Year 1995 Work Plan currently is available for public review and comment.

Response G-5

Please refer to comment response G-4 above. The purpose and need for the proposed project is fully discussed in Section 1.2 of the Final EIS.

Response G-6

The visitation and operating assumptions were derived from two feasibility studies, one prepared by Thomas J. Martin and Fox Practical Marketing, the other prepared for Alaska Industrial Development and Export Authority (AIDEA) by Public Finance Management, Inc. These reports are available for review at the EVOS Restoration Office Library.

Additionally, since publication of the Draft EIS, Martin and Fox substantiated their evaluation with up-to-date information (see Appendix C). More detailed and updated projections will be necessary as the project moves forward, and additional planning regarding refinements in the physical plant, project sizing, and program content are likely to occur.

Section 2.2.5 (page 2-35) has been revised, and Appendix C added, to reflect the results of a third analysis of the visitation projections.

Response G-7

As stated in the Draft EIS, revenue from wildlife rehabilitation programs is somewhat speculative. The conservative income estimate provided was derived from a comparison of similarly designed facilities.

While there is an ongoing scientific debate about the efficiency and cost of wildlife rehabilitation, current spill contingency regulations and agency policies dictate that industry must have the capability to treat and rehabilitate injured wildlife. Most of that capability presently exists in mobile response units. These units, however, cannot provide some critical and long-term care functions for mammals and birds that a fixed facility can provide.

Section 1.2 (page 1-6 to 1-7) presents a detailed discussion of the purpose and need for the proposed project which includes the merit of mobile versus fixed rehabilitation facilities.

Response G-8

The proposed facility would promote the recovery of marine mammal and bird species that were injured by the EVOS through treatment and rehabilitation of such species as they are found in the wild. A goal of wildlife rehabilitation services at the proposed facility is to restore the health of individual animals in order that they can be released to the wild. Another goal is to establish and maintain a database on animal health issues based on studies of wildlife at the facility.

Because a facility of this type was not available during EVOS, it is plausible that problems concerning early disease detection and potential transmission to wild populations, as well as improving the survival rates of released animals would have been better understood had such a facility existed in 1989. During the EVOS, the unreleaseable otters were sent to facilities outside of Alaska, and the opportunity to study the long-term effects of their exposure to oiling has been diminished.

Section 1.2 (page 1-6) has been revised to address concerns of the animal rehabilitation success.

Response G-9

As stated in comment response G-8, a goal of wildlife rehabilitation services at the proposed facility is to restore the health of individual animals in order that they can be released to the wild. Wildlife which can no longer survive in the wild, or which present a health risk to wild populations, would be kept at the proposed facility in long-term care for research and public education purposes, transferred to other appropriate facilities, or, as a last resort, euthanized. It is expected that an adequate number of animals for research and display would be available from unreleaseable animals, and animals obtained through transfers from other facilities.

Section 1.2 (page 1-5) has been revised to address the availability of animals for research and display.

Response G-10

The revenue projections for the proposed project do not include undue demands on the Trustee Council for supporting grants. The projected operating characteristics indicate that the facility would generate $4,883,986 in revenue during the first year of operation, of which $246,000 would come from research contracts such as EVOS studies. This is 6 percent of the revenue needed to offset projected operation and maintenance expenses of $3,837,200. In contrast, admissions, memberships, and retail sales are projected to generate $3,317,986 in annual income to offset annual expenses, or 86 percent of the revenue available.

Further, this EIS assumes that the operator of the proposed facility, a non-profit Board of Directors (SAAMS), would have responsibility for the operation and maintenance of the proposed facility, including all related budgetary matters (see comment response FA-10).

Alaska Center for the Environment:

Response G-11

The evaluation of Trustee Council funding for this project is not a function of this EIS. As stated in the Draft EIS on page 1-25, the Trustee Council has provided an opportunity to comment on the annual work plan process which addresses the appropriateness of funding for this, and other projects, as part of the overall restoration program.

As stated in Section 1.5.4, comments received about project funding have been directed to the EVOS Trustee Council for consideration. A Draft Fiscal Year 1995 Work Plan currently is available for public review and comment.

PUBLIC HEARING TESTIMONY

Public Hearing - Seward

Stu Clark
Rick Smeriglio
Carol Griswold

Public Hearing - Anchorage

Carl Hild

U.S. DEPARTMENT OF THE INTERIOR

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

EXECUTIVE SUMMARY ENVIRONMENTAL IMPACT STATEMENT

PROPOSED IMS INFRASTRUCTURE IMPROVEMENT PROJECT

PUBLIC HEARING

125 Third Avenue
Seward, Alaska

July 26, 1994

Alaska Stenotype Reporters

550 West Seventh Avenue, Suite 1320
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Fred M. Getty, RPR
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APPEARANCES:

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Department of the Interior

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Transpo Group

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Livingston Slone, Inc.

ALASKA STENOTYPE REPORTERS

PROCEEDINGS

MS. SWANTON: Like to welcome you to the hearing. This hearing is being conducted by the U.S. Department of the Interior on the draft environmental impact statement for proposed improvements to the Institute of Marine Science here in Seward. I should have done this earlier, but my name is Nancy Swanton. I'm the department's project manager for this environmental impact statement. And I have been designated to chair this hearing tonight. I'm pleased to see you all here, and I appreciate your coming out.

Other hearing panel members tonight include Barry Roth from the Department of the Interior's Solicitor's office, Ken Havran from the Department's Office of Environmental Policy and Compliance and Kim Sundberg from the State Department of Fish and Game. Kim has worked with us real closely on this environmental impact statement and actually on the project. So we thought it would be good to have him sit in as a panel member tonight.

As many of you already know, a number of project team members are present at the hearing as well, and I hope you had an opportunity to chat with some of them. I could -- if I forget some of you, you are going to have to stand up and introduce yourselves. But, we do have

Maureen Simms -- and you might want to just raise your hands. Gary Hayward from Dames & Moore. Dames & Moore has the contract to write the environmental impact statement. Louisa Moore and Gordon Lewis, who put together the social and economic and cultural and historical sections of the impact statement. And land use. Gordon did the land use section.

You have already met Milton Lim and Kurt Gahnberg from Transpo. They put together -- they wrote the analysis for the transportation section of the impact statement. We have Alex Swiderski in the back with the State Attorney General's office. We have Leif Selkregg with Heery International project management firm overseeing the Dames & Moore contract and the architect on the design project. And you have already met Debra Hankinson from Livingston Slone, the architect working on this project.

Who have I missed? I got everybody. Last time I forgot Kurt's name, so I'm improving.

The purpose of this hearing is to receive your views, your comments and your suggestions relating to this draft environmental impact statement. The document was prepared by the U.S. Department of the Interior as the lead federal agency on behalf of the Exxon Valdez Trustee Council and in accordance with federal law, specifically

the National Environmental Policy Act and other laws that pertain.

Dames & Moore, as I mentioned, an environmental consulting firm, was selected as the contractor to write the environmental impact statement. And you have met Maureen Simms. You have probably met her at previous meetings as well. She has been coordinating the effort for Dames & Moore.

The Exxon Valdez Trustee Council is proposing to improve the existing infrastructure at the University of Alaska's Institute of Marine Science in Seward as a way to enhance the council's capabilities to study marine mammals, marine birds and the ecosystem injured by the Exxon Valdez oil spill. The improvements are intended to help focus and carry out long term research and monitoring in the spill area as part of an overall restoration plan.

The project as proposed would be constructed adjacent to the existing campus of the Institute of Marine Science, as Debra explained to you. It would have two components, as she mentioned, a research and rehabilitation component, an animal rehabilitation component, and the second component would be an education and visitation component. Exxon Valdez oil spill monies are being considered for use in funding the research component of the project, but not the education and

visitation component.

And one reason that we are doing an environmental impact statement on this project is because we have federal members on the Trustee Council, and when federal monies are involved in a project, that kicks in the National Environmental Policy Act. So, the department and the council decided to do a full-blown environmental impact statement to ensure that we had a good, objective, complete, and thorough analysis of what this project might mean for Seward.

The education and visitation component would be funded primarily with monies raised through private donations. And one of Leif's projects as employed by the Seward Association for the Advancement of Marine Science is to work on that private fund raising effort. And that's a separate effort from the Trustee Council's financial considerations.

This hearing is meant to provide the opportunity to receive comments from you in order to fully evaluate the potential effects of this proposed project. This is the first of two hearings planned. The other is planned for Thursday evening in the Trustee Council offices in Anchorage. That's at 645 G Street, if any of you are in town, and that hearing will be held at the same time as this one tonight, at 8 o'clock.

The official reporter for this hearing is Mary Vavrik. She will be taking a verbatim transcript of the hearing, so everything spoken while the hearing is in session will be recorded by her. So, to ensure a complete and accurate record, it's necessary that only one person speak at a time. And I am going to ask that you come to the podium and speak right into the microphone. We are not doing that here, but I think in order to help our court reporter out to make sure that we get everything, if you would, please, step to the podium and speak into it.

This isn't an adversary proceeding. Those presenting their views aren't under oath, but the presentation should be relevant. Your comments should be relevant, and they should be supported by information, pertinent information. You will be questioned only if a member of the panel wishes to clarify facts or obtain some additional information. And any questions that might be asked by members of this panel shouldn't be construed as indicating any predetermined position. The purpose of the hearing is for us to receive information on the draft EIS. This is not the time to exchange comments. We will allow more time and more opportunity at the end of this hearing for that kind of interchange.

And the members of the panel are present to obtain

as complete an understanding of your views as we possibly can, and this is one way to do it. And another way to do it is to receive comments in writing. And other ways to do it are by phone and through communications that we have had, such as tonight during this open house.

While we are having the hearing, we are not present to answer questions on specific information or policy issues. That's one reason we have the open house prior to the hearing.

Those who wish to present comments on the draft EIS will be called in the order in which they registered with Kim Morris. Kim, where are you?

MS. MORRIS: Right here.

MS. SWANTON: In the back of the room. So if you wish to make some comments, please let Kim know, and she will get your name here to me. We will go through the list. If a speaker isn't present when his or her name is called, that name will be called again at the end of the hearing. We are trying to keep all oral presentations to ten minutes. And as you begin your presentation, we would appreciate very much if you would give your name and address, and if you could please spell your name. If you are representing a group or an agency, if you could please provide that information as well, we would appreciate that.

If you have got a written version of your oral testimony, please provide it to the court reporter. That will help her out a little bit. And we will get a copy from her. But whether or not you have provided a written copy, your remarks will be recorded as you provided them to us. If after you have provided verbal testimony you wish to submit written comments at a later date up until August 8, we would be pleased to get them. This is not your only opportunity to provide us comments.

I mentioned -- for those of you who are here tonight to listen to other people's comments and you still haven't formed your own, please know that there is opportunity until August 8 for you to submit comments to me. And my name and address are in the front of the environmental impact statement. And I'll have that up front here at the end of the hearing, if you would like that. And Kim has it in the back of the room. She can provide that information to you as well.

Any comments received after August 8th will likely not be part of the public record. We need to obtain comments by August 8 in order to complete this project, which is scheduled for publication -- final EIS is scheduled for publication in mid September. We need -- we will have a 30-day wait period after that final EIS is published, and a record of decision will be made by late

October. The Trustee Council will then make a decision one way or another as to whether to go forward with a funding recommendation for the project.

So, our plan tonight -- one other thing. If you wish to receive a copy of the transcript of this hearing or the Anchorage hearing, contact Mary after the hearing is over and she can make arrangements for you to purchase a copy. We are planning to proceed until 10 o'clock, take a brief break, probably ten minutes or so, and then we will reconvene after that time if we need to, if more comments need to be heard.

And as I said, the project team will be around as long as you wish to discuss the project and your comments on the EIS and as long as they let us stay here.

So with that lengthy introduction, the first person on my list is Stu Clark.

MR. CLARK: Hi. I'm Stu Clark. I live at 1129 Park Place in Seward. And my first visit to Seward was in 1984, and I've seen a lot of changes happen. And this looks like a big one. I'm very pleased that the political process has been successful. We have got funds from EVOS, and I think it's important for all of us to pull together and have a successful construction project.

I discovered this evening that a lot of my concerns have been alleviated because apparently there are a lot of

consultants that you people are working with in developing the design, and that relieves me considerably because, as a former project manager, it always seemed to me that the most successful projects had periodic design reviews by qualified people not connected with the project because I think there are a lot of questions being raised that are what if questions.

And I am a little concerned that a lot of the what if questions have not been addressed in this statement. One of the other concerns I have is that it's very difficult for the average member of the public to understand what this statement is trying to do. And one of the things that concerns me is that we have public comments right up front, but no response to each comment. And I would hope that the formal impact statement would address comments from the public as you summarize them. PH-1

I think that's great that you have summarized these comments, but I think they should be addressed directly and not have them scattered through the book because, as I say, it's very difficult to get at them.

The concern that I have that I'm going to address this evening mainly is the socioeconomic concern. And that's the big what if. There have been some assumptions made on visitor volume that I think have assumed a current rate of visitation to Seward, and PH-2

perhaps even an increasing rate. There have been questions raised recently in the press about general tourist traffic to Alaska, whether it will continue at its present rate, number one, and number two, whether it will increase. PH-2

And this facility appears to be depending upon the continuation of the present rate of tourism to Alaska. That means that one of the what ifs, if this doesn't continue, how is the facility going to continue to operate? Who is underwriting the operation of this facility? Seward is a community of less than 3,000. If Seward is left holding the bag, that's bad news. Who owns this facility? Who underwrites it? PH-3

State and federal funds are continuing to be cut, unfortunately, for facilities of this nature. And I don't think that any planning for this facility should assume continuing levels, much less -- much less continuing levels, probably reduced levels of funding for research, among other things.

I don't want to drag this on too long, but please get some contrary opinions in and listen carefully before you proceed too far. The schedule you have outlined here is quite precipitous. And if you proceed on that schedule as you plan, I'm afraid you might overlook some concerns that many people have addressed in Seward to

me and in the newspapers previously. Thank you.

MS. SWANTON: Thank you. Rick Smeriglio. I didn't get that name right, did I?

MR. SMERIGLIO: You got it close enough. I thought I was farther down the list, too.

MS. SWANTON: I have one maybe in between. Carol. Will you have some comments?

MS. OSWOLD: Uh-huh.

MR. SMERIGLIO: My last name is spelled S-M-E-R-I-G-L-I-O. And I have to admit I've only gone through the executive summary. I haven't had time to wade through the bigger part of this. But in the executive summary, the one thing that really leaped out at me was the bold assertion that the education or the research part of this, what I consider to be the meat of this, wouldn't be viable without the tourism part. And I see no data to back that up.

And I question that and I would certainly like to see in the final form of the EIS some backing that demonstrates why we have to have tourist facilities and an increase in tourism, et cetera, et cetera, to support what I consider to be the very important part, the research part of this facility. And I just -- I don't understand that. PH-4

Another thing that leaped out at me in the fine PH-5

print of one of the tables was the -- in the socioeconomic impacts, the elementary school being at or near capacity, it seems almost certain to me that the taxpayers will be left holding the bag on this one, too, as Stu alluded to. And I'm wondering if in the socioeconomic analysis you have calculated in what you say is going to be a net plus effect for the economy, just how you are going to handle the part of who builds the elementary school. And I understand that the electrical -- you will pay for your own electricity and all the other services, but I really question that part about the schools.

And I do have to agree with Stu that all of this is predicated on more and more tourists pretty much ad infinitum into the future to support this new facility. And I certainly have to question that. There is no back up to say that what happens if it levels off or what happens if the tourists just stop coming, if there is some other problem. PH-6

And to end my little speech, I'd like to say that the real tourist attraction around here is Resurrection Bay and Kenai Fjords National Park. And I think that every dollar that's spent on something like this that doesn't restore Kenai Fjords National Park or Resurrection Bay is a dollar not well spent. And I realize that the momentum exists to build this facility and it almost PH-7

certainly will get built -- and I'm not here to argue against that -- but I would like to just offer the opinion that I don't think these dollars are restoring or rehabilitating anything. They are stimulating the local economy, and most people consider that good, but so long as there are corporate claimants on Kenai Fjords National Park, and so long as development proceeds at a rapid pace unabated on Resurrection Bay, I don't think the resource is whole and I don't think the resources that the public lost owing to the oil spill are in any way restored.

That's my opinion. And I thank you for listening.

MS. SWANTON: Thank you. Carol Griswold.

MS. GRISWOLD: Carol Griswold, G-R-I-S-W-O-L-D. I live at 412 First, Seward. I'd just like to bring up a concern now that I've seen your latest maps of what's happening. And probably in the big view it's pretty minor, but we have a real important bike path that goes right below the park. It says existing park, also called Ladies' Park. And what I'm seeing is a traffic flow problem where we have these vehicles in and out -- Uh-huh. And right now there is a little driveway that goes into the campground. And it's not any big deal. Roller bladers, bikers, strollers, skateboards, they wait for the occasional traffic to go. But now I see a major traffic problem. PH-8

I'd like to recommend that instead you route it -- on the map you see gravel beach. If you could rebuild our bike path so perhaps it could end in what is now the ferry terminal and in that grassy landscaped area and follow the beach and hook up to Wellington Pavilion, which is just to the right side of your map. The parking lot abuts the hill, which is a real favorite place for everybody, and Wellington Pavilion. So if the bike path could be rerouted along beach there, hook up to where it exists at Wellington Pavilion and then continue, I think it would be a big improvement for the flow of the local people and the visitors alike.

The other thing I'd like you to consider is the impact on the campground that will now be replaced by parking lot. I haven't had a chance to read if you addressed that. But that whole parking area right now -- not the whole -- where the RVs are parking and -- well, pretty much three quarters of it, I would say, is right now a part of the green belt campground which seems to be diminishing. And I'd like to know what's going to happen to the displaced vehicles who like to park there. PH-9

The other thing I haven't had a chance to read but I hope you have addressed, the three Rs -- reduce, reuse, recycle -- in all aspects of this facility from building it to -- I'm glad to see your statement was PH-10

printed on recycled paper. That was really nice. But I hope you continue to consider that through all phases of this project and afterwards. Thank you.

MS. SWANTON: Thank you. Dave Calvert (ph). Are you wanting to testify?

MR. CALVERT: I just signed it. I didn't sign to speak.

MS. SWANTON: There is a Y-E-S after your name. But that's okay. Somebody else wrote that in. Patricia Williams.

MS. WILLIAMS: I'm going to reserve my comments to writing later on.

MS. SWANTON: All right. Very good. Thank you. Would anyone else who has not indicated on these sheets that they wish to provide comments, would you wish to provide comments now? Well -- yes.

MR. CLARK: In the interests of keeping my remarks short before, I didn't bring up one thought I had or one question I had, I should say: You addressed Alternative I, which is the proposal we all see before us; Alternative II, which is to build only the research and educational portion of the facility; and then the Alternative III was not to do anything. I'd like to PH-11 propose Alterative IIA. Alternative IIA would be to improve the IMS infrastructure by using the existing lands

of IMS and by building whatever facilities are needed for research on those lands, and to, if necessary, reserve part of the funding as an endowment for operating. Thank you.

MS. SWANTON: Thank you. Does anyone else have comments they wish to make? With that, I will close the formal public hearing. And we will stick around, and if you would like to have some more informal conversation, we would be happy to do that. Thank you all.

(Proceedings adjourned at 8:35 p.m.)

REPORTER'S CERTIFICATE

I, MARY A. VAVRIK, RPR, hereby certify:

That I am a Registered Professional Reporter for Alaska Stenotype Reporters and Notary Public for the State of Alaska; that the foregoing proceedings were written by me in computerized machine shorthand and thereafter transcribed under my direction; that the transcript constitutes a full, true and correct record of said proceedings taken on the date and time indicated therein;

Further, that I am a disinterested person to said action.

IN WITNESS WHEREOF, I have hereunto subscribed my hand and affixed my official seal this 29th day of July, 1994.

MARY A. VAVRIK,
Registered Professional Reporter

My Commission Expires: November 5, 1996

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF ALASKA
MARY A. VAVRIK
COMM. EXP. 11-5-96

U.S. DEPARTMENT OF THE INTERIOR

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

EXECUTIVE SUMMARY ENVIRONMENTAL IMPACT STATEMENT

PROPOSED IMS INFRASTRUCTURE IMPROVEMENT PROJECT

Seward, Alaska

Public Hearing

July 28, 1994

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Anchorage, AK 99501

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Department of the Interior

Darryl Schaefermeyer
Seward Association for the Advancement of Marine Science

P R O C E E D I N G S

MS. SWANTON: We will commence this public hearing. I'm pleased that some of you are able to come out tonight and to sacrifice this beautiful sunny evening to come and hear Debra talk about the design of the project and to talk with us. There seem to be more project team members here than public members at this point, but we are really glad that you came. And of course, there will be other opportunities to exchange information.

I'm sure you got the names of the people that you are most interested in talking to and hopefully their phone numbers and business cards. And you can call if you need to or to get the information you need or convey the information you need.

As you know, I'm Nancy Swanton. I'm the department's project manager on this environmental impact statement for the proposed infrastructure improvements to the Institute of Marine Science in Seward. Other hearing panel members this evening are Kim Sundberg from the Alaska Department of Fish & Game; Ken Havran from the Office of Environmental Policy and Compliance in Washington, D.C., the Department of Interior; and Barry Roth from our Solicitor's Office in Washington, D.C.

The purpose of the hearing is to hear your views and

comments and suggestions relating to the draft environmental impact statement on the project I just mentioned. The document was prepared by the Department of the Interior as the lead federal agency on behalf of the trustee -- Exxon Valdez Trustee Council and in accordance with federal laws, including the National Environmental Policy Act.

As you know, Dames & Moore is the contractor responsible for writing the environmental impact statement. Maureen Simms over to my right is the lead coordinator on the project. And as you have all met earlier this evening, project members who contributed to the EIS as well.

The Trustee Council is proposing to improve the existing infrastructure at the University of Alaska IMS, Institute of Marine Science in Seward as a way to enhance the Council's capabilities to study the long term effects of the ecosystem and animals in it injured by the Exxon Valdez oil spill. The improvements are meant to help focus and carry out long term research and monitoring as a part of an overall restoration plan for the spill area.

The project as proposed and as was described to you earlier tonight is adjacent to the existing IMS in Seward. Exxon Valdez oil spill monies are being considered for use in funding the research and wildlife

rehabilitation component of the project. The second component, the education and visitation component, would be funded with private donations, and a fund raising effort is under way by Seward Association for the Advancement of Marine Science for that.

We do have one SAAMS board member in the audience, Bill Noll, back there, and you did meet Darryl Schaefermeyer, who is the executive director of SAAMS.

Again, this hearing is meant to provide opportunity to receive comments and suggestions about the draft environmental impact statement. We also are accepting written comments until August 8. And if you would like to fax those comments to me, my fax number is 271-6507. It was stated incorrectly in the federal register, so you may want to have that number if you prefer faxing comments. My address is in the draft environmental impact statement, so you can also send me by mail your comments.

Okay. With that, just to remind you that the purpose of the hearing is for us to receive information on the draft EIS and not to exchange views at this point. That's why we had this lengthy opportunity for exchange from five until eight tonight. We are not here right now to answer questions about policy or specific information. But we will be glad to stick around after the hearing is over to talk more with you. Okay.

If anybody has walked in the door since I have begun, please sign-in on the sheets at the back of the room. And if you wish to present some comments on the draft EIS, let me know. Just give me the high sign. I know Carl Hild here is interested. And as I understand it, he's the only one interested right now in presenting some verbal comments. So if anyone else is after Carl, just let me know and we will --

MS. SIMMS: I think Mr. Pendleton also signed in.

MS. SWANTON: Ken, are you interested --

MR. PENDLETON: No, I don't think so.

MS. SWANTON: Please give your name. We have a court reporter here who is taking down all the information verbatim, so that will be part of our official public record. Please provide your name and spell your last name, if you would, please. If you are representing a group, please provide that information to us as well. If you prepared a written copy of your testimony -- and I've already received your letter, Carl, so I know you have -- I appreciate receiving a copy of it. Okay. So, with that, I think we can begin. If you are interested in obtaining copies of the transcript of this hearing or the hearing that we had in Seward two nights ago, you can contact Mary Vavrik here, and she will help you to get

that information.

Carl, would you be interested in sharing your information with us.

MR. HILD: Sure. My name is Carl Hild. Last name is H-I-L-D. I work for the Rural Alaska Community Action Program, commonly referred to as RuralCAP, in their subsistence department. I work as a marine mammal biologist. And I'm not here, I don't think, officially representing them, but as part of my job I certainly have a tremendous interest in marine mammals. And when I learned of this facility, I was quite interested in seeing how it was going to be developed.

I did comment on three items in a written letter on the EIS. I'd like to just go over those. I did get some clarity tonight, so that will help on one of the questions. That one was in regard to the fresh water supply. I had suggested that perhaps community of Seward should be approached in regards to the utility on how much it would cost to supply that 200 gallons per minute of fresh water. However, that's chlorinated water, not fresh well water, which is what is needed, or spring water.

I still do have a serious concern if -- as is in the environmental impact statement, it sounds as if a single well is to be drilled and supplying the 200 gallons per minute needed for the life support for fresh water

PH-12

research. I would recommend -- and Kim had mentioned to me the possibility that they may be drilling more than one well; so if there were multiple wells and there was some failure, the possibility that they would still have enough water to do their research. Also it was mentioned to me tonight that there may be a filtration system so the water can be recycled within the facility. I'd be real interested in learning more about that particular system and also what its capacities are in regards to the length of time that that water could be recycled and still maintain the experiments that are going on.

That was my first concern was just the volume of fresh water quality and quantity that would be available to the facility.

The second concern was in regards to the area of habitat. And I understand that the research design as it's going on right now is looking at the Department of Agriculture's minimum standards for such habitat. I would hope that in looking at these designs consideration is taken that if this is to be a rehabilitation facility, that these animals be given enough room to get the adequate exercise for rerelease into the wild.

I think this is particularly the case and it's one of the reasons why I asked several questions tonight about the bird screen. How much space will be available for

PH-13

these birds really to get the exercise? I would anticipate they would -- may need a larger aviary to allow these animals to go for longer flights in order to build up that strength, and was wondering if this type of facility would be available on the adjacent property or at some other location because it appears that this area may not be large enough for some of the larger birds to get the kind of exercise they need.

Likewise, when you get into the sea lions and seals, that they perhaps may also need a large corral within Resurrection Bay to allow them to get additional exercise before they are finally rereleased into the wild or halfway house type program for them, that these facilities here may be too small for them getting the adequate exercise.

The other issue is the animals who cannot be rereleased for some reason or another, they are injured to the point where it is not anticipated they could go back to the wild, that they have enough space to maintain good body condition while they are there on display for the public's education, but also if they are going to be used for any additional research, that they want to be kept in the best possible condition. So that would be my second concern, just generally the size of the habitat areas for these animals and that they have enough room for

appropriate exercise to keep the body strength and condition.

The final comment is one that is a general comment that I made at the scoping meeting as well as in my letter, and that is the involvement of local experts in the design of this facility. I would certainly hope that the people who are working on these habitat areas would contact local Native people throughout Prince William Sound in regards to various aspects of the designs of the habitats, looking particularly at the subtleties that the Native people may be aware of, that certain species prefer particular types of rock or outcrop areas, orientations. I learned tonight that these have been designed to face to the south so that they don't get a lot of moisture buildup as far as mosses and molds, that the walls are high enough to keep the wind from blowing across the areas.

And I'm glad to hear this, but I certainly would think that the Native community throughout Prince William Sound would be very interested in at least looking at these diagrams and perhaps making additional comment on the designs as they get more finalized and more detailed. PH-14

I think, once again, if you are going to keep animals in a captive setting and if you want to be able to rerelease them in as healthy condition as possible, you want them in a habitat that's going to maximize their

health status. And to do that, I think you need to draw on all your possible experts.

And I know you have gleaned a great deal from the scientific community, but I think there is a lot of knowledge within the Native community that you need to touch base with as well.

I've given a couple of names of contact people to be able to access that information tonight. So I hope those are used.

And with that, those three items, I'll close my comments. Thank you very much.

MS. SWANTON: Thank you. Does anyone else wish to provide information tonight? Bill?

MR. NOLL: Maybe not so much information, but on behalf of the board at SAAMS, simply to say thank you. I make clear to visitors from the Department of Interior particularly who are not here all the time -- SAAMS as a board, when we were confronted with the prospects of doing an environmental impact statement, welcomed it, in fact, and in fact have learned, I think, a lot. The project has no doubt benefited by the process that has been shepherded by Nancy, and tremendous input from the Alaska State Department of Fish and Game as well. We have learned -- and the comments that Carl just made, for example, and others who are concerned with

aspects such as parking and traffic patterns, we have learned a lot, I think, about the benefits of the project, which have been many.

So with that, from the board I would extend our thanks to the department for the expense, time and interest that you have shown in the project, and as well as the State Department of Fish and Game.

MS. SWANTON: Thank you. We know all of the -- those who actually contributed to the writings in the document, the EIS and coordination, able coordination through Dames & Moore.

MR. NOLL: And I am Bill Noll, N-O-L-L, Madam Recorder, member of the board.

MS. SWANTON: Very good. If we have no more testimony tonight on the draft environmental impact statement, I will conclude the hearing at this point. And thank you all for coming tonight.

(Proceedings adjourned at 8:25 p.m.)

REPORTER'S CERTIFICATE

I, MARY A. VAVRIK, RPR, hereby certify:

That I am a Registered Professional Reporter for Alaska Stenotype Reporters Reporters and Notary Public for the State of Alaska; that the foregoing proceedings were written by me in computerized machine shorthand and thereafter transcribed under my direction; that the transcript constitutes a full, true and correct record of said proceedings taken on the date and time indicated therein;

Further, that I am a disinterested person to said action.

IN WITNESS WHEREOF, I have hereunto subscribed my hand and affixed my official seal this 29th day of July, 1994.

MARY A. VAVRIK,

Registered Professional Reporter

My Commission Expires: November 5, 1996

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PUBLIC HEARING RESPONSES

Public Hearing - Seward:

Response PH-1

Chapter 5 of the Final EIS presents public and agency comments, comment responses, and references to the appropriate text location of edits and revisions made to the document.

Response PH-2

Section 2.2.5 (page 2-35) and Appendix C describe the results of visitation projections analysis. Please refer to comment response G-6 for more information.

Response PH-3

This EIS assumes that the operator of the proposed facility, a non-profit Board of Directors (SAAMS), would have responsibility for the operation and maintenance of the proposed facility, including all related budgetary matters (see comment response FA-10).

Response PH-4

Revenue from admissions, memberships, and retail sales are projected to generate $3,317,986 in annual income to offset annual expenses, or 86 percent of the potential revenue available. Please refer to comment response G-10 for more information.

Response PH-5

Potential effects on school enrollment would hinge on how many school age students move to Seward as a result of the proposed project construction and/or operation. A capacity problem may result at the elementary school, however this could occur regardless of the proposed project.

Please refer to Section 4.2.10 for a discussion of the potential effects of the proposed project on community infrastructure and service characteristics.

Response PH-6

Please refer to comment response G-6 for a discussion of visitation assumptions made for the proposed project.

Response PH-7

Comments received about project funding have been directed to the EVOS Trustee Council for consideration. A Draft Fiscal Year 1995 Work Plan currently is available for public review and comment. Please refer to comment response G-11 for a discussion regarding project funding.

Response PH-8

The bike path, in its current location, crosses the project site. This route would be maintained and allowed to continue through the project site to existing UAF IMS property (see Figure 2-4). When crossing the two driveways into the proposed visitor parking lot, bollards, signs, and pavement changes would mark the crossings. The west end of the path would cross the proposed public plaza, which is a hard surface. A 15-foot sidewalk would extend through the project site in front of the proposed building.

Movement of the bike path along the beach to terminate at the Municipal Dock would infringe on space required for the visitor parking lot.

Response PH-9

Sections 4.2.11 (page 4-47) and 4.5.11 (page 4-87) provide information on the potential consequences of displacement of up to 3/4 of the Iditarod Campground by project related parking.

Response PH-10

Text revisions on page 2-51 indicate that SAAMS would implement the "three Rs" -- reduce, reuse, recycle -- in all aspects of the proposed project.

Response PH-11

Section 1.5.5 addresses the potential use of UAF IMS property for the proposed project. Although the UAF fully supports the proposed project, it is unlikely that the University would support a request to utilize the remainder of its property for the proposed project (see Appendix A for correspondence). This opinion is based on the long-range master plan for the IMS Seward Marine Center, which includes potential expansion of existing IMS facilities.

Public Hearing - Anchorage:

Response PH-12

Section 2.2.4 (page 2-27) has been revised to provide additional information on the location, quality, and quantity of potential freshwater sources for fish genetics studies. Also refer to comment response G-3 for additional information.

Response PH-13

The wildlife habitat would provide areas for marine mammals and birds to exercise and would be an appropriate rehabilitation space for the transition of recovering marine birds and mammals. Please refer to comment responses G-2 and G-9 for additional information about the wildlife habitat area and wildlife rehabilitation goals.

Response PH-14

The goal of establishing project design work groups was to gain useful information from a broad base, capable of addressing local concerns as well as state-wide interests. Comment response G-1 provides information regarding the importance of local input for the project design and work program.

INDIVIDUALS

Kevin Walker
Mr. and Mrs. James Denison
K. Baxter
Richard Houghton
Diana Rigg
Katherine West
Timothy Sczawinski
Mark Luttrell
Stu Clark
Carol Chaudiere Clark
Bernard C. Hulm
Jerry Dixon
Raymond and Wanita Williamson
Richard A. Link
Nancy Bird and Karl Becker

KEVIN WALKER

PO Box 1911
Seward, AK 99664
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June 22, 1994

Ms. Nancy Swanton, EIS Project Manager
U. S. Department of the Interior
949 East 36th Avenue, Room 603
Anchorage, AK 99508-4302

Dear Ms. Swanton:

I received the Draft of the EIS for the Proposed IMS Infrastructure Improvement Project and was surprised that I was able to review it in less than 30 minutes!

If Alternative II (Research and Wildlife Rehabilitation Component only) is adopted, the EIS should address where future operating funds would come from. A goal of the education and visitation component is to create income for the operation of the research and rehabilitation component. I-1

On page II of the draft, a concern was mentioned for lack of housing for short-term construction workers. Seward is full of unemployed or underemployed construction workers, who all ready live here. ***These people would like to see some mention about local hire.*** As Sewardites drive to Anchorage we see the construction camp at milepost 50 on the Seward highway, if necessary a similar camp could be created in the Seward vicinity for IMS construction workers. I-2

The draft EIS which I reviewed did not include a bibliography of references and technical papers included as part of the EIS. I would appreciate a copy of this bibliography sent to the above address.

Thank you,
Kevin Walker
Kevin Walker

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MMS-Alaska OCS
Region
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Mr. & Mrs.
MR. JAMES L. DENISON
8931 E. 11TH ST.
LONG BEACH, CA 90815-1530

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JUL 5 1994
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USA 19

Teach Respect for the Earth and All Living Creatures
Boycott Alaska!
Boycott Norway.

Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement Project
U.S. Department of the Interior
949 E. 36th Ave. Room 603
Anchorage, Ak 99508-4302

June 28, 1994

Dear Ms. Swanton -

We believe there is a definite need for a rehabilitation center in Alaska. It could also be used as an education center, however we would like to see A separate and distinct center + a center that includes both a rehabilitation center + a public education + visitor area, but on a much smaller scale. The education center should be large enough to accommodate classes of individuals and the rehabilitation process but not emphasize these creatures. The only animals confined should be rescued animals - those held only until they can (if possible) be returned to their natural habitat.

Sincerely,
Mr. & Mrs. J. Denison

I-3

K. Baxter
P.O. Box 243660
Anchorage, Alaska 99524

Ms. Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement Project
U.S. DOI
949 East 36th Ave, Room 603
Anchorage, AK 99508-4302

Dear Ms. Swanton,

28 July '94

This letter is in response to the draft EIS prepared to evaluate the proposed IMS facility in Seward. While I believe that your analysis captures most of the potential impacts that may result from the new IMS facility, I am concerned about your analysis of the socio-economic aspects and with the gloss-over of impacts caused by acquiring a research vessel that will belong to the facility. The DEIS states that a vessel may be acquired, and I know that there have been lengthy discussions and campaigns to ensure that a vessel and submersible are acquired. Given that it there is a strong likelihood that such a vessel would be acquired, it seems appropriate to discuss the effects. The analysis of effects should consider that the acquisition of such a vessel will be in direct competition with boat operators in south-central Alaska. There are several vessels that regularly compete for contracts to take agency scientists into PWS or the AK Peninsula and even the Aluetians to do their research. A vessel owned by IMS would be in direct competition with these small businesses and would have adverse economic effects. I assume that the specifications of the desired vessel are not immediately available in Seward, however, it is also reasonable to assume that there are vessel operators willing to acquire or modify vessels to meet the need - it would be in their benefit to do so. To summarize this point, your analysis should show the effects of acquiring or not acquiring (which would show additional economic effects that you have overlooked) a research vessel as IMS property. I-4

Similarly, there is another economic impact that will be caused by the expanded facility to other research institutes such as Prince William Sound Research Center or the Auke Bay laboratory that must compete for Oil Spill funded projects or NFS contracts. The analysis fails to discuss the potential impact to the other research facilities, and their communities, that regularly conduct research in Alaska. I-5

Thank you for the opportunity to comment. I do not wish to be placed on a mailing list, I will have access to a final document through other sources and am anxious to see a more complete analysis.

Sincerely,

K. Baxter

Richard C. Houghton
Box 3506
Seward, Alaska 99664

July 29, 1994

Dear Ms. Swanton,

I wish to give you written comments regarding the EIS for the IMS Infrastructure Improvement Project.

There is some concern that the project will negatively impact upon the local schools through an increase in numbers. As a local teacher, and parent of elementary school students, this impact should be considered as a positive impact. The Kenai Peninsula Borough School District seeks to maintain a certain pupil-teacher ratio. An increase in pupils would lead to further employment opportunities for elementary teaching staff and a more diverse talent bank within the elementary school. Further, the additional professionals which would be employed by the Sealife Center would greatly enhance the local educational system through visitation to classrooms and a heightened cultural awareness. I-6 I-7

The addition of the Sealife Center would have a great positive affect on the local school population through opportunities for students to serve as docents and volunteers. In addition, we currently have a software project which authors computer software for visitors to the National Park Service, National Forest Service, Chamber of Commerce, Institute of Marine Science, and our local museum. The addition of the Sealife center would allow our students another avenue for software development.

The educational system here in Seward was definitely impacted by the Exxon Valdez oil spill. We had many students gone for several weeks during the cleanup efforts, drawn by the offer of large sums of money. The construction of the Sealife Center will at least partially compensate our educational system for the disruption caused by the oil spill cleanup efforts.

The option of building the Sealife center without the educational component will be nothing more than an increase in what currently exists. It is often hard to schedule visits around visiting researchers due to their schedules. Without the interpretation and public educational component of the facility, the information gained will go no further than the educational community.

More research will not stop future negative environmental impacts from happening. When society wants something changed it often turns to the educational community. Once again, only through public education will we change attitudes and behaviors and help to prevent the next Exxon Valdez oil spill through reduced consumption of petroleum, recycling, and

reusing our natural resources. This can only be accomplished through education. It will not be accomplished through research alone.

As a member of the education work group and a member of the national faculty for the Challenger Center. I can tell you that we have many exciting things planned for this facility. It has the potential to truly be a world class facility in both the research and educational fields.

Sincerely,

Richard C. Houghton

July 22, 1994

Re: USDI, Exxon Valdez Oil Spill Trustee Council
Draft Environmental Impact Statement
Proposed IMS Infrastructure Improvement Project
Seward, Alaska
June 1994

Ms. Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement Project
USDI
949 East 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

Dear Ms. Swanton:

First let me point out that I am not necessarily opposed to the proposed project - I have, however, grave reservations for the quality and depth of the Draft EIS. If the treatment of Section 106 of the National Historic Preservation Act is indicative of the treatment of other impact categories, the DEIS is woefully inadequate.

Page 1-22, Cultural and Historic Resources: The second sentence is not true at all. Neither cultural resources nor the proposed mitigation can be said to have been evaluated without the consultation of the State Historic Preservation Office (SHPO). It is SHPO who aids in these determinations and the process results in mitigation proposals and, where necessary, a Memorandum of Agreement. I-8

Page 2-6, Section 2.2.2: The correspondence to which the DEIS refers is lacking in the Appendix. Also, Appendix A appears only to contain a few letters from Federal agencies, completely ignoring State agencies. Where are the pertinent letters? I-9

Page 2-42, Cultural and Historic: The proposed mitigation to which the DEIS refers may or may not be acceptable to the SHPO. Landscaping and fencing could, indeed, be adverse impacts under Section 106 of the National Historic Preservation Act. I-10

Page 2-44, NPDES: I believe that the NPDES Stormwater Pollution Prevention Plan for construction activities in Alaska is required and not a "potential mitigation...". I-11

Page 2-48, 2.6.8: It is unknown whether or not there is an effect because Section 106 consultation is not complete. There may be No Effect, No Adverse Effect or Adverse Effect as a result of consultation under Section 106. I-12

Page 2-53, Table 2-4, Archaeological and Historical: In the first place this is changed terminology - is it "Cultural and Historic", "Cultural and Historical", or "Archaeological and Historical"? In the second, the matrix is invalid because Section 106 has not been completed. I-13

Page 2-56, Table 2-5, Cultural and Historical: See comment above concerning consistency. Once again the matrix is invalid because Section 106 has not been completed.

Page 3-21, 3.8.1: It's a good thing the City of Seward has begun the process of developing their Historic Preservation Plan and convenient that so much information could be transferred from their document to the DEIS. However, the DEIS has consistently ignored the existence of historic resources that could be affected by the proposed project other than the Railroad Depot. Secondary impacts could result from development of the proposed project. The proposed project may well result in extreme visual impacts to the historic nature and qualities of Fourth Avenue. The DEIS needs to acknowledge this and record the Section 106 consultation process. I-14

Page 4-24 and 4-25, 4.2.8.2: This part of the DEIS implies that Section 106 will not be completed prior to the Record of Decision (ROD) being issued for the proposed project. I do not believe that ANY Federal agency can, under the law, issue an ROD prior to completion of the process. How can USDI abrogate it's responsibilities under Section 106 of the National Historic Preservation Act as is discussed on page 4-25? I do not believe that USDI can delegate this responsibility to "...the applicant or his agent (neither of which has been determined at this time)." I-15

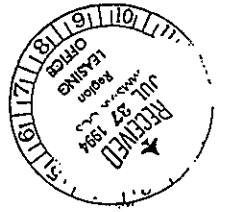
In summary, neither the list of agencies contacted nor the list of individuals indicate that the SHPO has been involved with the development of this DEIS. The DEIS refers to such contacts but their is no proof such has occurred. I-16

Please note the new address below my name for future correspondence.

Sincerely,

Diana Rigg

Diana Rigg
P.O. Box 221804
Anchorage, Alaska 99522-1804



cc: Judith Bittner, SHPO
Tim Smith, Review and Compliance Archaeologist
Russel Sackett, Architectural Historian

RECEIVED
JUL 08 1994
EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL

Draft EIS - DOI - Exxon Valdez Oil Spill Trustee Council

Proposed IMS Infrastructure Improvement Project,
Seward Alaska

Proposed Institute of Marine Science Infrastructure Improvement Project

I support and recommend Alternative III - No Action

State revenues continue to spiral downward, and no clarification of maintenance and staffing costs that a research and wildlife rehabilitation, and public education-visitor facility would entail are known. The City of Seward would be unfavorably financially impacted, and the quality of life in the summer would deteriorate with the additional pollution from exhausts of fuel and waste discharged from the influx of many more cruise ships into Seward. Tour busses and private vehicular traffic would increase to an intolerable level within the city, stressing public facilities, and certainly ruin any pretense to the small-town ambience enjoyed by the year-round residents. I-17

If the proposed center is non-profit, revenues from utilities will not offset the cost of building and maintaining adequate utility service, and treatment and discharge of waste from the facility. Revenues from visitors would be expected to be minimal as most will be on tours where food and lodging expenses will have been included as part of their costs. I-18

These additional visitors can be expected to not only impact the City of Seward, but an already overburdened highway with summer traffic. Seventeen tour buses in a row, as mentioned in an Anchorage Daily News article, is apparently not unusual at present. I-19

The proposal says revenue from public education and visitation is to be used to help offset the operational costs of all the proposed improvements; yet also states that approximately $10 million is to be raised from private donors and fund raising efforts to finance the public education and visitation component of the project. The major private firms who might be expected to make donations are experiencing cutbacks in operations in Alaska, with the resulting effect of heavy competition for any remaining financial donations.

Without dedicated and perpetual funding for research, wildlife rehabilitation, visitor educational efforts, and basic facility maintenance, the center staff will expend most of their duties toward seeking adequate operating monies, thereby abrogating the goal of an effective research center. I-20

Keeping wildlife in captivity for research has already been proven controversial, expensive, and results questioned in such centers in the lower 48 states. Alaska, with its boom/bust economy, windfalls, and short-term bonanzas has built many facilities from such funds, but is consistently unable to sustain and maintain them as envisioned in their proposals.

Katherine West

Katherine N. West

3854 Helvetia Drive
Anchorage, Alaska 99508

Nancy Swanton
U.S. Dept. of the Interior
949 East 36th Ave.
Anchorage Alaska
99508-4302

July 3, 1994

Reguarding: Institute of Marine Science Infrastructure Improvement Project/
Seward Sealife Center

Dear Ms. Swanton-

I am writing you in hope of having this letter included in the comments section of the Environmental Impact Statement of the Proposed IMS Infrastructure Improvement Project, Seward, Alaska. I was unable to attend the public comment meeting in Seward and have been unable to contact you by phone.

My comments are centered on Chapter 3, part 8.2, of the Draft Environmental Impact Statement. This deals with Historic Resources. It is my opinion that this section, which is less than two pages long, is not telling the entire story.

If one looks at the map included in this section one can see that all historical resources have been conviently located outside of the proposed site boundaries. In section 3.8.3, Archeological Resources the potential archeological resources are dealt with in one sentence. "There are no known archeological (resources) sites on, or in the vicinity of, the proposed project.

While these statements are true, they are misleading. The real reason no subsurface historic or prehistoric resources are known within the proposed project boundaries is that there has never been an archeological survey of this site.

There is voluminous historical documentation, both photographic and written to indicate that there should be massive historical subsurface remains in this location. There could well be a prehistoric component as well. Because of time limitations (this letter needs to be in your hands by Aug. 8th) I can only give you a capsule history of the proposed site area. There are four sub-areas of prehistory and prehistory of the proposed construction area which should have been addressed but were not.

1-21

①

Prehistoric Period - There is one archeological rule of thumb which almost always holds true. When people find a good place to live they tend to settle there in successive waves. When the Seward "pioneers" arrived in 1903, it is very unlikely they were the first group of people to live there. The same reasons they found this to be a good location for there city applied in the past. Therefore it is very likely that in times before recorded history Alaska Natives had seasonal or even permanent villages at this same location. Indeed there was a remanent of this Native population living there when they arrived. A man named Lowell was residing within or near the proposed construction area with his Native wife for many years. It is not likely they were the first to live there. There is no known archeological information for this area because no one has ever looked.

Russian-American Period - As is well known the Russians built the ship Phoenix in Resurrection Bay 200 years ago this year. They maintained a trading post at the same site as the ship construction until the 1820s. On March 25, 1994 Dr. Richard Pierce and Dr. Lydia Black presented a lecture in Seward reguarding Russian activities in Resurrection Bay. While the Russian ship construction site and trading post have not been located to date, both of these experts on the subject indicated they believed site to be in or near the proposed IMS construction zone. Again no one has ever looked.

The Foundation of Present Seward: 1903
It is well known that the first historically documented settlers of Seward, the Lowells and the railroad builders under John Ballaine settled within the boundaries of the proposed IMS construction area. This is easily proven by examining early historic photos. Initially it was a tent camp, latter more permanent structures, including a dock were constructed within the boundaries of the IMS construction project. No known remains are recorded because no one has ever looked.

Early Seward: The area of proposed IMS construction was the center of activity in early Seward. The dock was the focus of the towns life. The railroads terminus was here. No archeological survey has been conducted to

②

determine whether any subsurface remains are within the proposed construction area.

It is not my intentions to delay or confuse the Seward Sealife Construction Project, however it is clear that the question of potential prehistoric and historic archeology has not been addressed in the Draft EIS. Because federal funding is involved and because of the Antiquities Act the government and builders are legally bound to address these problems to the best of their ability. In my opinion this has not been done in the Draft statement.

Because the proposed construct will require deep excavations in this area, and because there is a high degree of possibility the are subsurface remains it is imperative that qualified archeologists be present during construction. This needs to be incorporated into the plan. So far it has not. Because construction could be halted due to the discovery of archeological remains and lead to costly delays some degree of tasking should be considered prior to construction.

I personally am in favor of the construction of the Seward Sealife Center. However all projects need to proceed within the laws established by Congress. Because of this areas known historic activity and likely prehistoric activity it would clearly be illegal to proceed without a serious (more than two page) study of the impact on historic resources.

Sincerely,

Timothy M Scrawinski
Box 2885
Seward, Alaska
99664
224-7664

Copies to:
Tyler Jones, City Manager
Seward Historical Preservation Commission
Dr Richard Pierce, UAF
Dr. Lydia Black, UAF
State Historic Preservation Office / Stolc Museum
file

RECEIVED
AUG 8 1994
MMS
Region
LEASING
OFFICE

Ms . Nancy Stanton
EIS Project Manager
IMS Infrastructure Improvement Project
U.S. Department of the Interior
949 East 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

August 6, 1994

Dear Ms Stanton:

Hey! What happened here? The Proposed IMS Infrastructure Improvement Project EIS (PIMSIIPEIS) is 1 1/4 inches thick, 8 inches wide and 11 tall, so volume-wise, that's just less than a quart of liquid, say Jack Daniels which if consumed leaves one blurry, bleary and unfit to deal with details.

Is that what happened with your writers?

They left out some very important considerations regarding archaeology.

Here's what PIMSIIPEIS is missing and must be in the final:

- Serious subsurface testing needs to be done in the project area before you begin construction. I-22
- An archaeologist monitor must be present during any ground disturbance.

It is possible that during Seward's history, local builders brought in fill to the project area rather than digging subsurface. If that's true, it's very possible that evidence of three significant periods Seward's prehistory and history (prehistoric, Russian, early Anglo) may be sealed subsurface in the project area. We can't jeopardize that irreplaceable knowledge.

The PIMSIIPEIS says only: "There are no known archaeological sites on, or in the vicinity of, the proposed project". That inadequately addresses the breadth of possibilities. Your final EIS should elaborate on the need for subsurface excavation and monitoring. Be specific. Contact the State Historic Preservation Office (SHPO) for details.

I was only kidding about the Jack Daniels part. There is no evidence that the writers were actually drunk at the time. Really, just a joke.

Cheers,

Mark Luttrell

Box 511, Seward, Alaska 99664

DATE: 1 August 1994

TO: Seward Planning & Zoning Commission

FROM: Stirrat H. Clark (Stu)
1129 Park Place
Seward, Alaska

SUBJ: Land Use Plan Amendment, Rezoning, Conditional Use Permit and Variance Request by Seward Association for the Advancement of Marine Science (SAAMS) for the development of a Marine Research and Public Eductaion Facility on Seward Waterfront Tracts 2-6.

Public Hearing to be held 3 August 1994.

The following is what I propose to say at the public hearing:

I am Stu Clark, a resident of Seward at 1129 Park Place. I speak for myself as a private citizen and nobody else.

First, my compliments to Mr. Martin for putting together a well-organized and informative packet regarding this subject, and for his recommended conditions under the Conditional Use Permit.

My compliments also to Mr. Schaefermeyer, Project Administrator for SAAMS, for the comprehensiveness of his backup to the applications for a Conditional Use Permit and for a Zoning Code Variance.

I would like to incorporate into my remarks excerpts from three sources, copies of which are attached, and marked:

a. The first paragraph of the Letter to the Editor of the Seward Phoenix Log from Louis Nauman, published 7/26/94;
b. Two paragraphs from Craig Medred's column in the Anchorage Daily News, Outdoors Section F, pages 1 and 4; and
c. The fourth paragraph on the third page of Attachment #5 to SAAMS Application for CUP.

These gentlemen, in different words, and from different points of view, say one thing in common: the tourists are here, and more may be coming. They are also suggesting that we look ahead.

The Proposed IMS Infrastructure Improvement Project can have a potentially greater impact on downtown Seward than any other proposal brought before this Commission since the waterfront hotel proposed in the mid-80's. By the way, that would have been a taxable enterprise, I hope. The impacts I see are:

a. Loss of free public access to a major portion of its, the public's, southern waterfront property;
b. Change in character from a small seaport town with tourists to a small town focused on a large, mostly summertime, tourist attraction, with even larger variations in resident population during the year than it now has;
c. Greater concentration of tour buses and casual tourist vehicles downtown;
d. Increased sales tax revenue, but remember the costs associated with an increased population;
e. Loss of taxable land without compensation, unless the transfer does involve a fair market value payment by deed or lease, and includes a fair payment in lieu of taxes agreement (this is not a new idea, the Feds do this in many areas where they have a major impact).

Because of these impacts, it behooves all of us to review the proposal carefully. Great things can happen with a successful SAAMS, but let us not lose sight of what might happen with an unsuccessful SAAMS.

Several items in this project need scrutiny:

The name is Proposed IMS Infrastructure Improvement Project. The Draft Environmental Impact Statement has no member of IMS, nor UAF, listed as a participant in its preparation. That document and the ones before you treat the project ownership as being entirely separate from IMS. Why? If this is in fact supposed to be an improvement to IMS, why is IMS not more directly involved? If this is in fact supposed to be an improvement to IMS, why not add to the current research facility on existing IMS property? If IMS needs more land to accomplish those improvements, then it can be discussed with the City of Seward. I-23

If this is a successful project, most of us will be very happy. But what happens if it stumbles financially? Who is underwriting it? The Citizens of Seward! We know that this facilty, like the hospital, won't be allowed to go under, but are we going to have to repair the "fiscal leaks" each year? I-24

If this Commission elects to amend the Seward Land Use Plan for Seward Waterfront Tracts 5 and 6 from Park to Central Business District, are you not reacting to a current request rather then adhering to a long range plan for all of Seward, wherein you expect applicants to fit their desires to the community's long term needs, not vice versa? I-25

If this Commission elects to rezone Seward Waterfront Tracts 3, 4, 5, and 6 to Central Business District, are you not acknowledging that this is potentially taxable property and that its use by a non-profit organization deprives the citizens of a potential source of high tax revenue? I-26

If the Commission elects to amend and rezone, I plead that it include all 15 conditions on pages 8 and 9 of Mr. Martin's memo, which he has included in the draft of Resolution 94-17.

I fervently hope that this is a successful project, and that we will all work together towards that end.

Thank you.

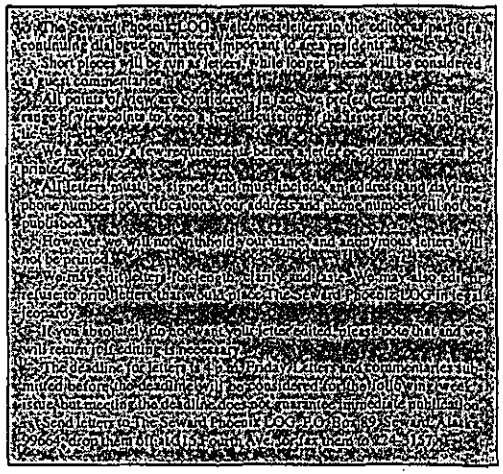
Stu Clark

Opinion

ave taxes alone d business will roll

The great constant in life is the fact hange. A glimpse in the mirror confirm this! Whether the indi- ial citizen likes it or not, Seward become a major resort town. This x all bad. The fishing industry is g rapidly. The 'blue sky' promis- ssociated with the highly vaunted system, the prison, the saw mill, ave fallen far short of the hype hoopla used to promote them. AMS enthusiasts take note, his- has a habit of repeating itself!) n the meantime, quietly and with uffery, private enterprise has pro- ed the area to the point that we er an embarrassment of riches days with regard to the summer on. We have more tourists than ns for them! Make no mistake it it, businesses such as Kenai ds Tours have had a much greater tive impact on this community most people seem to want to it. The smaller fishing charter nesses have real impact too! Add is the support efforts by the var- restaurants and shops. These ll family businesses have had a h greater positive impact than t of the grandiose schemes of the artists and assorted feather mer- ts to which this town is too often

Letters to the editor



prey.

Advertising and trade show appearances in the Lower 48 are expensive and time-consuming, but the companies involved in promoting this area assume these costs without whining, because they have a good handle on what it takes to promote their own businesses. In addition, the efforts related to finding funding for these businesses are beyond the experience of the average citizen. (Believe me, it ain't easy! For reasons beyond my comprehension, the big money comes from 'Outside. Apparently our local banks have problems with the larger cash requirement operations.)

Any effort by the local Chamber of Commerce pales into insignificance when compared to the advertising costs and managerial efforts of the tourism related businesses in this community. The Chamber can't even balance its budget!

As a result of the efforts and costs borne by the tourism business community, the sales tax revenue to this community has escalated year after year. Most of the costs for additional services for these tourists are more than covered by the increased billing to the businesses for utilities, etc. Any shortfall certainly is covered by the increased tax revenue.

Unfortunately, the city council fails to recognize these facts, in part because the city administration does not wish to underscore the fact that the tourists are already paying many of the costs of operation of the City of Seward. Let those who disagree provide the numbers! Let someone print in the Seward Phoenix LOG the sales tax revenues for the last 10 years, by the quarter.

There are many in this community who benefit from the efforts of the major players in this league. It is high time that this community begins to realize that the tourists bring very real money to this town and leave it here! We do not have to worship the tourists, but we should at least recognize their contribution to the economy. (Parenthetically, the benefit from the cruise ship traffic is minimal, though welcome, when compared to the number of passengers on each vessel. The cruise ships can, and will, move to any other port that suits their fancy. Let's not go overboard with new facilities for a very "iffy" situation.)

The tourists are not the enemy, nor are the businesses that cater to them. Let's not penalize the producers. My suggestion is to leave the taxation situation alone, put a proper damper on the city administration budget and stand back and watch the sales tax revenue roll in. It will, it has.

Louis Nauman
Seward

ATTACHMENT A

ANCHORAGE DAILY NEWS OUTDOORS SECTION F
SUNDAY 7/31/94

ATTACHMENT B

Save Kenai River for the masses

ON THE KENAI RIVER — All along this most famous of Alaska salmon streams, from Skilak Lake on downstream for tens of miles to Cook Inlet, a new environmental awareness is dawning.



CRAIG MEDRED

Where once property owners drove bulldozers into the river to steal gravel for their disappearing yards, there are now appearing boardwalks to protect riverside vegetation and piles of old spruce lashed to the riverbank to form underwater mazes of near ideal rearing habitat for the smolts of silver and king salmon.

Where once anglers denuded streambanks beneath the feet of their steady traffic to favorite salmon fishing holes, the banks are again growing green with

Please see Page F-4, MEDRED

MEDRED: Save Kenai for the masses

Continued from Page F-1

vegetation to provide the shade and shelter vital to the survival of immature silvers and kings.

The only question now is whether these changes will come fast enough and blossom broad enough to keep up with the swell of progress and people, for both are continuing to descend on this river like a wave breaking on the shore, and, like a wave, they are largely unstoppable.

Some, of course, would argue with that. There are people who wish the river could be returned to what it once was, who believe that somehow the tide of tourism can be turned back to the days of old.

They are at best naive. This river long ago lost its virginity. After that there is no going back.

The issue to be dealt with now is not how to get back the unpeopled river of old, but how to go forward intelligently with the river of the present. The job is to protect what has become a dream water for some anglers and an economic mainstay for the Kenai Peninsula.

MY EMPHASIS

Combat fishing might not be pretty to a few, but it seems perfectly acceptable to the masses.

Tourism is now the heart and the soul of the economy here, but don't take my word for it. Go see for yourself. The McDonald's, the Burger King, the Taco Bell, the Fred Meyer, and the rest of the swell of development that has turned downtown Soldotna from a sleepy roadside rest stop a decade ago into the booming community it is these days weren't built on commercial fishing, a business that has been frozen in place since the imposition of limited entry nearly 25 years ago, nor on the Peninsula's stagnating oil industry, nor timber, nor any other form of industrial or material production.

Love it or hate it, tourism has fueled the economy here. It brought the new jobs that gave young Alaskans the opportunity to work, and it holds the only real promise of jobs for more young Alaskans to come.

Certainly, they aren't going to find those opportunities in the commercial fishing industry where economic growth was long ago foreclosed. There are no new jobs there. It is unlikely there ever will be. Some limited entry fishing permits might change hands, all right, but there aren't going to be any new permits issued in the future.

The economic future is in the river, in those businesses catering to the people who come from hundreds or thousands of miles away to pursue the river's salmon.

Gubernatorial candidate Sam Cotten, comfortably attached to one of those limited commercial fishing permits, and other short-sighted politicians who talk about how the river's salmon shouldn't be reallocated away from the commercial fishery in Cook Inlet to the sport fishery in the river need to open their eyes to what is going on here.

Any day in July finds thousands of people lining the banks of the river or floating along it in boats in pursuit of salmon. All of them spend plenty of money to get geared up and get to the river. Others are paying guides serious money for the chance to fish

CONTINUED OVER

para. 4 on page 3 of Attachment #5
to Application for CUP by
SAAMS Project Administrator
Darryl Schaefermeyer

The general land use pattern in Seward is gradually changing to reflect the increase in tourism in the area and state-wide. The overall effect of the proposed action would be to enhance the tourist-based land use in the downtown area. The foot traffic and attendant tourist activity at the education component of the proposed project would spill into the downtown area, especially those properties bordering the IMS Seward Marine Center and southern Fourth Avenue. The attendant opportunities would increase pressure on the adjoining properties to renovate and upgrade to capture tourist dollars. This focus on the tourist trade is currently evolving in the downtown area at a modest pace. It mirrors the trend of development that is taking place at and near the city small boat harbor. The overall effect of the proposed facility would be to accelerate the rate of tourist development in the city.

ATTACHMENT C

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 2
To MAUREEN SIMMS	From LEIF
Co.	Co.
Dept.	Phone #
Fax # 562-1297	Fax #

DATE: 1 August 1994

TO: Seward Planning & Zoning Commission

RECEIVED
AUG 16 1994
DAMES & MOORE
ANC

FROM: Carol Chaudiere Clark
1129 Park Place
Seward, Alaska

SUBJ: Land Use Plan Amendment, Rezoning, Conditional Use Permit and Variance Request by Seward Association for the Advancement of Marine Science (SAAMS) for the development of a Marine Research and Public Eductaion Facility on Seward Waterfront Tracts Z-6.

Public Hearing to be held 3 August 1994.

The following is what I propose to say at the public hearing:

The Public, especially Seward residents, needs to retain the beach front for people's enjoyment, not parked cars.

The present plan asks Seward to transfer this southern bay view property to SAAMS for; at worst, unoccupied cars.

IMS is to be a participant in the SAAMS research and rehabilitation facility.

Since IMS owns enough property in Block 5A, it is an appropriate use for SAAMS required parking. I-27

Closing off Railroad Avenue between First and Third Avenues gives a much better flow of traffic for cars, buses and people.

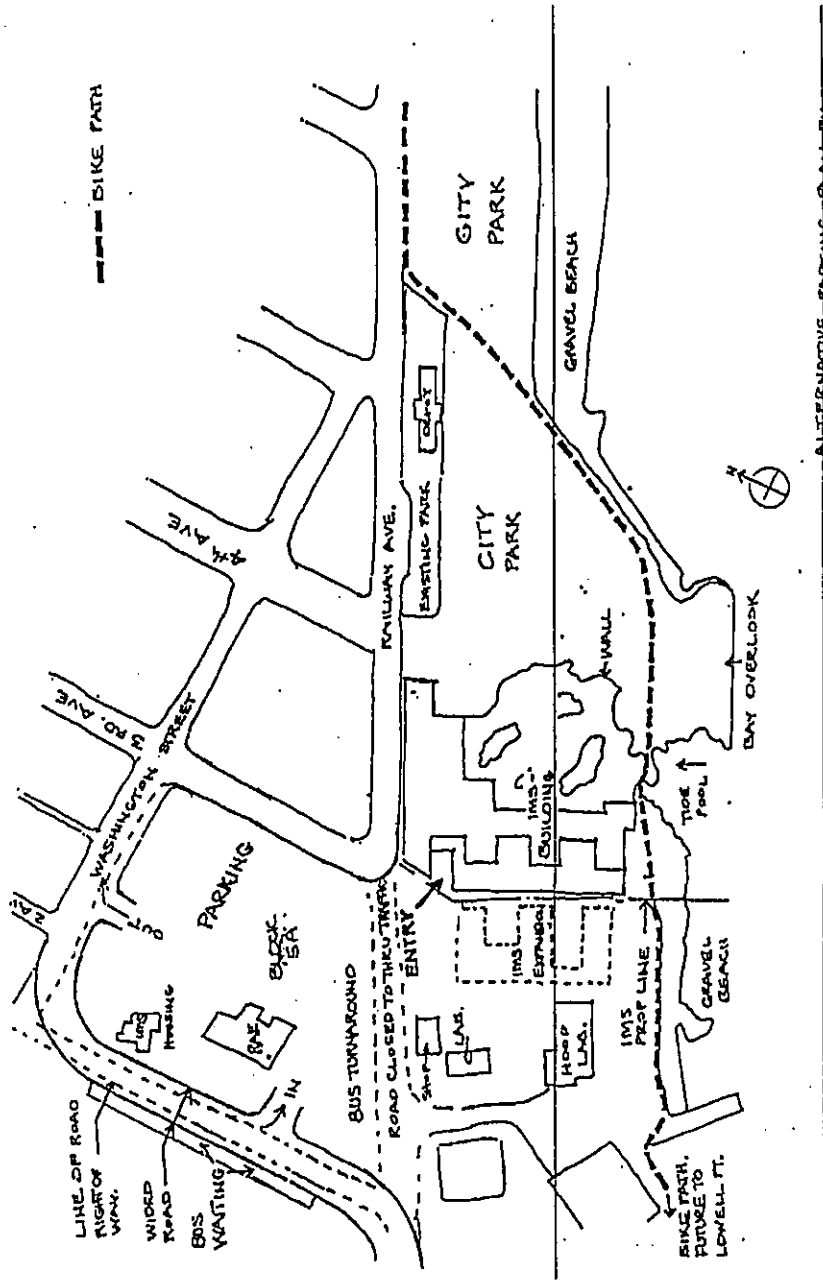
The existing Ladies Park should be blended into the design of the Plaza. I-28

Seward's bike path must be retained for an access to Lowell Point in the future. It should NOT have to fight the excessive new traffic and the pollution of cars and buses. I-29

Attached is a layout of these ideas.

Thank you.

C Chaudiere Clark
Carol Chaudiere Clark



ALTERNATIVE PARKING PLAN BY CAROL CHAUDIERE CLARK
IMS IMPROVEMENT PROJECT
SEWARD AK.

1. ELIMINATES BEACH FRONT USED FOR PARKING
2. USE EXISTING IMS PROPERTY FOR PARKING
3. IMPROVES BUS AND CAR DROP OFF.
4. WAITING BUSSES OUT OF CONGESTED AREA.

Mr. Bernard C. Hulm
317 Sixth Avenue
P. O. Box 1405
Seward, Alaska
99664 - 1405



Nancy Swanton, EIS Project Manager
IMS Infrastructure Improvement
Project
U.S. Department of the Interior
949 East 36th Avenue, Room 603
Anchorage, Alaska 99508 - 4302

22

July 5, 1994

Dear Project Manager Swanton:

This post card transmittal will advise you that I have read copy of your Draft Environmental Impact Statement, Proposed IMS Infrastructure Improvement Project to be located on the shore of Resurrection Bay.

We all know that the oceans of this world are the last remaining unexplored frontiers. And it should most certainly be axiomatic to all knowledgeable people that we move forward to solve the mysteries of that great unknown. Solving some or all of those mysteries that lie below the surface will be salutary for Mankind in many ways. We should, therefore, begin doing that with great vision and with the full-scale facilities this effort requires. I-30

For the above reasons, I fully support Alternative I.

With best wishes,

Bernard C. Hulm

Aug 3, 1994

Dear Persons

I want to see the Alaska Sea Life Center built in Seward. This facility should be built with focus on research and consideration for education. The balance of the Exxon Spill monies should be spent for land acquisition in the impact area. I-31



Sincerely,
Jerry L. Olson
Biologist M.A.
Seward, Ak

MR. & MRS. RAYMOND WILLIAMSON
Linger Longer Lane
19941 Loop Street
ANDERSON, CA 96007

REDDING CA 960
PM
29 JUN 1994

ALWAYS LOVE
ZIP CO
29 USA

Eros oil Spill Public Info Center
645 g street
Anchorage, AK 99501

Comment on IMS EIS.
(This was forwarded to me by Rod Kuhn, SIS coord. at Restoration EIS.
Rod has the original letter here
COPY - RS
7/12/94

Raymond & Wanita
Williamson
19941 Loop St
Anderson, CA 96007

Eros oil Spill Public Info Center
645 g street
Anchorage, AK 99501

RECEIVED
JUL 05 1994
EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL

Gentlemen:

After studying the draft EIS for proposed IMS Infrastructure Improvement Project, Seward, we recommend alternative II.

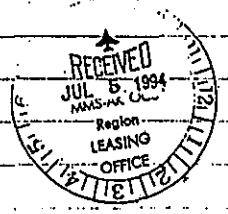
We are land owners in Alaska and have closely studied all proposals concerning rehabilitation of areas affected by the accidental oil spill.

We do not believe it is in the public interest to enhance prior existing conditions at the expense of the public or Exxon corporation by initiating new projects at public/Exxon expense. The incident was an accident. I-32

Sincerely,
Raymond & Wanita Williamson

JUNE 24, 1994

TO: Ms. NANCY SWANTON



FROM: RICHARD A. LINK,

HAVING JUST COMPLETED READING THE DRAFT ENVIRONMENTAL IMPACT STATEMENT ON THE PROPOSED IMS INFRASTRUCTURE IMPROVEMENT PROJECT, AND LISTENING TO MY CO-WORKERS COMMENTS. I HAVE COME TO THE CONCLUSION, THAT IN NO WAY SHOULD WE BE SPENDING 25 MILLION DOLLARS TO REHABILITATE A FEW SEA BIRDS OR MAMMALS. THIS MONEY COULD BE PUT TO ALOT BETTER USE IN OUR EDUCATION SYSTEM HIRING MORE TEACHERS (SO THAT THE TEACHER/STUDENT ~~RATIO~~ RATIO ISN'T OVER 30 AS IN SOME CLASSROOMS THIS YEAR.)

I-33 YOU PEOPLE HAVE A GOOD IDEA IN A MARINE STUDIES FACILITY BUT I'M NOT WILLING TO SPEND MILLIONS TAKING CARE OF OILY BIRDS OR MAMMALS WHICH WILL HAVE A HIGH MORTALITY ANYWAY.

I AM THEREFORE OPTING FOR ALTERNATIVE III "NO ACTION"

THANK YOU

Richard A Link

RICHARD A. LINK
P.O. BOX 3178
SOLDOTNA, ALASKA
99669

P.S. PLEASE KEEP ME INFORMED

P.O. Box 1185
Cordova, Alaska 99574
August 8, 1994



Ms. Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement Project
U.S. Dept. of the Interior
949 East 36th Avenue, Room 603
Anchorage, AK 99508-4302

Submitted by fax: 271-6507

RE: Comments on the DRAFT EIS for the IMS Infrastructure Improvement Project

We may have missed it, but we did not find a new review of the initial assumptions made on this project in light of the changes in scope and the Trustee Council's direction for a new review. In particular, was a new review done of those assumptions related to the economic costs for running the facility after it is built (i.e., revenues from visitation by Alaskans and tour companies, expected memberships; and expenditures)? I-34

We am very supportive of research activities in Alaska. However, we question the need or cost-effectiveness of maintaining a facility as large as the one identified in the preferred alternative. We have spoken with marine mammal researchers in the U.S. Fish & Wildlife Service who state they have no interest in doing captive mammal research projects. We're sure there are some worthy projects but fear the facility will not support itself from the revenue sources listed. I-35

We also want to call attention to the expected cruise ship visitation numbers. Given a choice between seeing a sea lion and puffins in the wilds of Kenai National Fjords and going to a captive facility, We believe the vast majority of visitors will choose the Fjords visit, even if it is more expensive. A trip to Alaska is generally a once a life visit. I-36

Rehabilitation of marine mammals is listed as a minor revenue source in the first few years of the facility's operation, but, in later years, this source becomes more critical for the facility's balance sheet staying in the black. How much is now spent in Alaska on rehabilitation? Is it really plausible that $300,000 will be spent by some entity annually on rehabilitation in Seward? We doubt that oil companies or other sources will be able or willing to support the level of funding assumed in the balance sheet. While rehabilitation has a place in education and research, in our view, it is neither cost-effective nor necessarily good for the animals. It makes people feel good, it can teach us about animals, but for mass numbers, particularly of sea otters, it has not been successful. On the contrary, it can pose risks for entire mammal populations through transfer of diseases. I-37

We noticed that the estimated construction costs for this project have increased to what may, or may not be a more realistic figure of 47.5 million. In Alaska, it seems all construction projects exceed their estimates by at least 20%. Is there any contingency in these plans or, alternatively, are there plans to scale down the facility should construction costs escalate? I-38

If this facility were to be built entirely with private funds, we would not raise o objections. Many people have put a lot of work into this ambitious project which certainly has some positive possibilities for research and education. We understand the Dept. of Justice is reviewing this project to ensure that any Exxon Valdez oil spill settlement monies used are spent only on "appropriate and legally permissible" items. We find the lines indistinguishable between the "research" and "visitor attraction" portion of this project and, therefore, question its validity as a restoration expense.

Thank you for the opportunity to comment.

Nancy Bird & Karl Becker
Nancy Bird and Karl Becker
Commercial salmon seine permit holders
Prince William Sound

K. Walker:

Response I-1

Text in Section 2.2.6 has been revised to reflect the future operating funds of Alternative II.

Response I-2

Section 4.2.10 has been revised to reflect that approximately 1/3 of the construction workers will be local hire.

J. Denison:

Response I-3

The education and visitation component, as part of this proposed project, would offset costs of operation and maintenance of the facility (refer to comment response G-10). A reduction in the size of the public education and visitor areas may impede the ability to generate the necessary funds. It is intended that the proposed facility would release those animals that are reasonably capable of surviving in the wild and which pose no danger to wild population. This would be in keeping with its mission to help restore injured resources. It is expected that an adequate number of animals would be available for research and display from unreleaseable animals, and animals obtained through transfers from other facilities and captive breeding.

K. Baxter

Response I-4

Refer to comment response FA-12.

Response I-5

The revenue projections and anticipated research program do not indicate that this proposed facility would place undue demands on the Trustee Council for supporting grants. Section 1.2 (page 1-3) provides additional information.

R. Houghton:

Response I-6

The text has been revised to reflect the positive effects of increased demand for teachers.

Response I-7

The text has been revised to reflect the positive effects to the local educational system. Also noted that opportunities would be available for docents and volunteers.

D. Rigg:

Response I-8

Sections 3.8 (pages 3-21) and 4.2.8 (page 4-22) have been expanded to discuss the coordination of Section 106 consultation with SHPO.

Response I-9

Appendix A, correspondence with SHPO has been added.

Response I-10

Please refer to comment response I-8.

Response I-11

Section 2.5.2 (page 2-54) Potential Mitigating Measures, the NPDES has been removed from this list. A Stormwater Pollution Prevention Plan would be prepared to detail measures instituted during construction and operation.

Response I-12

Please refer to comment response I-8.

Response I-13

Text revised throughout the EIS to provide consistent heading "Archaeological and Historic."

Response I-14

The discussion in the DEIS included an analysis of the potential visual effects on historic resources along Railway Avenue. Based on viewshed and project design criteria, it has been determined that there would be no adverse effects on any historic resources on Fourth Avenue. As part on the ongoing Section 106 consultation process, additional evaluation of the potentially affected area and adverse effects has been conducted, with additional discussion provided in Section 3.7 (page 3-20) and 4.2.7 (page 4-21) of the EIS.

Response I-15

Please refer to comment response I-8.

Response I-16

The Bibliography has been revised to include SHPO communications.

K. West:

Response I-17

Section 4.2.10 (pages 4-45 and 4-46) has been revised to clarify the Quality of Life effects of the proposed project.

Response I-18

Page 4-51 provides the projected distribution of visitation for the proposed project. Sections 2.2.6 (page 2-37) and 2.2.7 (page 2-40) provide information on revenue and expenses.

Response I-19

Section 3.12 (page 3-72) provides detailed information Traffic and Transportation. Sections 4.2.12 and 4.3.12 provide Traffic and Transportation effects predicted for Alternatives I and II.

Response I-20

Section 1.1 (page 1-1) provides project background information. In addition, a fund raising effort has been initiated by a private organization hired by SAAMS. The fund raising program would be the responsibility of the SAAMS organization.

T. Sczawinski:

Response I-21

Sections 3.8 (page 3-21) and 4.2.8 (page 4-22) provide expanded discussions of historic and archaeological resources in the proposed project area to address historical activities and potential for impacts to resources and artifacts that may be present.

M. Luttrell:

Response I-22

Section 2.5 (page 2-47) Summary of Mitigating Measures provides information on archaeological monitoring in addition to the initial site reconnaissance, including test pits, for archaeological resources recently conducted.

S. Clark:

Response I-23

Please refer to comment response PH-11.

Response I-24

Please refer to comment response FA-10.

Response I-25

The comment was forwarded to the Seward Planning Commission and is not the responsibility of the EIS.

Response I-26

Section 2.5 (page 2-51) provides socioeconomic information.

C. Clark:

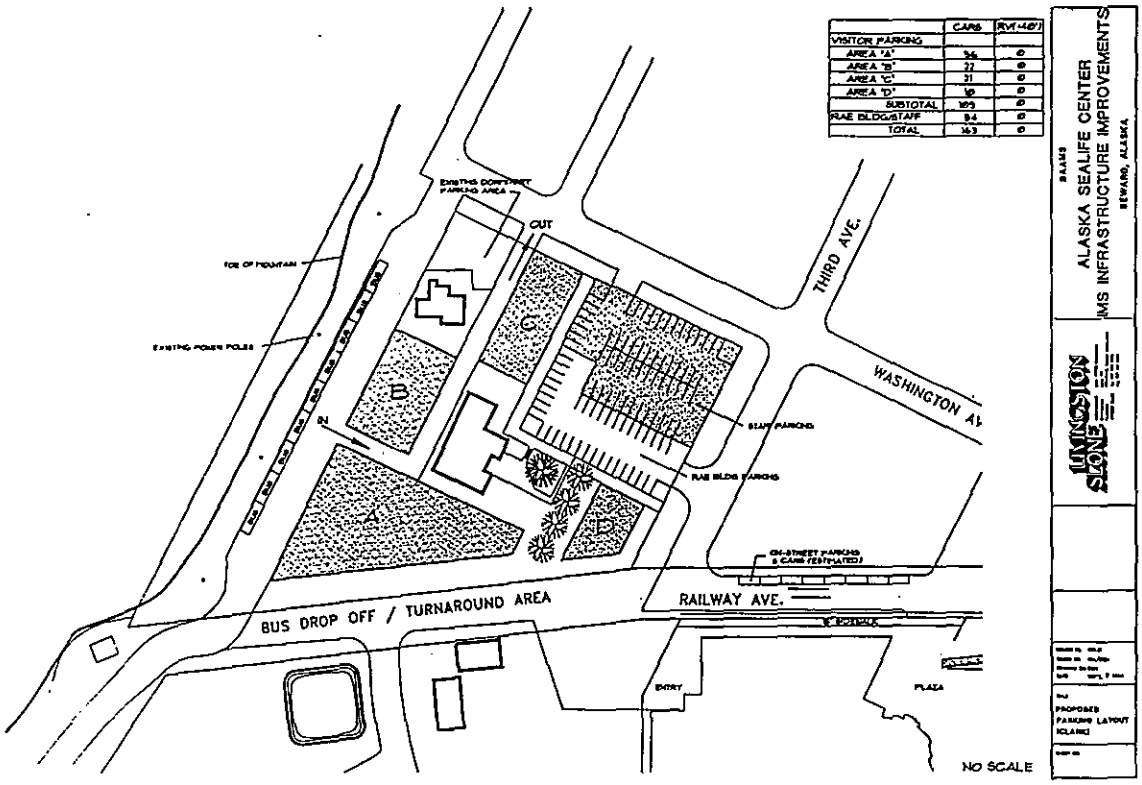
Response I-27

Assuming that the University would agree to the use of its entire Block 5A site for the proposed project, a conceptual design was evaluated by the EIS traffic consultants and the architectural design team to determine if parking requirements could be met on the existing IMS/Rae Building site, Block 5A. The following diagram represents the areas needed on the site for current IMS activities and those anticipated for the proposed project which include visitor and staff parking; circulation; bus drop-off and waiting

areas; access from Third Avenue and Washington Streets; the existing structures; and the existing Rae Building and dormitory parking lots. This evaluation determined that approximately 163 parking spaces could be made available for use by the proposed IMS Infrastructure Improvements Project, assuming that the remaining areas are needed to accommodate existing UAF/IMS parking for the Rae Building and dormitory.

This parking estimation was derived by applying the area required for a parking stall, 450 square feet, to the available square footage on the IMS Block 5A site. This figure assumes a 10' x 20' parking space plus an adequate amount of surrounding vehicular circulation, curbs, and landscaping. By comparison, the ratio of square feet per parking stall at the proposed facility visitor lot (not including the RV parking area) is 506 square feet per parking stall. By using 450 square feet in this exercise it has been assumed that a more efficient parking arrangement would be achievable due to the better vehicular access and circulation from Third Avenue and Washington Street.

Through analysis presented in Section 4.2.12, it was determined that the peak demand for parking spaces related to the proposed project is 152 visitor spaces, 12 of which would accommodate over-sized vehicles, and 54 staff parking spaces, a total of 206 spaces. Using Block 5A to accommodate the parking demand of the proposed project, as suggested in this comment, would result in a total of 163 spaces; 109 spaces for visitor parking, with no over-sized vehicle allowance, and 54 parking spaces for staff. To insure that no adverse effects on existing parking conditions in the City of Seward result from the proposed project, project design must accommodate the peak demand on-site. The use of Block 5A would not accomodate all proposed project parking.



Response I-28

Sections 2.2.2 (pages 2-5 to 2-7) and 2.5 (page 2-49) provide information on Ladies Park.

Response I-29

Section 4.2.12 (page 4-70) provides information on the negligible effects of the proposed project on the bicycle/pedestrian path.

B. Hulm:

Response I-30

Communication received and acknowledged.

J. Dixon:

Response I-31

Please refer to comment response G-4.

R. Williamson:

Response I-32

Please refer to comment response G-4.

R. Link:

Response I-33

Please refer to comment response G-4.

N. Bird and K. Becker:

Response I-34

Sections 2.2.5 (page 2-35) through 2.2.7 (page 2-40) provide Operating Characteristics, Projected Revenues, and Projected Expenses.

Response I-35

Section 1.2 (page 1-3 to 1-6) has been expanded to provide the Purpose and Need for the proposed project.

Response I-36

Section 3.11.3 (page 3-69) provides current tourism activities and facilities information. Sections 4.2.11 (page 4-47) and 4.3.11 (page 4-80) provide information on the effects of Alternatives I and II to Recreation and Tourism.

Response I-37

Annual income from wildlife rehabilitation activities is estimated at $150,000 and is not projected to increase in future years. This projection was developed after consultation with industry representatives. Income from wildlife rehabilitation would constitute only 4% of the annual projected revenue and is not expected to be a significant factor affecting the financial viability of the proposed facility (see comment response G-8 for additional information).

Response I-38

The purpose of the NEPA process and this Environmental Impact Statement is to address the environmental and social effects of the proposed project, not to address the propriety of the Trustee Council's decision to fund the project. The Trustee Council has a process to consider all available public comments and legal opinions before it makes decisions concerning expenditures of joint restoration funds.

The joint restoration funds that are being sought for the proposed facility would be used to support and carry out a research and monitoring program that would, among other things, seek to restore, enhance, and rehabilitate natural resources injured as a result of EVOS. The research and monitoring program anticipated for the facility includes studies that are either directly or indirectly linked to the restoration of injured resources. Section 1.2 (pages 1-3 to 1-6) provides additional information on the purpose and need of this proposed project.

Although the use of the settlement funds is a significant issue to be addressed with public input, it is not an environmental issue for purposes of this EIS. A programmatic environmental impact statement on the EVOS Trustee Council's Draft Restoration Plan, prepared by the U.S. Forest Service on behalf of the Trustee Council, was published recently. That Draft EIS examines the research and monitoring needs of the overall restoration program. Moreover, through the annual work plan process, the EVOS Trustee Council seeks and obtains public comment on the appropriateness of the funding for this, and other projects, as part of the overall restoration program. Comments received regarding the issue of project funding have been directed to the EVOS Trustee Council for consideration. A Draft Fiscal Year 1995 Work Plan currently is available for public review and comment.

6.0 CONSULTATION AND COORDINATION

CHAPTER 6.0

CONSULTATION AND COORDINATION

6.1 DEVELOPMENT OF THE PROPOSAL

The proposed project is intended to provide the infrastructure for long-term research and monitoring of the ecosystem affected by the *Exxon Valdez* oil spill, with the goal of benefiting the long-term health and restoration of affected resources. The facility is planned to serve as a center for the coordination and integration of the on-going and planned comprehensive research and monitoring of the EVOS area as part of the overall restoration plan.

SAAMS, a non-profit organization, has been the leading proponent of the project, with support from the UAF, the City of Seward, and other State of Alaska entities. The DOI is the lead federal agency for this EIS, on behalf of the EVOS Trustee Council.

Official coordination with other government agencies and the public regarding this proposal began on March 9, 1994, when the Notice of Intent to Prepare an EIS was published in the Federal Register. It requested comments on the environmental issues related to the proposed project. An agency scoping meeting was held on March 29, 1994, with NMFS, FWS, COE, DOI, ADF&G, and ADOT/PF. Two public scoping meetings were held, one in Seward (March 22, 1994) and a second in Anchorage (March 24, 1994) to more clearly and specifically identify potential issues and alternatives to be analyzed in the EIS. In addition, over 300 written comments were received during the scoping period.

Information received during scoping was considered in the preparation of the Draft EIS.

6.2 DEVELOPMENT OF THE DRAFT EIS

Following publication of the Draft EIS, public hearings were held in Seward on July 26, 1994, and in Anchorage on July 28, 1994, to obtain comments from the public and agencies. Written and oral comments were received on the Draft EIS through August 18, 1994. Those comments are presented in the Final EIS with their respective responses.

6.3 LIST OF CONTACTS FOR PREPARATION AND REVIEW OF DRAFT EIS

Federal, state and local government agencies; special-interest groups; other organizations; and private citizens were consulted prior to, and during the preparation of the Final EIS. The agencies and institutions listed below were sent copies of the Final EIS and/or a summary of the Final EIS. A detailed distribution list is included as Appendix H.

6.3.1 Federal

Department of Agriculture
- U.S. Forest Service

Department of Commerce
- National Oceanic and Atmospheric Administration
- National Marine Fisheries Service
  - Office of Spill Damage, Assessment and Restoration
  - Protected Resources Management Division

Army Corps of Engineers

Department of the Interior
- Bureau of Indian Affairs
- Bureau of Land Management
- Fish & Wildlife Service
- National Biological Survey
  - Alaska Fish and Wildlife Research Center
- National Park Service
  - Kenai Fjords National Park
- Natural Resource Library

Department of Justice

Department of Transportation
- Federal Highway Administration

Legislative Branch

U.S. House of Representatives

U.S. Senate

Library of Congress
- Congressional Research Services

Administrative Agencies and Other Agencies

Environmental Protection Agency

Marine Mammal Commission

6.3.2 State of Alaska

Alaska State Legislature

Alaska State Library

Department of Environmental Conservation

Department of Fish & Game
- Genetics Laboratory
- Habitat Restoration Division
- Wildlife Conservation Division

Department of Labor
Department of Law
- Environmental Litigation Section

Department of Natural Resources
Department of Transportation and Public Facilities
Office of the Governor
- Division of Governmental Coordination

University of Alaska
- Center for Environmental and Marine Study
- Fisheries Industrial Technical Center
- Institute of Arctic Biology
- Institute of Social and Economic Research
- Institute of Marine Science
- Marine Advisory Program
- Planning and Projects Services
- Rasmuson Library - Fairbanks

6.3.3 Local Governments and Libraries

City of Cordova
City of Kenai
City of Kodiak
City of Seward
City of Soldotna
City of Valdez
City of Whittier
Chenega Community Library
Cordova Public Library
Fairbanks Community Library
Homer Public Library
Kenai Peninsula Borough
Kenai Peninsula Borough School District
Kenai Community Library
Kodiak Area Native Association
Mayor, Akhiok
Mayor, Larsen Bay
Mayor, Old Harbor
Mayor, Ouzinkie
Mayor, Port Lions

Mayor, Seldovia
Mayor, Tatitlek
Mayor, Village of Nonwalek
Mayor, Village of Port Graham
Port Lions School Library
Prince William Sound Science Center
Seldovia Public Library
Seward Elementary School
Seward Senior and Junior High School
Soldotna Public Library
Valdez Consortium Library
Village of Chignik
Village of Eyak
Whittier Public Library
Z. J. Loussac Library - Anchorage

6.3.4 Final EIS Distribution List

The Final EIS Distribution List is included as Appendix H.

6.4 CONTRIBUTING AUTHORS AND SUPPORTING STAFF MEMBERS

Katy Chaney, Dames & Moore. B.A. Political Science/Mathematics, University of Washington. Ms. Chaney has more than 17 years of permitting and environmental compliance experience.

Michael Edwards, P.E., Environmental Engineer, Dames & Moore. Mr. Michael Edwards holds a Bachelor of Science in Chemical Engineering from Oregon State University and has classwork towards his Master's degree in chemical/environmental engineering at the University of Washington. Mr. Edwards is a licensed Professional Engineer in Washington State and has six years of experience in his field.

David Erickson, Wildlife Ecologist, Dames & Moore. Mr. Erickson has over 17 years experience in Alaska wildlife resource studies, including work with the ADF&G and the U.S. FWS.

Joel Farrier, P.E., Civil Engineer, Dames & Moore. Masters of Engineering, Civil Engineering, University of California, Berkeley, 1989; Bachelor of Science in Zoology from the University of California, Berkeley. In addition, Mr. Farrier has classwork toward a Bachelor of Science in Engineering from California State University at San Francisco. Mr. Farrier is a licensed Professional Engineer in Washington State and has over 11 years of work experience.

Michael Fitzgerald, Environmental Scientist, Dames & Moore. B.A. Environmental Studies/Economics, University of California at Santa Barbara. Mr. Fitzgerald has more than 5 years of environmental impact assessment experience.

Kurt Gahnberg, Senior Engineer, TRANSPO. Mr. Gahnberg has lead responsibilities for traffic impact studies involving traffic operations, traffic safety, parking, and the movement of people in alternative modes. His experience includes the preparation of studies for the Seattle Center and the UAF.

Gary Hayward, Senior Project Manager, Dames & Moore. B.A. Geology, New England College; M.S. Marine Science, University of South Florida. Mr. Hayward manages Dames & Moore's Environmental and Geoscience operations in Alaska, and has 15 years experience with NEPA and large multidisciplinary environmental investigations.

Stephen Hitch, Engineer-in-Training, Dames & Moore. Mr. Stephen Hitch holds a Bachelor of Science in Civil (Environmental) Engineering from Seattle University in Seattle, Washington.

Jonathan D. Isaacs, Principal of Jon Isaacs and Associates. Jon Isaacs has 20 years of experience (16 in Alaska) with planning, coastal management, environmental impact statements, and environmental impact assessment projects. Mr. Isaacs has lead responsibilities for the socioeconomics/land use/recreation analysis, and also for preparing the Recreation/Tourism and Archaeological/Historical Chapters. He has a B.A. in Environmental Studies from the University of California at Santa Barbara.

Richard R. Langendoen, Senior Geologist, Dames & Moore. B.S. Geology, Washington State University. Mr. Langendoen has more than 15 years of engineering geology and soils experience throughout the Pacific Northwest and Alaska, including NEPA documentation.

Gordon Lewis, Principal of Community Planning, Jon Isaacs and Associates. Gordon Lewis has twenty years experience as a planning professional with community comprehensive plans, environmental plans, land use and subdivision ordinances, and permitting systems. Mr. Lewis has the lead responsibility for the Land Use sections.

Milton Lim, Senior Engineer, TRANSPO. Mr. Lim has administrative and technical responsibility for transportation and planning, traffic impact, and traffic design studies. He has managed the traffic impact analysis for Seattle's Children's Hospital 15-year masterplan and has served as project engineer for the Pioneer Avenue Reconstruction study in Homer.

Charles M. Mobley, Director, Cultural Resource Services. Charles M. Mobley and Associates. Ph.D. Anthropology/Archaeology, Southern Methodist University, M.A., Conservation Archaeology, Southern Methodist University, .B.A, Anthropology, Case Western Reserve University. Mr. Mobley has over 20 years experience with archaeological projects, including acting as Director for the *Exxon Valdez* Cultural Resource Program. He has served as archaeologist for the U.S. Fish and Wildlife Service in Alaska and has worked on projects in Alaska for 14 years.

Louisa Moore, Socioeconomist, Jon Isaacs and Associates. Ms. Moore has 15 years of experience in environmental planning, coastal management, and project review (9 in Alaska). She has prepared socioeconomic analyses for various development projects in Alaska and on the east coast. Ms. Moore is responsible for the Socioeconomic Characteristics chapters. She has a B.A. in Environmental Studies

from Williams College and an M.A. in Marine Affairs/Coastal Management from the University of Rhode Island.

Maureen Sims, Assistant Project Manager, Dames & Moore. Ms. Sims has over 7 years experience in environmental studies and land use, including several large NEPA documents, site selection investigations, and corridor study investigations.

Alison Smith, Project Analyst, Dames & Moore. B.S. Political Economy of Natural Resources, University of California Berkeley; M.S. Resource Policy and Planning/Environmental Planning Minor, Cornell University. Ms. Smith has more than 10 years experience in the natural resource, environmental, and permitting fields in Alaska.

Michael Yarborough, Archaeologist, Cultural Resource Consultants. Michael Yarborough has more than 20 years of archaeological experience in Alaska. He has an excellent working knowledge of the historical and archaeological literature available for Alaska, and is experienced in working with state and federal agencies. Prior to joining Cultural Resource Consultants in 1981, he conducted archaeological surveys and excavations along the Alyeska Pipeline, and worked as an archaeologist for the U.S. Fish and Wildlife Service's Alaska Regional Office. During the time that he has been with Cultural Resource Consultants, Mr. Yarborough has completed over 50 preconstruction archaeological surveys in areas throughout the state.

APPENDICES

APPENDIX A

FEDERAL, STATE, AND LOCAL CORRESPONDENCE

United States Department of the Interior

OFFICE OF THE SECRETARY
c/o Nancy K. Swanton
949 East 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

APR 18 1994

Mr. Steven Pennoyer
Director, Alaska Region
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

Dear Mr. Pennoyer:

As you are aware, the Department of the Interior, on behalf of the Exxon Valdez Trustee Council, is serving as the lead Federal Agency for the preparation of an environmental impact statement (EIS) for proposed infrastructure improvements to the Institute of Marine Science (IMS) in Seward, Alaska.

To assure conformance with the requirements of Section 7(a)(2) of the Endandered Species Act, the Department requests information from the National Marine Fisheries Service (NMFS) regarding any threatened and/or endangered species in the area of the proposed project.

Information about the proposed project is enclosed. Please contact Nancy Swanton, EIS Project Manager, at 271-6622 (voice) or 271-6507 (fax) with any questions you may have about the project. She will also be happy to meet with you to discuss the project and to provide any additional information you may require. To facilitate completion of this consultation, I am sending a copy of this letter, along with the enclosure, to the NMFS Western Alaska Field Office in Anchorage.

Sincerely,

Nancy K. Swanton
EIS Project Manager

Enclosure

cc: Mr. Ron Morris
National Marine Fisheries Service
Western Alaska Field Office
701 C Street
Anchorage, Alaska 99513

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

April 25, 1994

Nancy K. Swanton
EIS Project Manager
United States Department of the Interior
Office of the Secretary
949 East 36th Avenue, Room 603
Anchorage, AK 99508-4302

Dear Ms. Swanton:

Thank you for your letter requesting a list of threatened and endangered species, pursuant to Section 7 of the Endangered Species Act of 1972, as amended, present in the vicinity of the proposed infrastructure improvements to the Institute of Marine Science in Seward, Alaska. We have reviewed the project area and determined that no listed species under our jurisdiction are present.

This concludes Section 7 consultation with the National Marine Fisheries Service. However, should project plans change or new information become available that alters the basis of this decision, then consultation should be reinitiated.

If you have any questions please contact Linda Shaw at (907) 586-7510.

Sincerely,

Steven Pennoyer
Director, Alaska Region

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

May 6, 1994

Nancy K. Swanton
EIS Project Manager
United States Department of the Interior
Office of the Secretary
949 East 36th Avenue, Room 603
Anchorage, AK 99508-4302

Dear Ms. Swanton:

This reinitiates Section 7 consultation, pursuant to the Endangered Species Act of 1972, as amended, regarding proposed infrastructure improvements to the Institute of Marine Science in Seward, Alaska. Based on new information provided by Mr. Kim Sundberg of the Alaska Department of Fish & Game in discussion with Linda Shaw of my staff indicating the occasional occurrence of the threatened Steller sea lion (Eumetopias jubatus) along the offshore borders of the project site, we have reconsidered the wave barrier and intertidal invertebrate artificial habitat for possible adverse impacts to this species.

Because Steller sea lions are sighted along the barriers of the project site and do not frequently enter the shoreline waters or haulout on the terrestrial project area, construction of the wave barrier and placement of intertidal animals behind it is unlikely to adversely affect the species. There could be some attraction of sea lions to the artificial tidal area if prey species such as octopus, sea otters or harbor seals are likewise attracted there. However, such attraction to naturally occurring prey species would not adversely affect Steller sea lions. Harassment of Steller sea lions by persons using or viewing the intertidal area is specifically prohibited by both the Marine Mammal Protection Act and Endangered Species Act. Such harassment is unlikely because admission of the general public to the facility will be controlled and accompanied by instruction and supervision of facility staff and interpretive presentations. Towards this end, we suggest that the educational aspects of the project incorporate appropriate guidelines to visitors advising them of the legal requirement to not disturb any Steller sea lions or harbor seals that may be attracted to the intertidal area or occur within the shoreline of the project site.

This concludes Section 7 consultation with the National Marine Fisheries Service. However, should project plans change or new information become available that alters the basis of this decision, then consultation should be reinitiated.

If you have any questions, please contact Linda Shaw at (907) 586-7510.

Sincerely,

Steven Pennoyer
Director, Alaska Region

United States Department of the Interior

OFFICE OF THE SECRETARY
c/o Nancy K. Swanton
949 East 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

APR 18 1994

Ms. Ann Rappoport
Field Supervisor, Ecological Services
U.S. Fish and Wildlife Service
605 West 4th Avenue, Room G-62
Anchorage, Alaska 99501

Dear Ms. Rappoport:

The Department of the Interior, on behalf of the Exxon Valdez Trustee Council, is serving as the lead Federal Agency for the preparation of an environmental impact statement (EIS) for proposed infrastructure improvements to the Institute of Marine Science (IMS) in Seward, Alaska.

To assure conformance with the requirements of Section 7(a)(2) of the Endandered Species Act, the Department requests information from the U.S. Fish and Wildlife Service (FWS) regarding any threatened and/or endangered species in the area of the proposed project.

Information about the proposed project is enclosed. Please contact Nancy Swanton, EIS Project Manager, at 271-6622 (voice) or 271-6507 (fax) with any questions you may have about the project. She will also be happy to meet with you to discuss the project and to provide any additional information you may require.

Sincerely,

Nancy K. Swanton
EIS Project Manager

Enclosure

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Anchorage Field Office
Ecological Services and Endangered Species
605 West 4th Avenue, Room 62
Anchorage, Alaska 99501

IN REPLY REFER TO:

WAES

MAY 13 1994

~~MAY 13 1994~~

Memorandum

To: EIS Project Manager, Office of the Secretary
Attention: Nancy K. Swanton

From: Field Supervisor
Ecological Services Anchorage

Subject: Environmental Impact Statement for Proposed Infrastructure Improvements to the Institute of Marine Science

This responds to your letter of April 18, 1994, regarding the above proposal.

In accordance with Section 7 (c) of the Endangered Species Act of 1973, as amended (ESA), we have determined no threatened or endangered (T/E) species are present in the project area. The following candidate species occur in the project area. Consultation for candidate species is not required under the Endangered Species Act; however many federal agencies have instituted policies to protect candidate species. Your consideration of these species is important in preventing their inclusion on the Endangered Species list.

CATEGORY 1 SPECIES

The Steller's eider, Polysticta stelleri, occurs infrequently in Resurrection Bay. Seward is on the edge of its winter range.

A Category 1 species is a species for which the Service has sufficient information on file to propose listing. This species may be proposed for listing in the near future and a final rule issued by next year. Once a species is proposed for listing, informal consultation conference procedures are required. Per the conversation Endangered Species Specialist Virginia Moran had with you (May 4, 1994), an applicant can voluntarily prepare a biological assessment in anticipation of a proposed rule. Because we believe this project will not impact Steller's eiders in Resurrection Bay, conference procedures for the Steller's eider will not be required.

CATEGORY 2 SPECIES

A Category 2 species is one that may be declining but the Service lacks sufficient biological information to warrant consideration for listing.

Therefore, any information agencies can provide about these species is appreciated.

Harlequin duck	Histrionicus histrionicus
Kittlitz's murrelet	Brachyramphus brevirostris
Marbled murrelet	B. mamoratus
Northern goshawk	Accipiter gentilis

Please be aware that species lists are continuously being updated. If a federal agency or applicant does not begin its analyses on impacts within 90 days of receipt of, or concurrence with, the species list, the federal agency or applicant must verify with the Service accuracy of the species list at the time the preparation of the assessment is begun (Section 402.12 of the Implementing Regulations).

We would like to review the draft Environmental Impact Statement and request a copy when it is distributed.

We appreciate your concern for threatened, endangered and candidate species. If you have additional questions, you may direct them to Endangered Species Specialist, Virginia Moran, at 271-2871.

United States Department of the Interior

OFFICE OF THE SECRETARY
c/o Nancy K. Swanton
949 East 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

SEP 9 1994

Ms Judith Bittner
State Historic Preservation Officer
Post Office Box 107001
Anchorage, Alaska 99510-7001

Dear Ms Bittner:

In accordance with the provisions of 36 CFR 800.5(e), we advise you that, in consultation with your staff, Mssrs. Timothy Smith and Russell Sackett, at a meeting today, we have identified the area of potential effect (APE) for the Proposed Institute of Marine Science Infrastructure Improvement Project in Seward, Alaska. The APE is as shown on the enclosed map (Enclosure 1). Further, we discussed and agreed upon the list of eligible properties within the APE, as well as the determination of effect for each eligible property. Finally, we drafted a Memorandum of Agreement (MOA) to ensure potential adverse effects are minimized. This draft MOA is enclosed and also has been forwarded for comment or concurrence to the City of Seward and the Seward Association for the Advancement of Marine Science, concurring parties to the MOA (Enclosure 2).

Archaeological Resources
The proposed project area was surveyed in August 1994; and we have determined that no archaeological properties are present within the APE. Thus, no effect would be expected from the proposed project. Enclosure 3 is a copy of the report. Please concur with our determination of effect for archaeological resources.

Historic Properties
Historic properties in the proposed project area were investigated in August 1994 (see Enclosure 4 for the report). Three properties within the APE already are listed on the National Register of Historic Places (NRHP); and we have determined that two additional properties are eligible for inclusion on the NRHP.

Please concur with our determination of eligibility as follows:

- Hoben's Park (Nile Park or Ladies Park)
- Seward Machine Shop

Please concur with our determination of effect as follows:

• Alaska Railroad Depot	no effect
• Iditarod Historic Trail Mile 0	no effect
• Lowell Creek Flood Control Facility	no effect
• Hoben's Park	no effect
• Seward Machine Shop	potential adverse effect

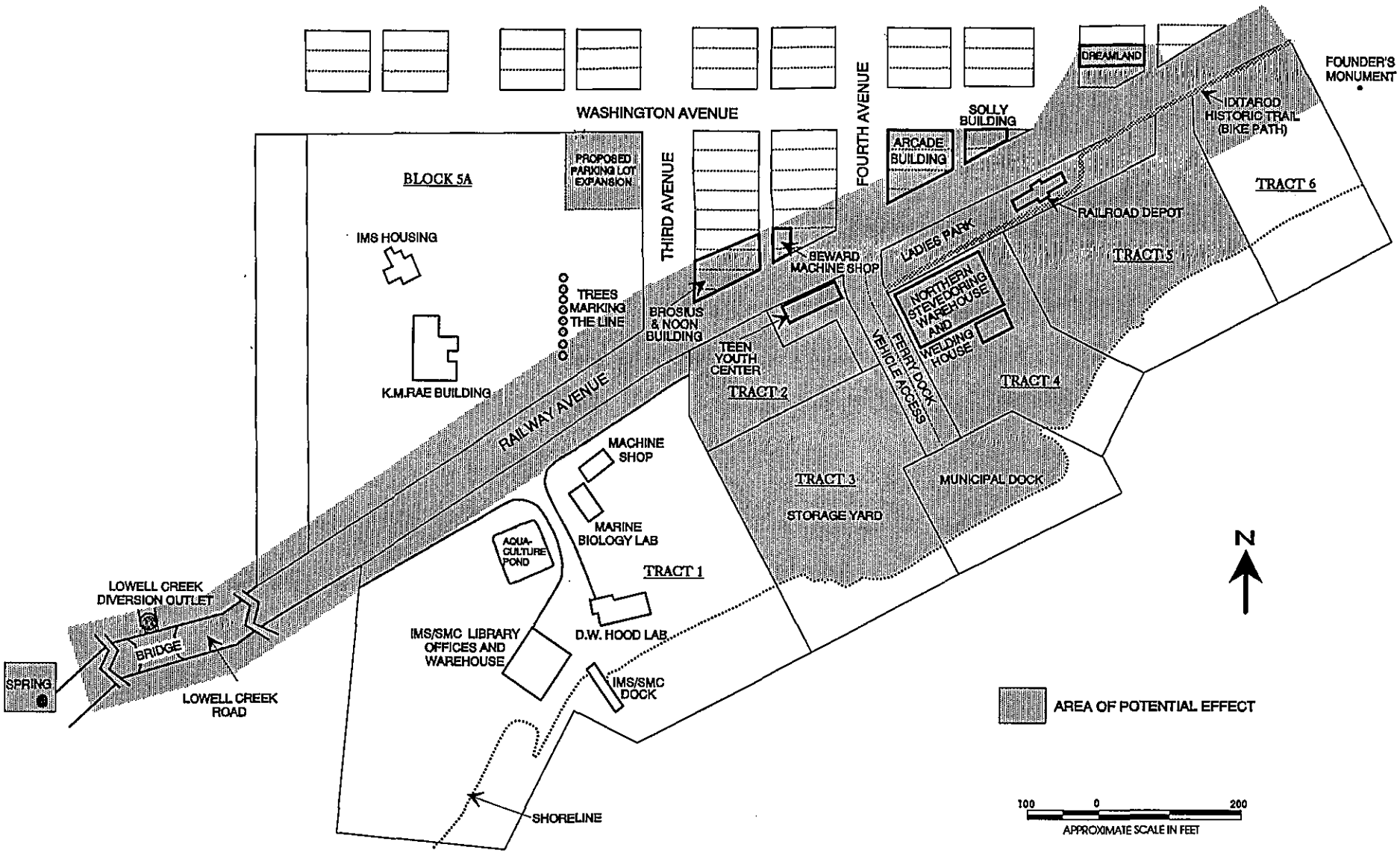
As stated in paragraph one, the MOA will ensure that adverse effect to the Seward Machine Shop is minimized.

We look forward to receiving notification of your concurrence at your earliest convenience.

Sincerely,

Nancy K. Swanton
Project Manager

4 Enclosures



AREA OF POTENTIAL EFFECT

IMS Infrastructure Improvement Project
Seward, Alaska

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF PARKS AND OUTDOOR RECREATION
Office of History and Archaeology

WALTER J. HICKEL, GOVERNOR

3601 C STREET, Suite 1278
ANCHORAGE, ALASKA 99503
PHONE: (907) 762-2622

MAILING ADDRESS:
P.O. Box 107001
ANCHORAGE, ALASKA 99510-7001

September 12, 1994

File No.: 3130-1R Department of the Interior

Subject: IMS Infrastructure Improvement Project, Seward
Section 106 Compliance

Ms. Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement Project
U.S. Department of the Interior
949 E. 36th Ave., Rm. 603
Anchorage, AK 99508-4302

Dear Ms. Swanton;

Thank you for the package of Section 106 compliance documents for the referenced project. We have no objections to your definition of the area of potential effect (APE). We concur with your finding that there are no archaeological properties in the APE based on a negative survey conducted by an archaeologist qualified under the Secretary of the Interior's standards (Yarborough, 1994).

We concur with your findings that the following properties are **not** eligible for inclusion in the National Register of Historic Places:

Dreamland Bowling Alley (SEW-303)

Northern Stevedoring Warehouse

Seward Teen Center

The Line

Brosius & Noon Building (SEW-151)

Arcade Building

Solly Building (SEW-209)

We concur with your findings that the following properties **are** eligible for inclusion in the National Register of Historic Places:

Hoben's Park/Ladies Park

Seward Machine Shop

Three properties within the APE are previously listed on the National Register of Historic Places, as follows:

Seward Alaska Railroad Depot (SEW-001)

Lowell Creek Diversion Tunnel (SEW-011)

Iditarod National Historic Trail (SEW-148)

We concur with your findings of effect on eligible or listed historic properties as follows:

Hoben's Park/Ladies Park - No Effect

Seward Alaska Railroad Depot (SEW-001) - No Effect

Lowell Creek Diversion Tunnel (SEW-011) - No Effect

Iditarod National Historic Trail (SEW-148) - No Effect

Seward Machine Shop - potential Adverse Effect

We have reviewed the draft Memorandum of Agreement stipulating ways to reduce adverse effects to historic properties. Since the facility to be built is at the schematic stage of design, effects can not fully be determined. Therefore, the MOA provides for SHPO review of building design and lighting/landscaping plans at the 35%, 75%, and 95% stages of completion for the purpose of minimizing visual intrusions to the setting of historic properties. The MOA as drafted at this time is satisfactory and is signable by the SHPO if no substantive changes are proposed.

Please contact Tim Smith at 762-2625 if there are any questions or if we can be of further assistance.

Sincerely,

Judith E. Bittner
State Historic Preservation Officer

JEB:tas

cc: Sandy Faulkner, NPS/ARO

STATE CORRESPONDENCE

Department of Transportation and Public Facilities, Alaska Marine Highway System
Letter to City of Seward regarding ferry service relocation.

Alaska Department of Fish and Game
Letter regarding fresh water quality analysis.

University of Alaska, Fairbanks
Letter regarding potential use of UAF property for visitor parking.

Alaska Department of Transportation and Public Facilities, Alaska Marine Highway System
Facsimile to Dames & Moore regarding the condition of the Municipal Dock.

Alaska Department of Transportation and Public Facilities, Alaska Marine Highway System
Letter to City of Seward regarding Municipal Dock.

STATE OF ALASKA

WALTER J. HICKEL, GOVERNOR

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

ALASKA MARINE HIGHWAY SYSTEM/SYSTEM DIRECTOR

P.O. BOX 25535
JUNEAU, ALASKA 99802-5535
PHONE: (907) 465-3959
FAX: (907) 465-2476

August 18, 1994

RECEIVED
AUG 22 1994
City of Seward
City Manager

File No. SD-411-SW 12

Mr. Tyler Jones
City Manager
City of Seward
P. O. Box 167
Seward, AK 99664

Dear Mr. Jones:

Thank you for your letters of July 1, 1994 and July 26, 1994 regarding the facility use agreement (MTL-93) with the City of Seward which allows the Alaska Marine Highway System (AMHS) to provide service to your community through June 30, 1996.

You are correct that our original correspondence seems to have crossed in the mail, and thus the reason for my original letter and my subsequent call to you was to clarify the City of Seward's intent with regard to the present Fourth Street terminal agreement.

From your correspondence and our phone conversation of August 9, 1994 it is my understanding that the City of Seward:

1) Cannot guarantee the AMHS access to the Fourth Street terminal beyond the spring of 1995.

2) Will not renew the aforementioned lease agreement and plan to exercise the early termination clause.

3) Expects the Alaska Marine Highway System to find some other facility alternative so that continued service can be provided to your community.

I would like to clarify that the City of Seward' s decision to terminate the facilities use agreement with the Alaska Marine Highway System, prior to its June 30, 1996 expiration date, puts the AMHS in a very difficult position. The DOT&PF/AMHS is dedicated to working cooperatively with your community to

identify alternatives which will address your concerns, but we cannot guarantee that the decision to terminate the facilities agreement with AMHS early will not result in an interruption of service to your community.

We believe that the City of Seward must take an active role in identifying a suitable long term ferry terminal facility in your community. We further believe that the City should provide us a proposal for long term access and use of this facility. Harold Moeser (907-465-8868) will be able to provide you with specifics regarding the State's minimum requirements for an acceptable facility.

Please contact me if I have misunderstood your correspondence or if you have any question or concerns.

Sincerely,

Gregory A. Dronkert
System Director

cc: Harold Moeser, Deputy Director
Helvi K. Sandvik, Deputy Commissioner

STATE OF ALASKA

WALTER J. HICKEL, GOVERNOR

DEPARTMENT OF FISH AND GAME

August 16, 1994

Debora Hankinson
Livingston Sloan, Inc.
3900 Arctic Boulevard
Suite 301
Anchorage, Alaska 99503-5790

RECEIVED
AUG 19 1994
LIVING

Dear Debora:

I've reviewed the test results from the analysis of spring water at the IMS/ASLC site. All water quality parameters tested are within acceptable ranges for salmonid culture.

The results from the total coliform bacteria test indicated the unexpected presence of coliform and other bacteria. Gary Miller discussed these results with our pathologist and with Northern Testing Laboratories. Both were of the opinion that the type of bacteria present should not pose a problem for fish culture. He also contacted Doug Kenley of P, N & P, Inc. about possible sources of bacterial contamination. None were immediately apparent but Doug indicated samples will be taken again within two weeks, and will be retested for the presence of bacteria.

Although the presence of coliform bacteria should not affect fish culture, projects conducted at the IMS/ASLC wetlab facility utilizing spring water and involving disease resistance experiments may want to consider pretreatment of influent to prevent accidental introduction of pathogens.

Sincerely,

Jim Seeb
Principal Geneticist

cc: Kim Sundberg
Gary Miller

Institute of Marine Science
SEWARD MARINE CENTER

RECEIVED
SEP 9 1994
DAMES & MOORE
ANC

UNIVERSITY OF ALASKA FAIRBANKS
Box 730, Seward, Alaska 99664

September 6, 1994

Ms. Nancy Swanton
EIS Project Manager
IMS Infrastructure Improvement
Project
U.S. Department of the Interior
949 East 36th Avenue, Room 603
Anchorage, AK 99508-4302

Dear Ms. Swanton:

In an August 1, 1994, letter to the Seward Planning and Zoning Commission, Mrs. Carol Chaudiere Clark has recommended that parking for the IMS Required Infrastructure Improvement Project be located entirely on University of Alaska property located at Block 5A, Oceanview Subdivision. As you know, the University has indicated its support in locating employee parking for the proposed project at Block 5A, however, in my opinion the University would not support a request to utilize the remainder of its property to provide visitor parking for the facility.

The University has incorporated Block 5A within a long range master plan for its Seward Marine Center campus that includes additional wet laboratories, sea water storage, and additional visiting scientist and student housing. Additional parking, beyond that already committed by the University to support the proposed new facility, would eliminate the property from being available to meet the aforestated future development goals of the University. Furthermore, it is my belief that Block 5A is not of sufficient size given its current development to accommodate all of the parking need of the proposed new facility, even if the property was available for that use.

Sincerely,

Thomas D. Smith
Assistant Director for Coastal
and Marine Operations

cc: Maureen Sims, Dames & Moore
Darryl Schaefermeyer, SAAMS

RECEIVED
AUG 12 1994 3:16 PM
DAMES & MOORE
ANC

Friday, August 12, 1994

From:

Name: HAROLD MOESER
Company: AMHS
Phone: (907) 465-8868
Fax: (907) 465-2746

To:

Name: Moreen Sims
Company: Dames And Moore, Inc.
Phone: (907) 562-3366
Fax: (907) 562-1297

Total number of pages, including cover: 3

Message:

Here is our view of the condition of the 4th Ave. Dock. Activities at Seward include taking on fuel, banking, stores and crew change. As you mentioned weather causes a lot of schedule delays etc.
Other concerns are any changes that would precipitate added operating or capital costs. Both of which there is potential of at other dock's in Seward.
Thanks for the opportunity to participate in commenting on your project.

MEMORANDUM STATE OF ALASKA

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
Alaska Marine Highway System

TO: Harold Moeser
Deputy Director

DATE: August 10, 1994

FILE:

TELEPHONE: 465-8880

FROM: Mary Ashmore
CIP Planner

SUBJECT: Draft Environmental Impact Statement, Proposed IMS Infrastructure Improvement Project

I have reviewed the Draft Environmental Impact Statement for the proposed IMS Infrastructure Improvement Project and the response of Jerome R. George, Chief of Engineering Operations and Public Facilities. Mr. George has done a thorough job of representing our concerns and I have only one area of additional comment.

The Draft EIS gives the impression that the current dock is satisfactory and that with a few minor inconveniences the ferry can continue to use this dock indefinitely. This is simply not the case. I have attached a copy of the 1993 Shore Condition Survey for Seward which clearly outlines major defects in the dock which are in no way addressed by the Draft EIS. I would add that on a recent trip aboard the M/V Tustumena the crew clearly agreed with the Condition Survey and perceived the need for Seward to make major improvements to the dock if we are to continue to use the dock. AMHS is already being called upon to pay for upgrades to the terminal building in addition to lease costs. The solution to the dock deficiencies for AMHS may be to move or discontinue service but the EIS contains other proposed uses for the 4th street dock after completion of this project without a discussion of the useful life span left in this dock.

Attachments: 1993 Condition Survey-Seward

CC: Pat Eberhardt, Marine Engineering

Condition Survey Information

SEWARD	City Bulkhead	Leased
	City Building	Leased

The City of Seward facility is what was left of the Alaska Railroad Seward dock at Railroad Avenue after the 1964 earthquake. This facility's structures are the remains of a soil-filled sheet pile cell concrete-capped bulkhead constructed circa 1955. It was originally intended to serve as a ship-to-rail transfer complex.

The facility acts as the staging area, transfer wharf, and layover berth for the M/V TUSTUMENA. A terminal building exists in Seward, but it is approximately one city block from the staging and transfer area. The facility was used by 6,176 passengers and 2,548 vehicles in 1992, about half the volume of the Homer facility.

With the exception of the terminal building (the old railroad depot) and the transfer wharf (about 200 feet of the original railroad wharf), the balance of the railroad transfer/warehousing complex was destroyed in 1964 by the Good Friday Earthquake.

The transfer/staging area is bounded on the west by the University of Alaska Marine Center and on the east by a geophysical hazard area. The geophysical hazard area is presently being utilized by the City as an RV/camper park.

The leased terminal building is improperly located for convenient use, and there have been problems in the past with the City needing the building for other purposes. Since the building is 30+ years old and was designed as a railroad depot, it is not energy or use efficient. AMHS participation is likely in the cost of upgrades in the roof, windows, and interior and for handicapped access if use is to continue.

The staging area is improperly laid out and not delineated or properly signed and guardrailed. It is now paved but is still illuminated inadequately. In reality, the adjacent roadway shoulder becomes the defacto staging area.

Utilities for the ship's use are located underground and are limited to telephone and TV hookups. Three phase power is available approximately one city block away. Operations has seasonally requested a ship shore power tie at this berth for layover and now that the access to the wharf is paved, the cost for provision will increase. Due to broadside orientation of the moorings, ships personnel are required to stand watch in order to fire up and stand offshore should weather threaten.

Therefore, the ship power tie (and attendant minimum security tie-up) may not be required until a more secure berth is available.

The transfer wharf and fender systems attached thereto are extremely marginal. The layout is broadside to swells from Resurrection Bay. At times traffic transfer is difficult due to the ship rolling at berth. Also as previously mentioned, at times the ship must

leave the berth during layover due to the weather and swells and may not be able to transfer and be forced to use an alternate facility operated by the Alaska Railroad. An effort to bolster the timber fender piles with untreated 12" x 12" timbers was made in the spring of 1993, however, some of them have already been broken. Continued use of this fendering system represents a significant risk to AMHS.

AMHS should not become involved in funding of the needed fender repairs at Seward. City should be requested to repair/replace them as all current damage is the result of use by others.

The cells and wharf are 30+ years old and have corroded extensively. An underwater inspection undertaken in the spring of 1993 revealed that the westerly cell was totally breached and the diver was able to swim inside below the concrete cap beam. He described a 6' x 10' void. The entire seaward wall of the dock appears to be leaning outward. The useful life of this structure has been exceeded and AMHS should make arrangements as soon as possible to vacate. A seismic event of low to moderate intensity could be enough to finish off what is left of this structure.

The City of Seward has retained a consulting engineer to provide a preliminary design of a new multipurpose dock for use by AMHS and tour ships. AMHS should support this effort in every way possible.

Ratings and Action Required

SEWARD

The following activities need to be commenced or issues need to be considered at this facility to maintain traffic or to bring the facility to an appropriate standard.

Issues

Upgrade Seward facilities to meet the operational requirements at this stop.

Support City of Seward in their effort to construct a multipurpose facility in Seward.

Reevaluate the level of service required in Seward and whether continued home-porting here is justified.

Request City to repair fenders and advise them sailings will be disrupted/missed as a result of the condition of their facility.

STATE OF ALASKA

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

ALASKA MARINE HIGHWAY SYSTEM/SYSTEM DIRECTOR

WALTER J. HICKEL, GOVERNOR

P.O. BOX 25535
JUNEAU, ALASKA 99802-5535
PHONE: (907) 465-3959
FAX: (907) 465-2476

July 7, 1994

File No. SD-411 SW 12

RECEIVED
JUL 15 1994
City of Seward
City Manager

Mr. Tyler Jones, City Manager
City Of Seward
P. O. Box 167
Seward, AK 99664

Dear Mr. Jones:

Thank you for keeping us informed of your progress on the Sea Life Center. This project should give a significant boost to your economy and enhance your waterfront. Your letter of May 11, 1994 and subsequently meeting alerted us to the probable change in use and the unavailability of the fourth avenue site. As we make plans for next year what are your intentions regarding the fourth avenue dock and ticket office lease (RE-018), both for summer 1995 and 1996.

Sincerely,

Gregory A. Dronkert
System Director

LOCAL CORRESPONDENCE

City of Seward

Letter to Port and Commerce Advisory Committee regarding relocation of ferry service from the Municipal Dock.

City of Seward

Letter with attachment to Suzanne Little regarding Municipal Dock.

City of Seward

Letter to Alaska Marine Highway System regarding Municipal Dock.

Seward Association for the Advancement of Marine Science

Letter of Agreement with University of Alaska Fairbanks regarding limited use of UAF property for specific project elements.

CITY OF SEWARD

P.O. BOX 167
SEWARD, ALASKA 99664

- Main Office (907) 224-3331
- Police (907) 224-3338
- Harbor (907) 224-3138
- Fire (907) 224-3445
- Telecopier (907) 224-3248

May 11, 1994

Mr. Jim Pruitt, Chairman
Port and Commerce Advisory Board
P.O. Box
Seward, AK 99664

RE: FOURTH AVENUE DOCK USE RELOCATION

Dear Jim:

In 1990 the city of Seward committed the area south of Railway Avenue between the Institute of Marine Science and the present Ballaine Monument parking area to the SeaLife Center. The conceptual design process for the Alaska SeaLife Center has progressed to the point that it is time to arrange for the relocation of uses presently taking place at the Fourth Avenue dock. It has long been anticipated that the Fourth Avenue dock traffic would be relocated to either the proposed B-Street dock location or the existing Alaska Railroad dock. The Seward Marine Industrial Center north dock has recently surfaced as a potential additional alternative.

The Alaska SeaLife Center design team has been proceeding on the assumption that the Fourth Avenue dock and its traffic - most significantly Alaska Marine Highway System traffic - would be relocated and that the existing right-of-way between Railway Avenue and the dock would become available for use by the Alaska SeaLife Center project. This will be accomplished by the time appropriate so as to accommodate the construction and operation of the Alaska SeaLife Center.

Funding for the B-Street dock proposal has not been forthcoming. Therefore, it is in the best interests of the Alaska SeaLife Center project and the established users of the Fourth Avenue dock that an interim location, and potentially a long-term location, be obtained for those users. The Alaska Railroad dock appears to be the logical site for such interim or long-term use. Depending on scheduling and funding, it may also serve the University of Alaska's anticipated Arctic Research Vessel.

The relocation of these uses, or the coordination of continued use, needs to be effected before the spring of 1995 when construction is scheduled to begin on the Alaska SeaLife Center. To plan for that event I would like to schedule a half-day meeting in Seward of all affected agencies and businesses. It would be my goal to examine the assumptions concerning dock use relocation and the project's use of the land with all the parties involved. Please arrange to attend, or send a representative to, the meeting at 9:00 a.m. Friday, May 27, in the Seward City Council chambers.

Please confirm your plans, or your representative's plans, with Annie Martin at 224-3331.

Sincerely,

CITY OF SEWARD, ALASKA

TYLER JONES
CITY MANAGER

TJ:alm

Cy: Ms. Nancy K. Swanton
Seward City Council
Port and Commerce Advisory Board
SAAMS Board of Directors
Heery, Inc.
Livingston Slone
Peratrovich, Nottingham & Drege

CITY OF SEWARD

P.O. BOX 167
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COPY

July 26, 1994

The Honorable Suzanne Little
State Senator
34824 Kalifonsky Beach Road
Soldotna, AK 99669-9728

Dear Suzanne:

As we discussed, attached find the letter to Greg Dronkert concerning Seward's distress over rumors that the Tustumena will be home ported in Kodiak, the service of the marine highway system in Seward will be drastically reduced, the ocean class ferry will not be home ported in Seward or a combination of the preceding.

I appreciate your stated willingness to engage with Governor Hickel to ensure that we do not lose ground with respect to the Tusty being home ported here or serving Seward using the railroad dock now that we have made plans for the Fourth Avenue Dock to be obsorbed by the Alaska SeaLife Center. Certainly your and Governor Hickel's help in getting the Railroad and the Alaska Marine Highway System to develop an operating agreement to ensure that service in Seward is expanded, not reduced, would be desired and most appreciated.

If you or your staff have any questions about this do not hesitate to contact me. Incidentally I hope that the request for an analysis by the Department of Transporation of services received and provided in Seward as well as in other non-southeast coastal communities is still being pursued. Attached find a copy of Foster Singleton's letter which made the request. I had discussed with you since that letter was sent the intent of our inquiry which was to be able to compare services provided and received in the different non-southeast communities.

Thank you for your interest and support.

Sincerely,

CITY OF SEWARD, ALASKA

TYLER JONES
CITY MANAGER

TJ:ygw

Enclosures

CITY OF SEWARD

P.O. BOX 167
SEWARD, ALASKA 99664

- Main Office (907) 224-3331
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July 1, 1994

Gregory A. Dronkert, System Director
Alaska Marine Highway System DOT&PF
P.O. Box 25535
Juneau, AK 99802-5535

COPY

Subject: AMHS Accommodations in Seward

Dear Greg:

I thought it might be advisable to write you a letter to confirm the City's position with respect to our continued support for, and interest in, home porting the F/V Tustumena and expanding our relations with the Alaska Marine Highway System generally.

As you know we conducted a meeting in Seward May 27 regarding the necessity of relocating the current users from the Seward 4th Avenue Dock to other facilities. Harold Moeser of your staff attended representing AMHS. There was a good deal of dialogue around the various uses and related issues concerning the 4th Avenue Dock. In short, however, the Alaska Railroad and Mr. Moeser agreed to discuss use of the Alaska Railroad dock by the F/V Tustumena on a regular basis.

In the course of the meeting it was noted that there would likely be times when both berths at the Alaska Railroad dock would be in use by cruise or freight vessels. At these times, it was observed, the City's North Dock at Seward Marine Industrial Center could be accessible to the Tustumena. There was a following meeting at which more detailed discussions were held by Harold and John Burns, representing the Alaska Railroad Corporation, concerning use of the railroad dock. The City is glad to see that discussions are taking place. We strongly endorse this arrangement.

Let me assure you that the unavailability of the 4th Avenue dock in no way reflects a diminution of Seward's interest in remaining the home port for the Tustumena. Further, we would appreciate support of our desire to expand on the existing role Seward has in the delivery of the services of the Marine Highway System. This extends to the proposed ocean class ferry, docks, buildings, staff, and other components of your system.

Barring contrary formal communication from the division, the City of Seward is operating with the understanding that the Alaska Marine Highway System is renewing its commitment to serve and receive service at Seward. We trust that arrangements are being made between your division and the Alaska Railroad Corporation. We would appreciate being kept abreast of that progress. In addition, if you have any questions about our commitment or yours, please be sure to let me know.

Sincerely,

CITY OF SEWARD, ALASKA

TYLER JONES
CITY MANAGER
TJ:ygw

CITY OF SEWARD

P.O. BOX 167
SEWARD, ALASKA 99664

- Main Office (907) 224-3331
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July 26, 1994

Gregory A. Dronkert, System Director
Alaska Marine Highway System DOT&PF
P.O. Box 25535
Juneau, AK 99802-5535

COPY

Subject: Your letter of July 7

Dear Greg:

Thank you for your letter of July 7, 1994. Judging from its content and what was not contained in it, I presume you had not received my letter of July 1 when you wrote your letter July 7.

I've enclosed a copy of my letter of July 1 in the event that the original did not reach you for one reason or another. I believe that I established clearly in the July 1 letter the intentions and the commitment of the City of Seward to support the Tustumena and the Alaska Marine Highway System and to do all that is within our power to expand upon the existing role we play in the delivery of services of and to the marine highway system.

Long before I arrived in Seward, (January 1993), this community became accustomed to regular warnings of impending changes in our relationship. Recognizing this I am reluctant to attach very much significance to a recent flurry of concern on the part of community residents and crew members of the Tustumena alerting me to the potential of major moves by the Alaska Marine Highway System away from Seward. I acknowledge that the City's announced intentions to terminate vessel usage of the Fourth Avenue Dock may have contributed to the sense of unrest both on the part of the locals and on the part of the system. Such unrest may be at the root of the reports I have received lately.

None the less, Greg, I feel it is critical that Seward be informed of and involved in those decisions by the marine highway system which affect our long standing linkage and which directly affect our relationship with other coastal communities. I hope you will find time to respond to my letter of July 1. I am more than willing to engage in any level of extended dialogue which would take us away from the arena of rumor and politics and put us on a firm footing as a community and a transportation agency interested in working together. Thank you, in advance, for your attention to this matter. I await your response.

Sincerely,

CITY OF SEWARD, ALASKA

TYLER JONES
CITY MANAGER

TJ:ygw

Enclosure

I submit that an appropriate step at this juncture, considering the difficulty we seem to be having, would be to involve your Commissioner, Mike Barton. Commissioner Barton sits also as a Director of the Alaska Railroad Corporation. As Commissioner of the Alaska Department of Transportation and Public Facilities and as a member of the Board of Directors of the Alaska Railroad Corporation, Commissioner Barton has an interest in each enterprise's success, as well as statewide transportation cooperation. Perhaps he can help us iron things out.

In the interim, Greg, I invite you or your representatives to meet with me, my staff and with representatives of the Alaska Railroad soon in order that facility planning for the probable future transfer might take place. Do not feel constrained by a particular date. As mentioned previously, the likelihood of shifting operations to the railroad dock simply suggested in May that negotiations for initiating the transfer might as well start. This was only an attempt to be productive and to plan appropriately. Please do not interpret this further as an attempt to force your untimely relocation.

The ability of the City of Seward to transfer the Fourth Avenue Dock property for the future Alaska SeaLife Center is a matter of considerable importance. It is not, however, our exclusive mission. Continuing to respond appropriately and productively to the concerns of the Alaska Marine Highway System remains a high priority for the City of Seward. We certainly hope that your agency's concern for the relationship with and service to this community is equally substantial.

Please contact me concerning the proposed meeting at the location of your preference.

Sincerely,

CITY OF SEWARD, ALASKA

Tyler Jones

TYLER JONES
CITY MANAGER

TJ:ygw

cy: Honorable Mayor and Members of Council
Port and Commerce Advisory Board
City Dock Committee
Planning and Zoning Commission
Honorable Walter J. Hickel, Governor
Commissioner Mike Barton
Senator Suzanne Little
Representative Gary Davis
Dorothy Urbach
Dale Lindsey
Robert Hatfield, President, Alaska Railroad Corporation
Richard Knapp, Vice President of Marketing, Alaska Railroad Corporation
Mary Ashmore

CITY OF SEWARD

P.O. BOX 167
SEWARD, ALASKA 99664

- Main Office (907) 224-3331
- Police (907) 224-3338
- Harbor (907) 224-3138
- Fire (907) 224-3445
- Telecopier (907) 224-3248

August 25, 1994

Mr. Gregory Dronkert, Director
Alaska Marine Highway System
P.O. Box 25535
Juneau, AK 99802-5535

Subject: Seward Docking Facilities for Alaska Marine Highway System Vessels

Dear Greg:

I'm in receipt of your letter dated August 19, 1994. I'm glad you've now had an opportunity to review the correspondence.

I regret deeply, however, the characterization you have given the direct attempts of the City of Seward to inform the Alaska Marine Highway System of future changes to the facility now known as the Fourth Avenue Dock. I am at a loss to understand how you could draw your three conclusions from the preceding telephone contacts, letters, meetings, follow up inquiries and assorted other attempts on the part of the City of Seward to do precisely what you ask: that the City of Seward..."take an active role in identifying a suitable long term ferry terminal facility in (Seward)."

In your newspaper interview in the August 18 Seward Phoenix Log (which was regrettably picked up by broadcast media and heard by Sewardites Monday) your comments and those of Jerry George imply that the city and other sponsors of the Alaska SeaLife Center have been unduly forceful in announcing the termination of service at the Fourth Avenue Dock. In fact we have asserted from the beginning that the actual deadline for termination for marine highway service could be past the June 30, 1996 expiration date of our existing terminal agreement. Nonetheless, we have attempted to plan for relocation for the Alaska Marine Highway System activities in order that:

A. No planning time would be lost;

B. Facility use conflicts between SeaLife Center construction and the Alaska Marine Highway System operations would be minimized;

C. The relocation of the Alaska Marine Highway System to a north/south lying dock could begin and thereby relieve you of your concern and frequent complaint about the Fourth Avenue Dock's east/west lie.

In early May of this year I wrote you and asked that you send appropriate staff to discuss this project. Harold Moeser of your staff attended our May 27 meeting. At that meeting dialogue was begun between the Alaska Marine Highway System and the Alaska Railroad Corporation. It is worth noting, I believe, that at no time during that public meeting did your agency or the Department of Transportation and Public Facilities express any of the reservations which you and Jerry George laid out in the Phoenix Log nearly three months later.

Further, in my communication, I have clearly and repeatedly asserted that our commitment to maintain and expand our relationship with the Alaska Marine Highway System is, if anything, stronger than ever. Again let me assure you this position is unchanged.

Seward Association
for the Advancement of
Marine Science

August 20, 1994

George Burgess
Deputy Director/Managing Engineer
University of Alaska - Fairbanks
P.O. Box 758160
Fairbanks, Alaska 99775

Dear Mr. Burgess:

This letter of agreement between the University of Alaska Fairbanks (UAF) and the Seward Association for the Advancement of Marine Sciences (SAAMS) is intended to authorize the limited use of UAF property at the Institute of Marine Science (IMS) in Seward to accommodate specified elements of SAAMS' proposed project, the IMS Infrastructure Improvement Project, also known as the Alaska Sea Life Center. The agreement is limited at this time to address the following concerns:

1) Enlargement of the existing K.M. Rae Building parking lot to include 50 additional parking spaces for staff of the proposed project (see attachment 1). The expansion will include construction of an entrance from Washington Avenue, installation of lighting, paving the entire parking lot, and improvement of the existing access from Third Avenue. It is understood that future maintenance of the entire parking lot will be the responsibility of the proposed project.

2) The ability to construct a riprap wave barrier that interfaces with the existing wave barrier on UAF property. The length of the proposed barrier would extend from the UAF interface to the existing municipal dock (approximately 160 feet). The proposed barrier would be similar to the UAF barrier in construction using approximately 5,000 cubic yards of armor rock. To accomplish the interface with the existing UAF barrier, it is anticipated that the proposed barrier would cross the southeast corner of UAF property (see attachment 2).

3) Due to limited square footage available for development on the proposed project site, design of the proposed structure requires a service entrance at the northwest corner (see attachment 1). To access this entrance, it would be necessary to cross a segment of UAF land at the extreme northeast corner. This service entrance will be used to deliver supplies for operation of the facility.

4) A supply of non-chlorinated fresh water is required at the proposed facility to accommodate fresh water research. A potential source has been located approximately 2,500 feet south on Lowell Point Road that appears, at this time, to

SAAMS
P.O. Box 1329
Seward, Alaska 99664
Tel: 907 224 3080
Fax. 907 224 3392

Willard E. Dunham Chairman
Karen Swartz Vice Chairman
Carol Ann Lindsey, Secretary
Sharon Anderson, Treasurer

provide the quantity and quality of water required. Analysis of this source is continuing; however, should this site prove to be unacceptable, it may be necessary to explore the potential of one or more wells on UAF property. Although no test wells have been drilled at this time, preliminary data indicates that the area northwest of the K.M. Rae Building would be most suitable.

This agreement is authorized and executed by the signatures listed below and is in effect for the life of the Alaska Sea Life Center or until subsequent agreements are reached regarding these issues.

Sincerely,

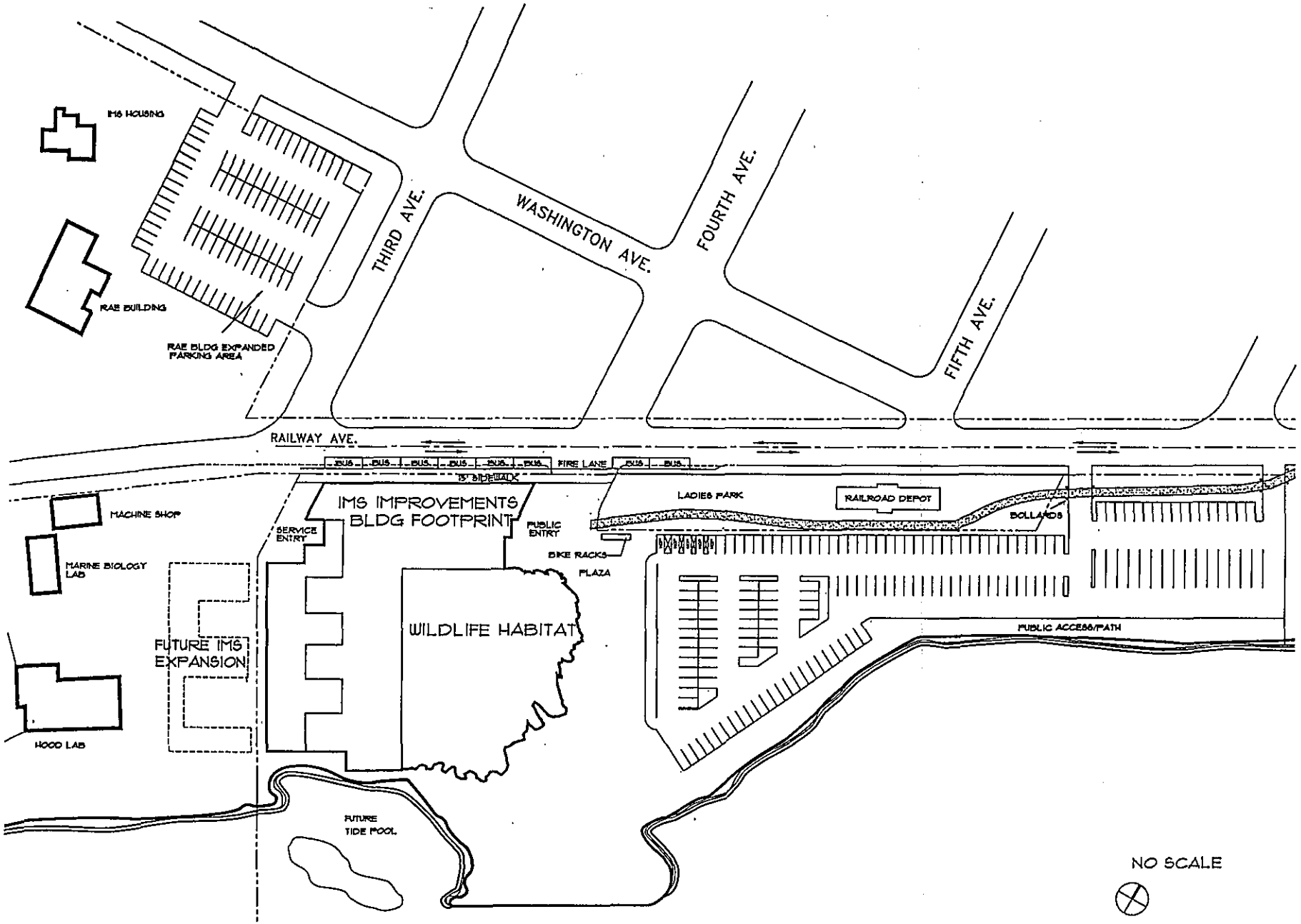
Alaska SeaLife Center

Darryl Schaefermeyer
Project Administrator

8-22-94
Date

University of Alaska

Date



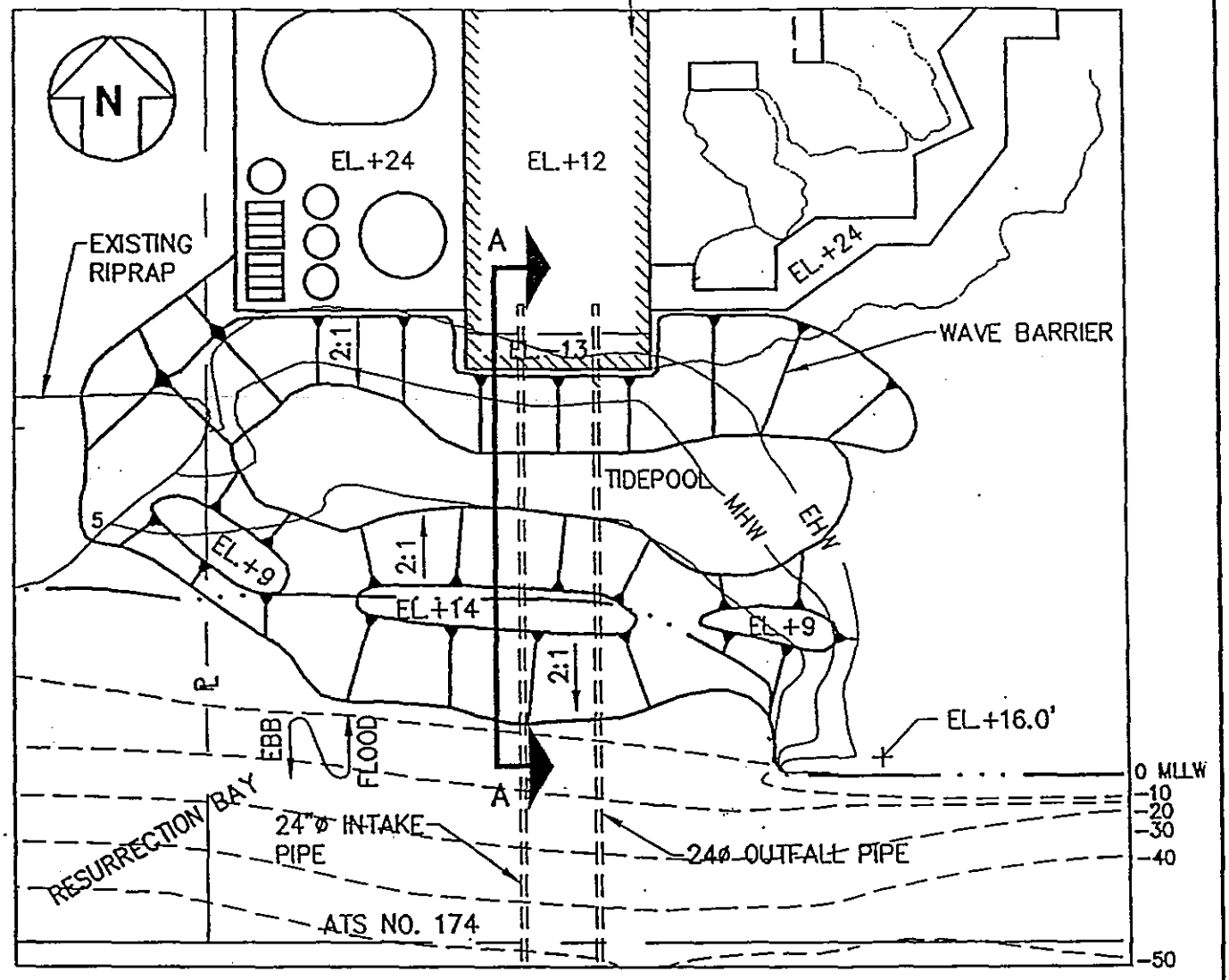
ALTERNATIVE I - PROPOSED SITE PLAN

Job No. 28347-002-160

DAMES & MOORE

IMS Infrastructure Improvement Project
Seward, Alaska

ATTACHMENT 2



TIDAL DATA:

EHW	14.8
MHHW	10.5
MHW	9.6
MLLW	0.0
HTL	13.8

LATITUDE 60°05'57"
LONGITUDE 149°26'30"

PURPOSE: EXCAVATION FOR BUILDING STRUCTURE. RIPRAP BACKFILL FOR SHORELINE PROTECTION.

ADJACENT PROPERTY OWNERS:
CITY OF SEWARD
UNIVERSITY OF ALASKA

SCALE (FEET)
0 1500 3000 6000

DETAILED SITE PLAN

SEWARD ASSOCIATION FOR THE ADVANCEMENT OF MARINE SCIENCE (SAAMS)
P.O. BOX 1329
SEWARD, ALASKA 99664

PROPOSED: RESEARCH FACILITY AND SHORELINE PROTECTION

IN: RESURRECTION BAY
AT: SEWARD, ALASKA
APPLICATION BY: SAAMS

DATED: 8/13/94

APPENDIX B

ARCHAEOLOGICAL SURVEY

HISTORIC RESOURCE INVENTORY

PRELIMINARY NATIONAL REGISTER OF HISTORIC PLACES ELIGIBILITY EVALUATIONS FOR HISTORIC PROPERTIES IN THE VICINITY OF THE PROPOSED SEWARD MARINE CENTER, SEWARD, ALASKA

Prepared By

CHARLES MOBLEY

Preliminary National Register of Historic Places Eligibility Evaluations for Historic Properties in the Vicinity of the Proposed Seward Marine Center, Seward, Alaska

Prepared by:

Charles M. Mobley



September 6, 1994

Cover: Aerial view of Seward looking northwest, taken about 1943. Dreamland building at lower right still has smaller building adjacent (blown off in a 1980s propane explosion). Railroad depot (moved to that location in 1928) is right of lower center. Left of lower center is Hoben's Park, with the white circular fountain/flowerbed showing plainly. At far lower left corner is a small railroad shop building, placed there just before the jitney shop [Teen Center] building (which is absent in this photograph) was moved to its present location adjacent. Across Railroad Street to the north, in the lower left corner, the east edge of the Brosius-Noon building shows. Across Alley C to the east, in the lower left corner, is the Seward Machine Shop -- complete with its two additions extending to 4th Avenue. North of Hoben's Park, at the corner of 4th Avenue and Railroad Street, in the new Arcade Building, built in 1943 after the old Arcade Building burned in 1941. East of the Arcade Building is the Solly Building, painted a dark color, showing the east garage portion before the second story was added to form the present building configuration. (Seward Museum photograph #0004.c1930-003)

Introduction

Between August 26 and 31 of 1994, Charles M. Mobley investigated historic properties in the proposed project area to collect information in compliance with the National Environmental Policy Act of 1969, and Section 106 of the National Historic Preservation Act of 1966. The Section 106 process provides the Advisory Council on Historic Preservation the opportunity to comment on federal undertakings that may affect properties eligible to the National Register of Historic Places. The proposed project area of potential effect on historic structures essentially includes the construction area, and--from a visual and aesthetic perspective--both side of Railway Avenue from Dreamland (at the corner of Fifth Avenue and Railway Avenue) west to the Lowell Point Creek diversion outlet flume on Lowell Creek Road (see map). Dr. Mobley photographed the existing properties, inspected archival photographs at the Seward library and museum, and talked with knowledgeable people about the buildings and the people and events associated with them. This information, presented here in preliminary form, will be assembled with additional background data as a Section 106 report in compliance with the National Historic Preservation Act.

Dreamland Bowling Alley (SEW-303)

Location: 202 5th Avenue; Owners: Kowalski-Rogers.

Description

The Dreamland bowling alley was originally constructed as an Arctic Brotherhood meeting hall, and has continued to serve large social functions throughout most of its history. The building is rectangular, 38' wide in a north/south axis, and 100' in an east/west axis. Gable ends face east and west. At least part of the east side has a basement, accessed by a relatively narrow sunken ramp at the southeast corner.

The building was originally built tall enough to be two-story, but the interior had only the ground floor, so that, for example, basketball games could be played inside. The walls are wood frame, with several different types of siding. The north wall is horizontal tongue-in-groove wood siding. The east wall is stucco, with about five feet of T-111 plywood siding added across the top, below the roofline. The south wall has stucco on the east half, and painted metal horizontal siding on the west half. The west wall, facing the street and serving as the main entrance to the building, has fake masonry panels from the ground up to about three feet. A one-story L-shaped wind-screen around the front door, open to the east, has the masonry applied across its entire west wall. Above the masonry is horizontal tongue-in-groove wood siding, extending up to the eave line. The gable end is filled in with T-111 plywood siding.

The roof has a shallow pitch, with no overhang, and is covered with painted metal roofing.

The north side of the building has no windows or doors. The east side has four windows: three on the first floor in the north half, and one on the second floor at the far north side. The south side of the building has a door into the east half, accessed with a few wood steps up to a wood landing, and protected with a small shed roof. The west half has a similar porch arrangement leading to a door. On the second floor of the south wall there is one window and one door, both on the west half. The door leads out onto a wood deck, about 12' X 12', supported by two 6" X 6" posts. The west side of the building has four windows on the ground floor, ganged in sets of two, centered on either side of the wind-screen. Mounted on the roof of the wind-screen is a small flagpole, and a five-foot-tall white bowling pin lettered with the word "BOWL." The second story has three windows spaced symmetrically, each flanked by over-sized white shutters. Above the center one is a sign that says "DreamLand."

Significance

The Dreamland Bowling Alley has played an important part in the lives of Seward residents. It was originally constructed as a meeting hall for the Arctic Brotherhood in 1907, according the Seward Historic Preservation Plan. However, Barry (1986:127) reports that the Arctic Brotherhood "acquired a lot on Washington Street to build a large hall for lodge purposes, meetings, and dances" in 1910. The 38' X 100' foundation was begun in 1915 (Barry 1993:9). The building was used for dances and basketball games until sometime in the 1930s, after the school gymnasium was built. In 1936 Burt Carr opened an automobile repair shop (called Carr's Garage) in the building (Barry 1993:203). During World War II the Army used the building as a theater, and allowed civilians in for the shows. In 1948 the building became a bowling alley, and by 1951 an apartment was framed into the west end of the second story, with a false ceiling over the lanes (in the east end of the building; bowlers bowl towards the east). At first there were just two lanes, but two more were added later to make the four that are there now. The building was called Dreamland at least by 1942, and is still named that now, 52 years later. It figures prominently in the memories of Seward citizens. It continues to play a central part in the social life of Seward, hosting bowling leagues, tournaments, and club meetings, and is significant under the category of Recreation.

National Register Eligibility

The Dreamland Bowling Alley is old enough to be entered on the National Register, since it was built in 1907. It is significant at the local level, under the category of Recreation, since is has served through time as the Arctic Brotherhood meeting hall, community dance hall, community basketball court, community/military theater, and town bowling alley. Its period of significance would be from 1907 to at least 1944. It is lacking in architectural integrity, however.

The building lacks architectural integrity in that the entire interior has been remodeled to insert a second floor where none was before. The downstairs now holds a bowling alley, and the second story contains an apartment. Although the upstairs was not inspected, it is likely that little if nothing remains of the interior appointments present during the period of significance. On the exterior, the basic lines of the building are unchanged, and the window placements on the west end are the same as during the period of signifance. However, on that west end, the

windows are of a different, modern, style, and the three second-story windows have shutters added. The present downstairs windows are truncated at the bottom, compared to those present in 1942, to accomodate the brickwork added (sometime before 1980) since the period of significance. The L-shaped wind-screen, added sometime before 1980, was not present during the period of significance, and consequently the large bowling pin and flag weren't, either. An old-fashioned gas pump present at the north end of the west side is no longer there. The 1942 photograph -- a rare early color print -- shows the west wall as grey stucco, whereas now it is a combination of fake masonry, horizontal wood tongue-in-groove, and vertical T-111 siding. Finally, both the 1942 and 1980 photographs show the west end of the building with a flat roof; the gable roof was apparently added sometime since.

The interior of the building is now two-story, with the second-story taken up by a large apartment occupied by the owners of the bowling alley.

Consequently, although the Dreamland building is an old, historic structure that figured prominently in the lives of Seward citizens, in my opinion it lacks sufficient architectural integrity to warrant placement on the National Register of Historic Places.

> *We had basketball games between us and Anchorage in the old Dreamland building. There was a lot of rivalry then. That was in the late 1930s. There was a loft -- a balcony -- and then you could also sit along the sides. At one of the games one of the players' father got so excited in the balcony that he lost his false teeth over the railing.* Wilma Lind

> *I was the janitor in the building that we played [basketball] in, where the bowling alley is now. They called it the AB [Arctic Brotherhood] Hall, or something like that. They had all the New Year's dances and all that stuff in there....it was kind of cramped, but it seemed like a big place at the time. They'd get in some awful fights.* Barton Stanton

> *When I came in we didn't have a gym at the school and that's where we played basketball, at the Dreamland Bowl....Then there was a garage for awhile, in 40, 39. Cause I was in there, had my car painted in there....a second-hand Nash. Then the Army took it over during the war and had a theater in there....Then the bowling alley started after the Army left, in the late 40s or early 50s. Started out with two alleys. And they had a fire in there, so they added two more. That made four alleys, and that's what it is now.* Oscar Watsjold

> *In 1948 Dreamland became a bowling alley, and when I saw it in 1951 it had a crummy three-room apartment across the front and a false ceiling over the rest of it....It had a slope going into the basement on the southeast side, and at one time they had stables in there. A gentleman who used to bowl here -- Bill Estes of Moose Pass -- told us he stabled his horse Napoleon in there in 1928....When we re-sided it I insisted we leave the Dreamland sign. Juneau and other places had Dreamland dance halls. I assumed this one had the name because it was a dance hall.*
> Donna Kowalski



Figure 1. Dreamland bowling alley looking east, showing west side facing 5th Avenue. The building was originally built in about 1915 as the Artic Brotherhood Hall, and has served as a dancehall, basketball gymnasium, movie theater, and automotive garage. Note masonry, shuttered windows, T-111 siding on gable, and second-floor deck.

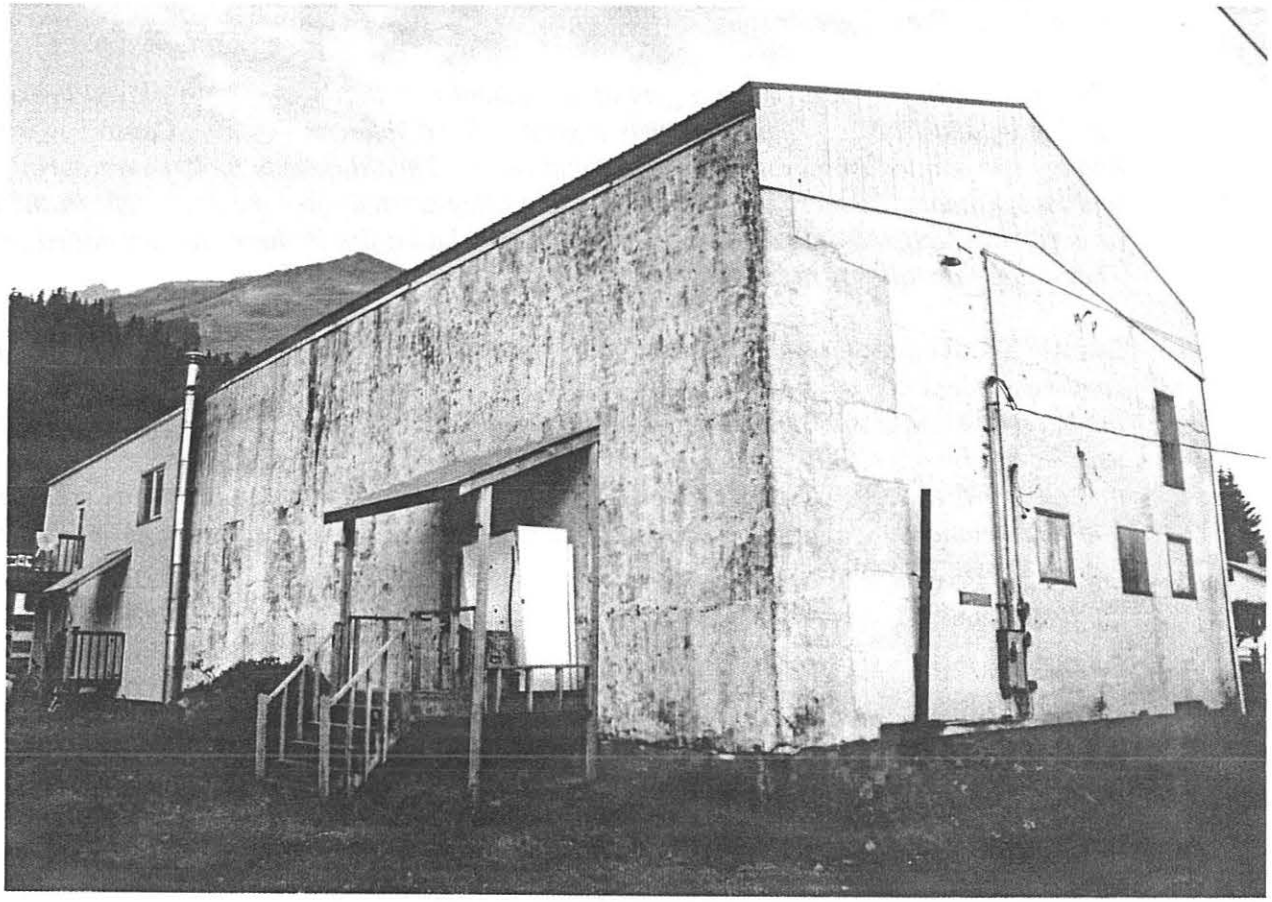


Figure 2. Dreamland bowling alley looking northwest, showing southeast corner. Note metal siding at far left, and T-111 on gable.. Former window locations, now stuccoed-over, show left of porch and left of electrical service. A narrow ramp down to the basement is located just behind the stairs, left of center.

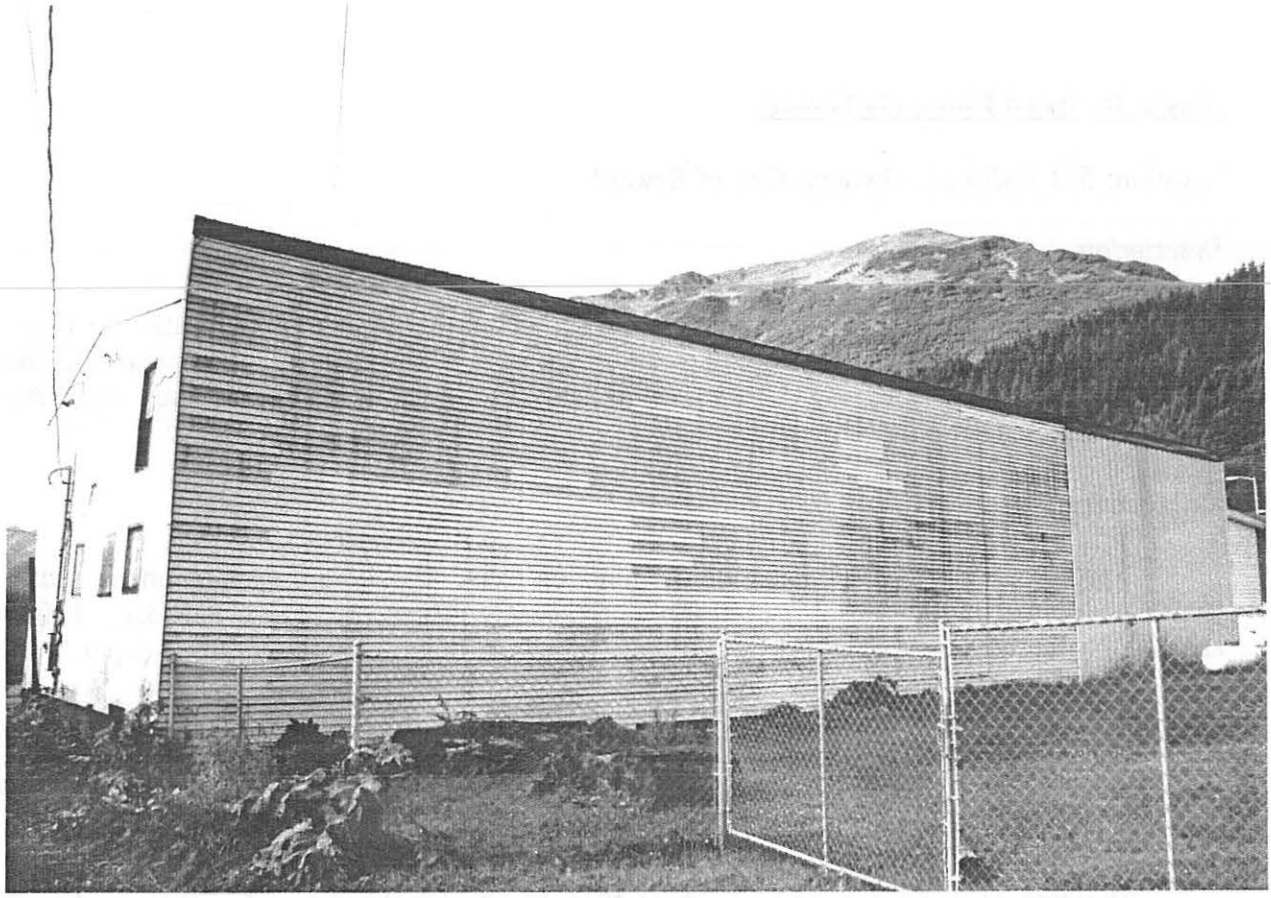


Figure 3. Dreamland bowling alley looking southwest, showing north wall. Wall is sheathed with tongue-and-groove wood siding on the east, with ribbed metal installed on the west (far right).

Alaska Railroad Depot (SEW-001)

Location: 501 Railroad; Owners: City of Seward

Description

The Seward railroad depot was built in 1917, and moved to its present location in 1928. It has been called "a pristine example of Alaskan industrial/transportation modifications to the residential Craftsman Bungalow style." Complete description is foregone here, since the structure is already on the National Register.

Significance

According to the National Register nomination form, "the Seward Depot, constructed in 1917, is a symbol of Alaska railroad history, particularly that of the Alaska Railroad. It is a virtually unaltered prototype of the hip-roofed, Craftsman Bungalow style railroad depot."

National Register Eligibility

The Seward railroad depot was entered on the National Register of Historic Places in 1987.

> *That depot was built, I presume, about 1916-17. At that time it was located not where it is now -- its the ferry office building now -- it was around the corner there just off the end of Ballaine -- about a block from the end of Ballaine. There used to be railroad tracks and stuff out there, and that's where it was located. [It's] just like it is now. Hasn't changed a bit. They had two sliding doors -- I think one of them is still on there, where they put the baggage in. It's absolutely the same. They didn't change it.* Herman Leirer

> *The passenger trains came in about seven in the evening, left about seven in the morning. Most everybody was down there to see who the hell was coming, you know....It [freight] was all loose stow in cars. They didn't have cribs and all that stuff like they do now. Handwheelers. They'd take it off the boat. Lots of men involved. Toward the end, there, before they quit it, there was two shifts, four gangs. There'd be a boat gang, and a dock gang. There'd be around 200 longshoremen here in town, working. One guy'd put the box down, and it was somebody else's job to put it on the two-wheeler, and somebody else's job to take the two -wheeler... It took sixteen, seventeen men to a gang. I was hauling hay off the dock one time, one night, me and another guy....And we moved the hay faster than the seventeen men could get it off the boat. Sheesh. No wonder it cost so much to move freight.* Herman Leirer

> *They left it [train depot] pretty much the way it was. In fact, I think they increased the size of it a little bit in the main place. They had more baggage in those days....The tourists in those days, they traveled with trunks and everything. They'd have baggage so it was coming out your ears....But they used trunks....*
> Barton Stanton



Figure 4. The Alaska Railroad depot was built in 1917 and moved to this location in 1928. It is a classic example of Craftsman Bungalow style, and was placed on the National Register of Historic Places in 1987.

Hoben's Park (Nile Park, or Ladies Park)

Location: 401 Railroad; Owner: City of Seward.

Description

This park, which has had several names, is a narrow strip of land west of the railroad depot, between the depot and 4th Avenue. It measures approximately 200' X 40', and is bounded on the north and west by a low concrete berm. Imbedded in the berm is a low wrought-iron fence, built in sections, formed by vertical metal posts welded to two horizontal cross-bars. The whole assembly is less than three feet high.

The park is a hodge-podge of landscaping details. A surfaced bike/pedestrian trail bounds the south edge of the park, separating it from the large Northern Stevedoring warehouse just a few feet away. A dozen or so trees, of all different sizes, both spruce and deciduous, are scattered through the park in no pattern. A surfaced and fenced half-court basketball area takes up most of the east end of the park, near the railroad depot. Near the center of the park is a flower-bed inside a low circular concrete berm painted white. At the southwest corner of the park is an information sign mounted on two posts, announcing the beginning of the historic Iditarod Trail. Nearby is a pedestal holding a wooden dogsled, with a similar Iditarod Trail plaque.

Significance

The original park was built sometime before 1927, according to the Seward Historic Preservation Plan. Barry (1993:62) reports that in 1923 the City was considering that parcel and the one just west of the 4th Avenue dock "to make an ornamental park area so visitors would find a pleasant scene when arriving by ship or train." Period photographs indicate that the concrete berm and metal fence were part of the original landscape. Also in place were at least one and possibly two circular flower beds, centrally located in the park, as well as a circular fountain.

Harry V. Hoben -- former mayor, businessman, and owner of the Arcade Building just north across Railroad Street -- was said to have directed his handy-man to maintain the park during the summer. Oral history accounts indicate that the park was not a focal point for local citizen activities, but was primarily for the enjoyment of tourists and other rail and boat passengers.

The park was known as Hoben's Park because Harry V. Hoben took upon himself the maintenance of the lot. It was probably known as Nile Park due to some relationship with the Nile Temple -- Seward's chapter of the Masons. The origin of Ladies Park did not come to light.

Hoben's Park is significant through its association with Seward's early days of rail and boat traffic, under criterion a. Its areas of significance are recreation and transportation. Its period of significance is from about 1927 to 1944 -- using the arbitrary 50-year cut-off. It would appear to be one of Seward's earliest surviving designed landscapes.

National Register Eligibility

Hoben's Park is an historic designed landscape associated with early recreation and transportation in Seward. It retains its original size, aside from perhaps encroachment by the paved bike/pedestrian trail on the south. Original elements remaining include the concrete and metal fence, and a circular flower bed which may actually be the former fountain site. Non-contributing elements built since the period of significance are all reversible: the Iditarod Trail sign, the Iditarod Trail dogsled and pedestal, and the basketball court. In my opinion, Hoben's Park is eligible to the National Register of Historic Places.

> *Now right there by the railroad station they had what they called Nile Park, or Ladies Park. It was put in by Hoben and Davis. Old Harry Hoben was responsible for that. And he had old McKay taking care of it, his janitor, in the summertime. That concrete ring there, that had a little stand with a sprinkler on it -- that was there before we was....They had a couple benches there. They didn't pay too much attention. They were mostly over at the beer joint drinking beer, you know.* Herman Leirer

> *Hoban's park, I think they called it. The whole thing. There's just a little bit of it left, where they've got that tennis court....It was more or less for when tourists came on the boat. The boats all landed there at the dock and they'd come off of there....* Barton Stanton



Figure 5. Hoben's Park, sometimes called Ladies or Nile Park, was originally an un-cluttered open court when the city opened it in about 1927 as "an ornamental park area so visitors would find a pleasant scene when arriving by ship or train." View is to the east.



Figure 6. Virginia Darling, who remembers some of Seward's early days, stands in front of what was either the original fountain or a flowerbed in Hoben's Park.

Northern Stevedoring Warehouse

Location: Municipal dock; Owner: leased from City of Seward (?)

Description

The Northern Stevedoring warehouse is a large two-story metal building about 60' X 120' in size. It has a concrete foundation. The slightly-pitched metal roof creates gables facing east and west. The metal sheathing is placed with the ribs vertical, and held in place with hex-head screws through rubber washers. The north exterior wall presents an essentially solid wall toward the city. The west wall has a large sliding garage door for entry of large, tall vehicles, and three windows on the south side -- one on the ground floor and two on the second story. The southwest corner of the building holds offices, both upstairs and down, and has the majority of the building's windows. The west end of the south wall has three windows on the second story, and two on the first floor. The west end of the south wall also has the buildings main entrances, two of them, each protected by a small entry way with shed roof. Midway in the south wall is a loading dock, with a large garage door opening into the first floor of the building. The interior of the building was not inspected.

Significance

The Northern Stevedoring warehouse is constructed on fill placed there after the 1964 earthquake destroyed the rail facilities and warehouses on the waterfront. According to City Engineer Kerry Martin, the structure was erected on its present site about 1970. It supports industrial activity in conjunction with the municipal dock.

National Register Eligibility

The Northern Stevedoring warehouse is a recently-constructed industrial building with no historic significance. In my opinion it is not eligible to the National Register of Historic Places.

Northern Stevedoring Welding Shop

Location: Municipal dock; Owner: leased from City of Seward (?)

Description

The Northern Stevedoring welding shop is a corrugated metal building about 50' X 30' in size. Its foundation consists of metal posts bolted to concrete pedestals formed in 10" diameter "sonatubes." The metal sheathing is placed with the corrugations run vertical, and held in place with hex-head screws through rubber washers. The pitched roof creates gable ends facing east and west. The roof is metal. The building is pre-fabricated, and has an enamel sign at the peak reading "FOLD-W-WAY ATCO WESTERN LTD." The structure has no entrances other than tall sliding garage doors at the east and west ends of the building, and it has no windows.

Significance

The Northern Stevedoring welding shop is constructed on fill placed there after the 1964 earthquake destroyed the rail facilities and warehouses on the waterfront. According to City Engineer Kerry Martin, the structure was erected on its present site about sometime around 1980. It supports industrial activity in conjunction with the municipal dock.

National Register Eligibility

The Northern Stevedoring welding shop is a recently-constructed industrial building with no historic significance. In my opinion it is not eligible to the National Register of Historic Places.

> *The smaller metal building was moved in in the late 1970s or early '80s. The other was built about 1970 -- definitely after the earthquake.* Kerry Martin

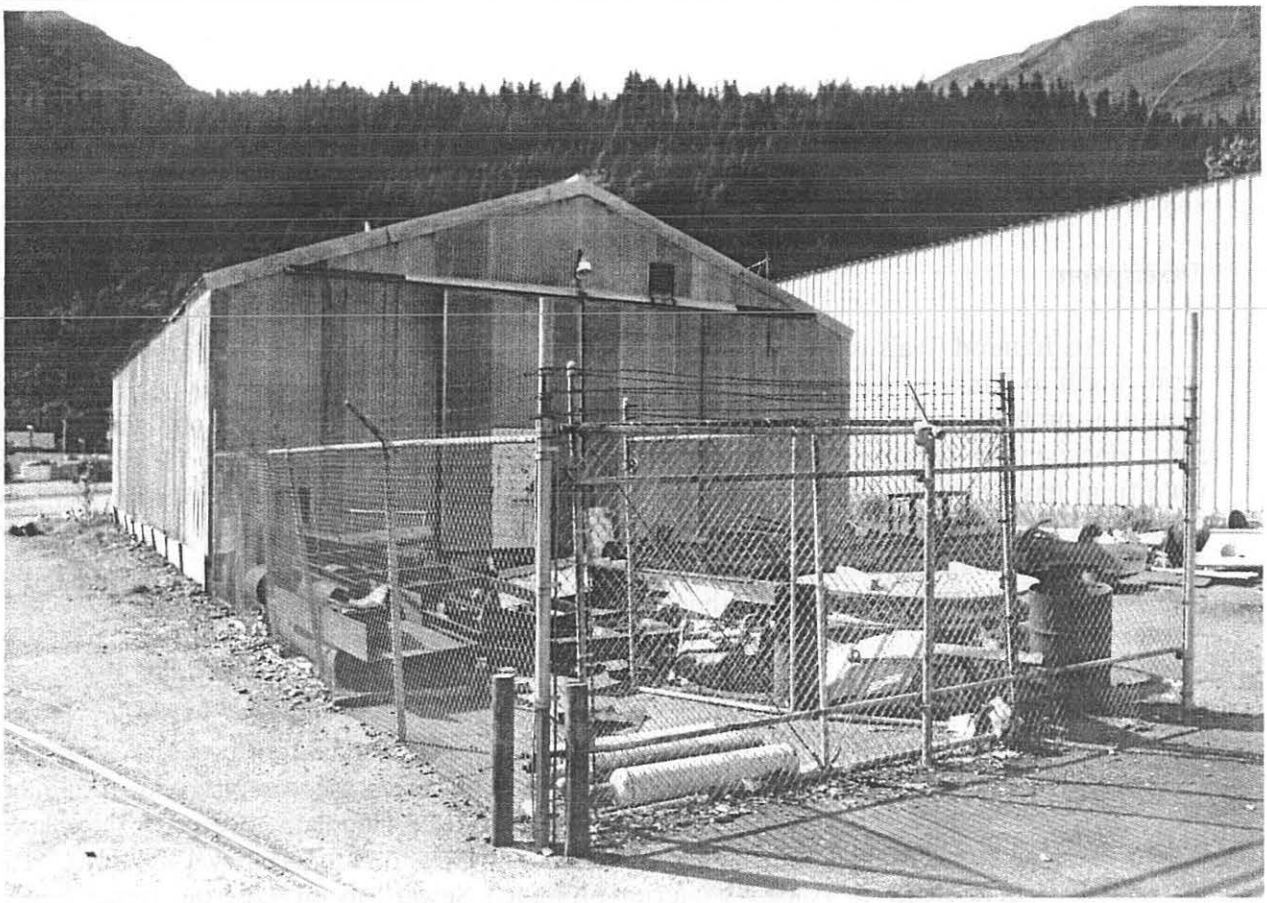


Figure 7. The two Northern Stevedoring buildings are both metal structures built on fill after the 1964 earthquake. The smaller building on the left, a welding shop, was constructed about 1980. The larger building, the office and warehouse, was built about 1970.

Iditarod Historic Trail Mile 0 (SEW-148)

Location: Seward waterfront; Owner: City/KBP/State

Description

The Iditarod Trail is an historic trail which began in Seward, went inland to Turnagain Arm, north to Knik, and then all the way to Nome. Physical evidence of the historic trail at Seward is probably non-existent. The actual beginning of it, technically, was the wharf where ships docked and new arrivals landed to begin their Alaska journey. Since the Seward waterfront has been rearranged several times, most significantly by the 1964 earthquake and subsequent demolition and fill, little survival of the original trail can be expected. A commemorative sign and dogsled are installed at the west end of Hoben's Park, next to a paved bike/pedestrian trail that follows the shoreline counter-clockwise to the present harbor.

Significance

The Iditarod Trail was a major historic trail in the commercial transportation system of early Alaska. Although the head of Resurrection Bay had been the starting point for inland travel for prior decades if not centuries, it was the 1907-1908 Goodwin survey for the Alaska Road Commission that mapped a complete route from Seward to Nome (Barry 1986:116). The 1909 Iditarod gold strike in Alaska's interior prompted Seward to promote the route, and in December of 1910 "a half ton of gold dust arrived at Seward from the Iditarod, brought by dogteams" (Barry 1986:127). In 1914 a mail contract was issued for the Seward to Iditarod route, formerly a concession began in Valdez (Barry 1986:156). With the completion of the railroad from Seward to Anchorage in 1918, the dogteam portion of the Iditarod route was begun in Wasilla (Barry 1993:132). Thereafter, commercial dogteam travel out of Seward was solely local traffic for the Kenai Peninsula (Barry 1993:134). The period of significance for Iditarod Trail Mile 0, in Seward, is approximately 1907 - 1918.

National Register Eligibility

The Iditarod Trail was a significant route in the history of Alaska's commercial transportation, and Seward was the beginning of that route. The period of significance is approximately 1907 - 1918. However, no physical traces of the original Mile 0 are in evidence. The commemorative sign and dogsled, and the bike/pedestrian trail, are all recent improvements. In my opinion there is nothing remaining at Mile 0 of the Iditarod Trail that is eligible for the National Register of Historic Places.



Figure 8. The historic Iditarod Trail began in Seward as a dogsled route to goldfields in Flat and Iditarod, and beyond to Nome, between 1907 to 1918. The 1986 federal management plan for the Iditarod Trail gave the city license to designate accessible hiking routes as part of the trail, leading to a commemorative Iditarod Trail sign at the beginning of the bike trail, shown here by the railroad depot.

Teen Center

Location: Railroad Street; Owner: City of Seward

Description

The Teen Center is a long narrow one-story building measuring 25'6" X 72'6", with the long axis running east/west, parallel to Railroad Street. The moderately-pitched roof creates gables on the east and west. Roofing is blue metal, with a two-foot overhang exposing 2" X 8" planed rafters. Exterior sheathing is grey ribbed metal, installed with hex-head screws through rubber washers. The main door, centered in the north wall, is metal, and is protected by a small open entry with a gable roof. The south wall has a metal door, protected by a gable roof, on its west end. The west wall has a metal door near its north end. Windows are wood-framed, paired, awning types, held together with staples.

The foundation is almost completely covered by the exterior sheathing, but it appears to be concrete on the west end of the building, and creosoted pilings on the east end.

The former exterior sheathing, beneath the metal siding, is exposed only in a few places near the foundation. The older sheathing is vertical wood boards, and quite rotten where exposed. Some of the boards are 1" X 6", and some are 1" X 8". They were too rotten to determine whether they were shiplap or not.

The interior was not inspected, but it is apparent from peering through the windows that the building has been remodeled to serve its current function as a youth center. The east and west interiors are reported to have two different floor elevations.

Significance

The date of building construction is not certain. It was a repair shop for jitneys -- small railroad yard tractors used to pull pallets of freight and luggage -- and was originally on pilings on the dock. It was moved to its present location in about 1942 or 1943. The building is definitely not at that location in a 1941 aerial photograph. Later, in the 1970s, the building was used for storage, before becoming a youth recreation center.

National Register Eligibility

The teen center building has been at its present location for no more than 52 years. It was a utilitarian building serving the railroad dock area, and does not figure prominently in the memories of Seward citizens from that era. It never was architecturally distinctive, and subsequent renovations have removed its architectural integrity. In my opinion, the teen center building is not eligible for the National Register of Historic Places.

> *...it was a military building -- a shop building. They repaired their tractors and stuff in there, you know -- a kind of shop building....It was put in there about 1942-43, something like that.* Herman Leirer

> *That [Teen Center] used to be a railroad repair shop....for their jitneys and stuff. They had a couple of mechanics working there.* Oscar Watsjold

When I first started working on the dock there were two buildings on the dock. One was the jitney shop. The other was used for storing material. They moved the jitney shop onto the shore, by the tracks, because they were rebuilding a lot of the dock. That would have been '42-'43, something like that. I was a machinist. I kept the jitney bugs running. Jitneys were electric carts that pushed the flatcars of baggage, or mail, or groceries, back and forth on the docks. Del Robbins

The Teen Center was an upholstery shop in 1975. Then Albert Kowabe stored fishing and recreational gear in there for the Japanese fishing boats in the late 1970s. Willard Dunham

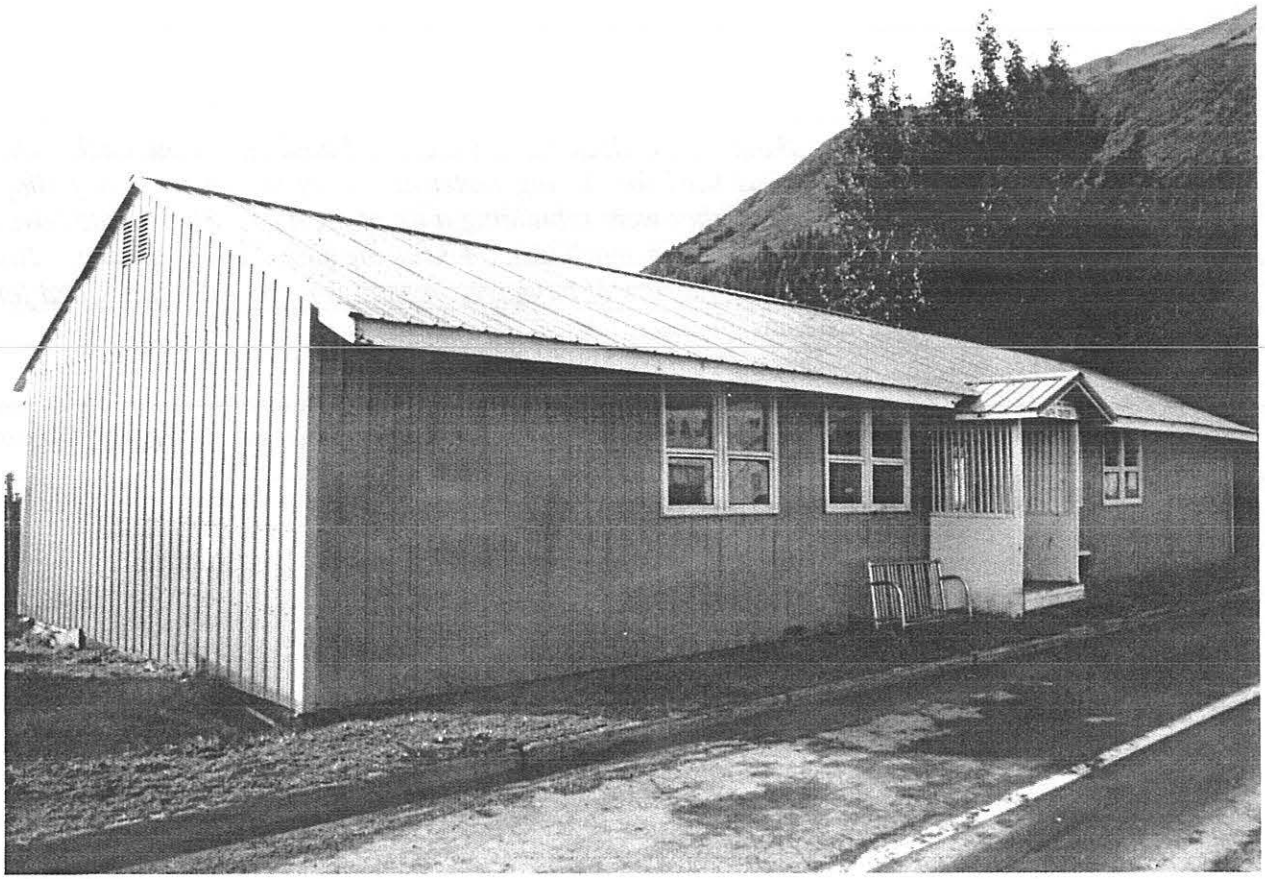


Figure 9. The Teen Center was once a railroad shop for repairing jitneys -- small electric tractors used to move flatcars of baggage and freight from the dock to the train. It was moved from the dock to this location in about 1942 or 1943. Used for storage in the 1970s, it became a youth center in about 1980. View is of the north wall, looking southwest. Note metal roof and walls.



Figure 10. The Teen Center, looking northwest. Windows are modern wood assemblies.



Figure 11. This view of the west wall of the Teen Center shows its metal door.

Lowell Creek Flood Control Facility (SEW-011)

Location: 100 Lowell Point Road; Owner: City of Seward.

Description

The Lowell Creek flood control facility consists of a diversion dam just upstream from the mouth of Lowell Canyon; a 2068'-long, ten-foot-diameter tunnel; and an outlet flume that discharges the water into Resurrection Bay 67 feet above the low tide mark, just north of Railroad Avenue where it begins following the rocky shoreline west and turns into Lowell Point Road. A complete description is foregone here, since the structure is already on the National Register of Historic Places.

Significance

According to the National Register form, "the flood control project on Lowell Creek at Seward, Alaska, was the U.S. Corps of Engineers first completed flood control project in Alaska." It was begun in 1937, and completed in 1940.

National Register Eligibility

The Lowell Creek flood control facility was entered on the National Register of Historic Places in 1977.

> *In the fall of '41 they started the diversion tunnel up to Lowell Creek, and I worked there all winter, as a miner, cause I knew a little bit about mining, and dynamite, and that kind of stuff....they just built it like they used to mine, with water-liners -- drills cooled by water -- and washed the stuff out. And then they had the mucker, and they hauled it out by diesel truck, cause they couldn't run gas in the tunnel....They had two shifts working on the tunnel. Two 8-hour shifts. There was about seven people working on the crew, hauling the rocks out, and the mucker, and then there was three miners, and then there was a person on the compressor.* Oscar Watsjold



Figure 12. The Lowell Creek flood control project was the first water control project completed by the U.S. Army Corps of Engineers in Alaska. Construction took place between 1937 and 1940. The facility was entered on the National Register of Historic Places in 1977. This view is of the diversion dam, at left, and the beginning of the tunnel at center. (Seward Museum; un-numbered photograph)



Figure 13. The outlet flume of the Lowell Creek flood control tunnel enters Resurrection Bay at an elevation of 67 feet, at the beginning of Lowell Point Road.

The Line

Location: northeast corner of 3rd Avenue and Railroad Street; Owner: University of Alaska (?)

Description

The Line is the term used for the group of 26 shacks along "Alley B" traditionally housing prostitutes in Seward, but there are no structures there now. They were either destroyed by the 1964 earthquake, or demolished soon thereafter. Now the area is a sodded lawn, with a north-south line of large trees marking where Alley B once was.

Significance

The Line was a well-remembered and accepted tradition in historic Seward, until the Army closed the facility down in about 1942 or 1943. While not socially accepted as individuals, the prostitutes were perceived as a necessary institution throughout the town's early days. Barry (1993:5) describes its founding, in about 1914: "Expecting that Seward would have an influx of new residents, mostly single men, John Noon, a City Council member [and an early partner with Cal Brosius in his lumber dealership and wood shop], set up provisions for a restricted district within the corporate limits of the town for the red-light women. Alley B, between Second and Third Avenues and Washington and Railroad Streets became the designated area. In 1918 there were fourteen women, and fourteen houses, comprising The Line. When threatened with closure that year, the women bought interests in the fishing fleet, thus expanding their commercial enterprises and remaining in business (Barry 1993:51).

National Register Eligibility

No structures are left from The Line, and therefore none are eligible to the National Register. The site remains of interest as Seward's acknowledged red-light district, however, and -- fittingly -- is still marked by a line -- the line of trees.

> *They had the prostitutes over here right on the other side of the Brosius building. See that row of trees over there, kind of straight? That was Alley B, they called it. That's where The Line was. They usually called them lines in those days. They had quite a bunch of them over there, and all good citizens. A little different way of making money, but some of them just sold whiskey, is all. You go over there and get a shot of whiskey for 50 cents. I remember council used to have a session and then go over there -- mayor included -- and go over there and drink for a couple of hours after the council meeting, in the 20s, 30s. They had those girls, once a week, had to report to a doctor. They couldn't go uptown only between one and five o'clock, to do their shopping. They couldn't run around town at night, or solicit business....Yeah, they closed it down -- the girls were all over town then, working out of hotel rooms and everything else. No more control. You didn't see them steal anything from anybody. I used to deliver milk over there by the month. Bill at the end of the month, and on the second of the month I'd go down there and knock on doors, and tell them I'm around to collect my milk bill....Five years, no six years, I got gyped out of $8.25. That's all I got gyped out of. Now that's pretty damned good....* Herman Leirer

...I didn't know there was a line, I just knew I wasn't to go over there and play....A girl came to town from Cordova....her father had a store like ours, and the fathers were acquainted. She came up to the apartment, and I was just fascinated by her, because she had a garter on her leg and she was a very pretty girl....She took me down on The Line with her, and I visited in all the houses. I came home just full of news for my dad -- the most beautiful ladies I'd ever seen, and they were so nice to me. Poor dad, he just nearly had a fit because he didn't know what to tell me....You could go out on the street and you wouldn't be accosted, and nothing bad would happen, because they all knew where The Line was and they all went down there. I thought it was just great. It made it safe for the other women in town. When they closed it....we had a terrible time.... Dad left a big axe handle by the back door, and he said "You keep it locked, but if it's necessary, use this."....I don't know that it would work now, because the girls don't have the morals that they had then. Virginia Darling

I was on the council during the war. This guy I kind of hob-knobbed around with, he told me "Well, you're going to get something to scream about pretty soon -- they're going to close The Line." The military was going to do that. I said, well, the girls are going to move out and they'll be all over town then. And that's what happened....They did it all over the U.S. I think that's probably what started what we got now. They moved them out, made everybody whores. Barton Stanton

The Army...came to the council and wanted to shut The Line down, and I think half the women in town came to the council meeting, saying "Don't you dare shut that line. It won't be safe for us to walk the street." The Army they wanted to close it, but we took the opinion of what the women said and we never did close The Line, as the council. Oscar Watsjold

There were 26 whorehouses in Alley B. The tidal wave got most of them in '64, except the madame's house. It was gorgeous -- red brocade, etc. It was a gold mine. We tried to save it but Oscar Watsjold, the fire-chief, burned it for a training exercise. Willard Dunham



Figure 14. Shot from the nearby mountain in probably the late 1940s, this photograph of the Seward waterfront shows the buildings of The Line at lower left. Note the railroad jitney shop is in place at its present location as the Teen Center, at right. (Seward Museum photograph #0004-ND-014)



Figure 15. The line of trees marking where Alley B once was -- The Line -- is now part of the lawn surrounding the University of Alaska buildings.

Brosius & Noon Building (SEW-151)

Location: 302 Railroad; Owner: Lindsey/Siemenski

Description

The Brosius & Noon building is an amagalmation of three historic buildings in their original location, now completely renovated and incorporating a large modern addition on the north. According to a National Register form prepared in 1977, the original three buildings consisted of: (1) a two-story wood frame carpenter shop built in 1909; (2) a one-story wood frame building-supply store built in 1907; and (3) a one-story wood frame warehouse built in 1906. Today some of the original lines of the three buildings can be detected beneath the renovation, on the south, but the present facility appears as a modern structure named Seaview Plaza. It houses medical and other offices.

The exterior walls are stucco with a coarse pebble surface. The entire south-facing wall of the larger, two-story component is glazed. The west wall has a modern entrance and few windows. The north wall of the building, the two-story addition built sometime in the early 1980s, has an enclosed entrance and stairwell and six large office windows on each story. The east wall faces the alley, and has no windows except for the northern addition, which has two.

Significance

The Brosius & Noon building was built early in Seward's development, and played a prominent roll in the town's growth by supplying building material for several decades. Cal Brosius was an influential and respected character in Seward, and also built and owned, with his sister -- Mrs. Wybreck -- what became known as the Solly building. The building is significant at the local level for its association with Cal Brosius and its contribution to the construction and development of early Seward.

National Register Eligibility

The 1977 National Register nomination form made its way through the system until the Brosius building was judged eligible in 1983. However, the early 1980s renovation of the building, in the opinion of the SHPO, destroyed the building's integrity and removed it from National Register consideration. A letter from the State of Alaska dated May 21, 1986, states that "the exterior treatment retains the original building masses, but has no other resemblance to the character, materials, details or fenestration pattern of the building as it was nominated. Given the destruction of the building's historic visual integrity, it appears that the Brosius and Noon Building complex is no longer eligible for nomination to the National Register of Historic Places. Although I did not inspect the interior of the building, given its exterior appearance, I would agree that the Brosius & Noon building remains ineligible to the National Register.

> *...he [Brosius] had his planers and saws and everything, you know. He had a long shaft going through the benches. Pulleys on there. Instead of having an Allen lock on there he had the old type -- put them on with a wrench with a square head on them. They always stuck up about that high, and it caught him. '42, I think....he got his pants caught in that and it wrapped him up*

in there. The guy he was working with, Army soldier, he took him a little time to get the machinery disconnected. Herman Leirer

[Cal Brosius] was really an old timer....Cal ran this builder's supply, and I bought all my lumber and stuff from him to rebuild the house. I'd known him for a long time, even when I was a kid. He'd bend my skis for me....His building was a wood-working shop. He could cut framework and stuff like that....He was cutting his fingers off all the time....He was showing me, you know, when he was bending my skis....he wanted me to quit Standard Oil and go to work for him....The old son-of-a-bitch, he even took one of my checks and threw it down behind the safe. And after he died they found it....He was trying everything in the book to make me quit Standard Oil and go to work there. Barton Stanton

...it [Brosius Building] was sort of like a wood shop, you know. He had the motors that run the different things downstairs, and they run off of belts....a big band saw, and a couple of cut-off saws....It was just the one story -- the ceiling was all open. It used to say -- the big sign on the front, on the building -- Brosius and Noon. Noon was his partner, I guess. Barton Stanton

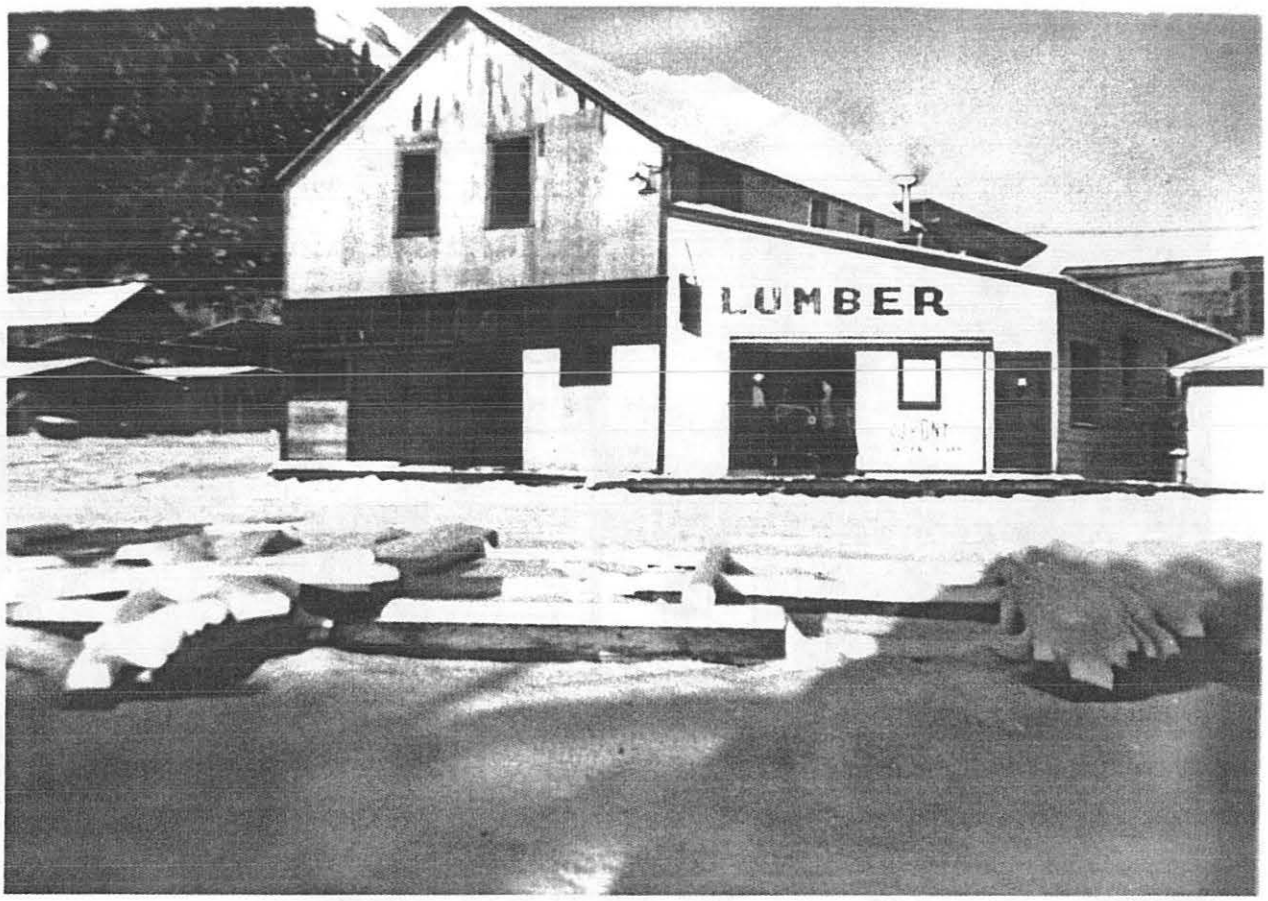


Figure 16. The Brosius-Noon building was originally a lumberyard and woodworking shop for Cal Brosius between 1906 and 1942. (Seward Museum photograph #0070.006.01)



Figure 17. After Cal Brosius died from an industrial accident inside the building, in 1942, the business was taken over by John Paulsteiner -- the father of noted Seward historian Mary J. Barry. Compare building original building lines with those in following photographs. (Seward Museum photograph #0070.013/01)

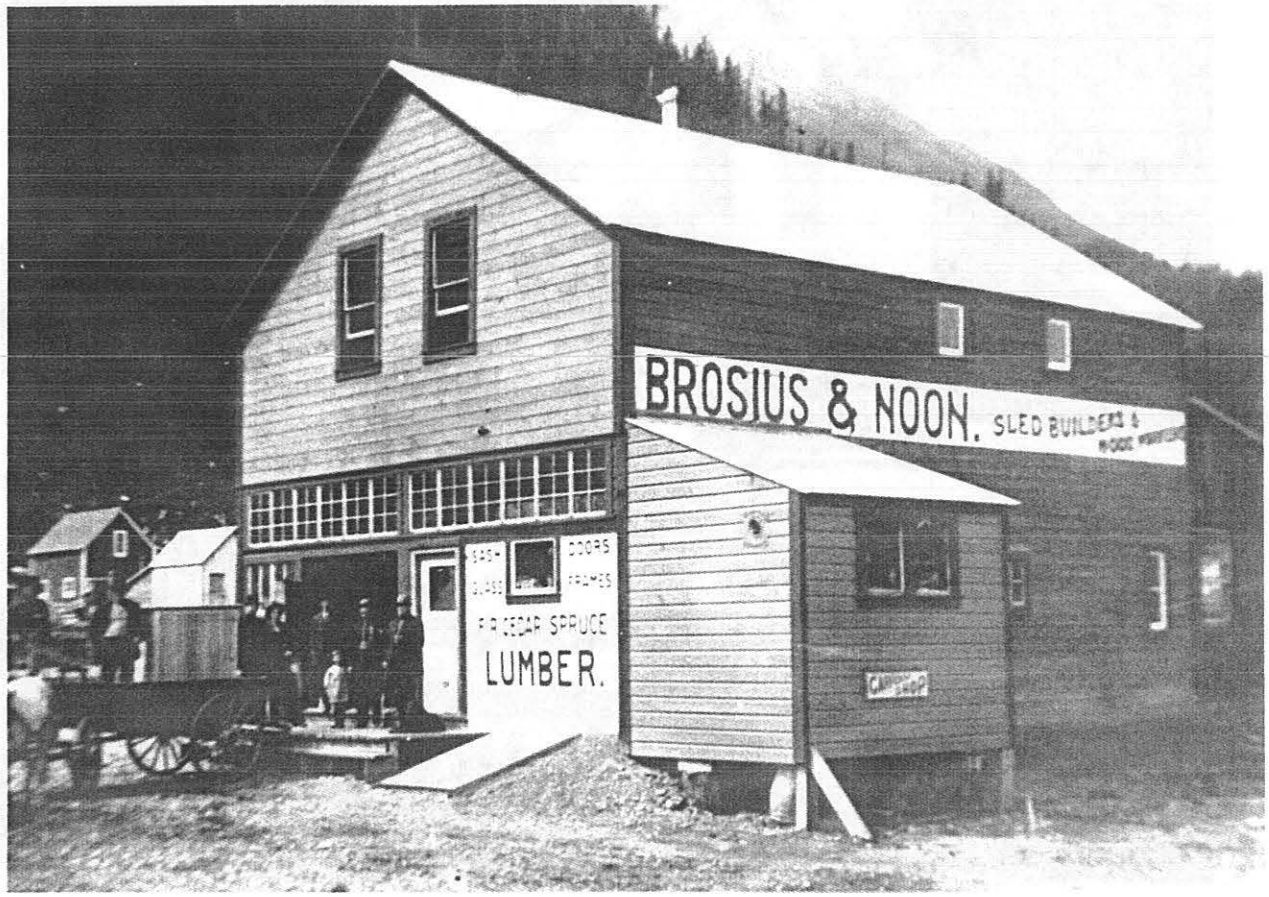


Figure 18. This portion of the Brosius-Noon building was built in 1909. (Seward Museum photograph #0070.006/02)

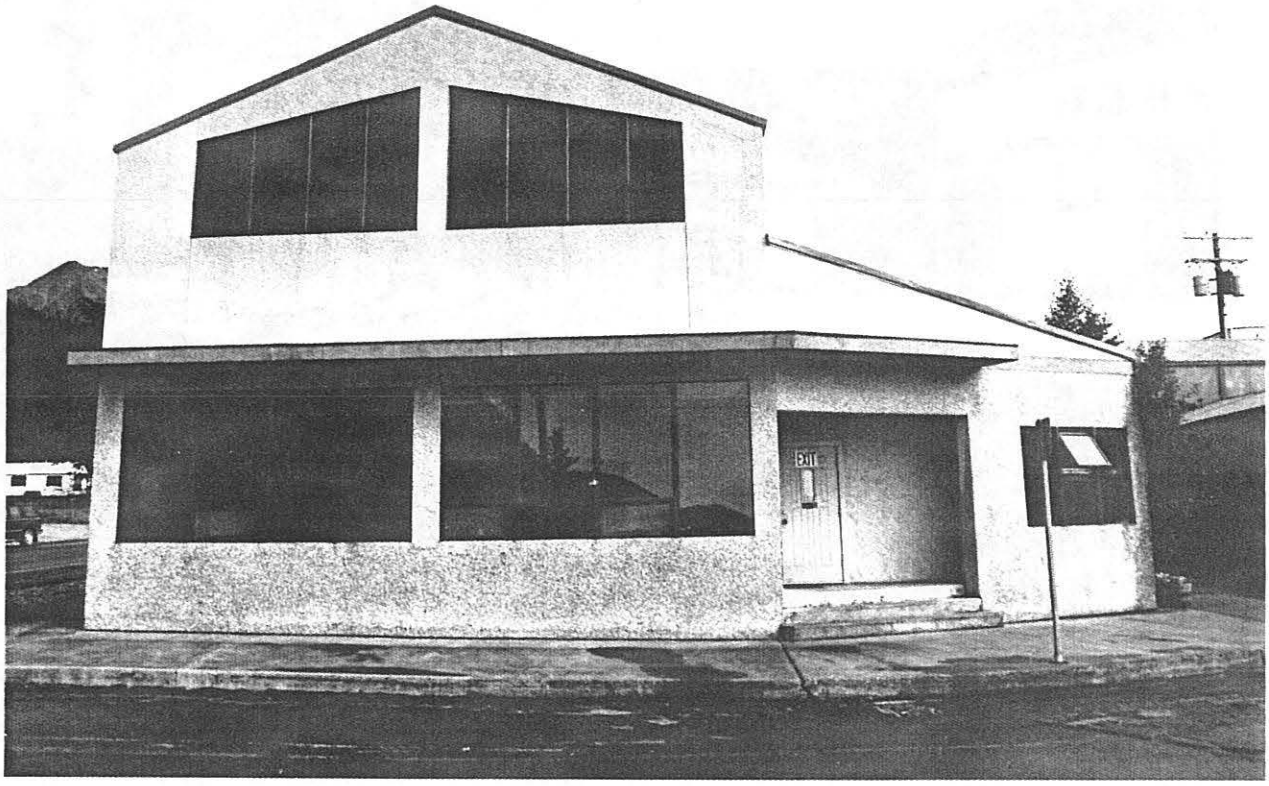


Figure 19. The 1909 Brosius-Noon building was dramatically renovated in 1985, thus eliminating its National Register eligibility, according to a 1985 letter from the State Historic Preservation Officer.



Figure 20. The present version of the Brosius-Noon building is named the Seaview Plaza.

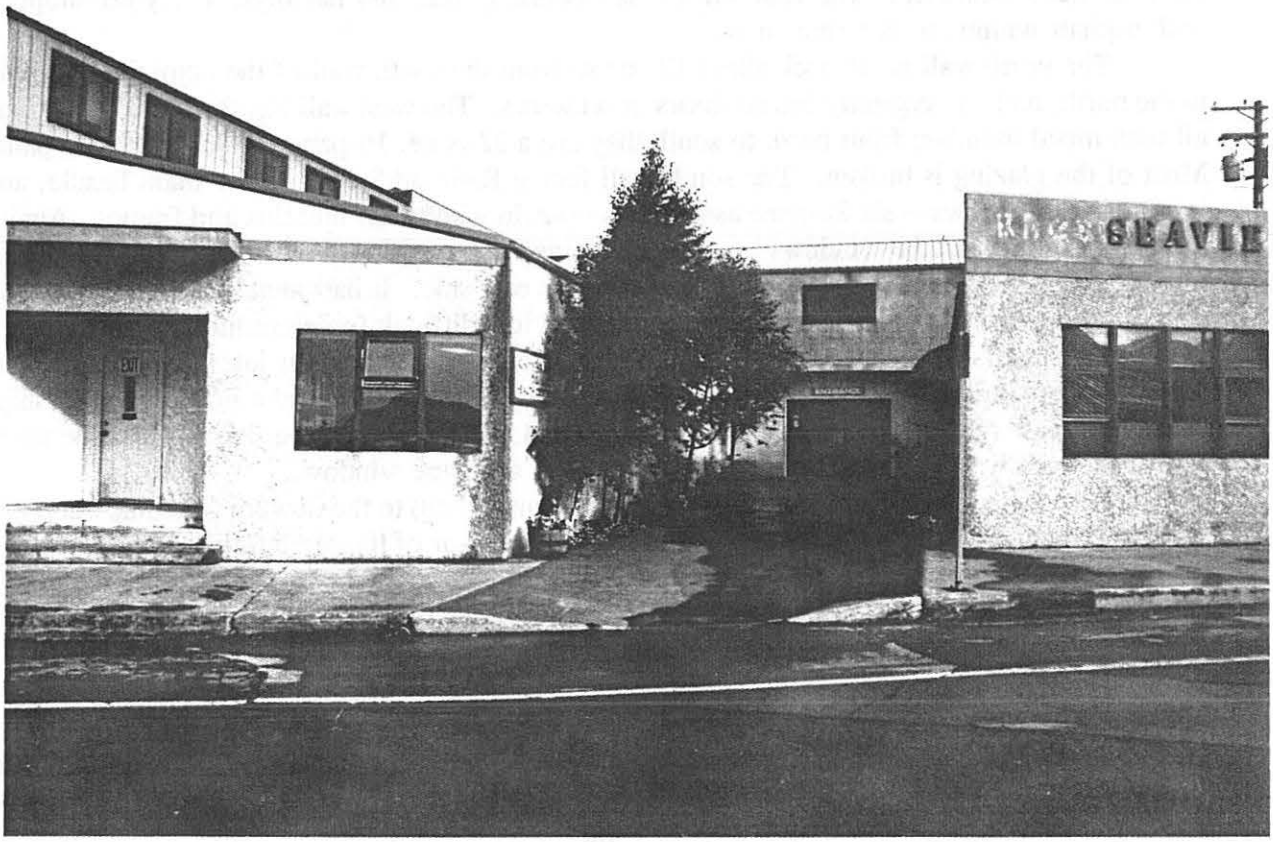


Figure 21. Compare the present building lines of the Seaview Plaza with those shown in the historic Brosius-Noon photographs.

Seward Machine Shop

Location: 308 Railroad Street; Owner: Jim Pruitt

Description

The Seward Machine Shop is a large one-story building with an open ceiling exposing its trusses, and no interior partitions. Because Washington Street and Railroad Street are not parallel, the building's north and south walls are not either, and the west wall is longer than the east wall. The dimensions of the building are: west wall 83'; north wall 39'; east wall 61'; and south wall 44'. Most of the building has a concrete floor, but it would seem that the foundation consists of concrete footers, and the floor was poured later.

The north wall is of poured concrete, 8" thick, with 3/4" reinforcing rod. Imprints of the boards used to form the wall are visible on the exterior. One large, essentially vertical crack has opened west of center in the wall, exposing reinforcing rod, and part of the crack has spalled away to form a hole almost big enough for a person to stick their head through. The other three walls are wood frame with stucco exterior. The wall section consists of horizontal 1" x 8" shiplap on the interior, 2" X 6" studs, and steel mesh (not wire), with stucco over the mesh. There are places where the exterior stucco has been knocked in, exposing the studs. The bottom four feet of the north end of the west wall is partly below grade, and there the original wall appears to have failed. Concrete was poured directly in the wall cavity, between the studs, for a distance of 20' or so. It, too, is now failing, and the wall leans in somewhat.

The roof is supported by a truss system built of 2" X 12" rough-cut lumber, with the trusses running east/west. A steel I-beam runs the length of the building, north/south through the center, supported by steel pipe posts, to support the trusses. The I-beam is set to provide 12'4" of head clearance. The roof surface is essentially flat, and has been newly hot-mopped with asphalt within the last year or so.

The north wall is set back about 12' or so from the south wall of the adjoining building to the north, and consequently has no doors or windows. The west wall has four fixed windows, all with metal muntins; from north to south they are a 32-pane, 16-pane, 32-pane, and 32-pane. Most of the glazing is broken. The south wall facing Railroad Steet was the main facade, and is almost all windows -- six 20-pane assemblies -- again with metal muntins and frames. Again, the glass is gone, but the windows have been battened down with plywood. A home-made steel bifold garage door pierces the south wall on the far east side. It had metal-muntined windows across its top, but most of the muntins are gone and it is difficult to determine how many panes it originally had. The east wall of the building eventually became an interior wall after the additions were built to house additional facilities, including a tin-shop and a Ford car dealership. It has a narrow (32" wide) doorway at the south end, but is missing the door. Near the north end of the east wall is a metal door (36" wide) with a 6-pane window.

The east additions (now with the first story demolished) to the Seward Machine Shop had a full basement, and the stairs to it run alongside the exterior of the old building (which became the interior of the new addition). It appears that, working from that basement, part of the east portion of the old building was undermined (about 4' X 10' in area) to accomodate the motors and belt assemblies that then ran power upstairs to the machine shop in the old building.

The interior of the Seward Machine Shop was essentially open. A second-floor catwalk runs along the north wall and bends around to part of the east wall, apparently to form a surface to store materials and parts. In the southwest corner an office area about 10' X 12' in size was

delineated using large home-made metal shelves and bins. The office area is littered about a foot deep in old shop manuals, parts catalogs, and other debris, including such items as the 1927-1940s ledger for the Seward Masonic Lodge, Kittredge's (1888) **The Metal Worker Pattern Book**, and a first edition of Zane Gray's (1914) **The Light of Western Stars**.

Significance

The present Seward Machine Shop building was built in 1915, according to the Seward Historic Preservation Plan. Its original function is not clear, but Barry (1993:106) reports that immigrant machinist William Bazant, who arrived from Latouche in 1919 to operate what he called the Seward Machine Shop on 6th Avenue, "purchased from Charles Tecklenburg a large concrete building at the south end of Broadway, near the waterfront and next to the Brosius lumber shops," in January of 1922. Barry goes on to say that "Charles Lechner purchased the Seward Machine Shop from William Bazant, probably in late 1922." Charles Lechner had a plumbing shop in Seward as early as 1915, and plumbed many of the major buildings built in Seward during the following three decades. Lechner soon acquired the Ford dealership from Brown and Hawkins, and added on to the Seward Machine Shop, twice, eventually making all one building from Alley C -- next to Cal Brosius' establishment -- to 4th Avenue. The new additions -- both one-story affairs like the original building --were underlain by a full basement. Because the north wall of the composite building was solid concrete, it stopped the advance of the 1943 fire, which otherwise destroyed the businesses to the north. The east addition facing 4th Avenue was used as an automobile showroom. The Lechner family kept the building while Charles Jr. operated the shop, but the eastern additions eventually fell into disrepair and were demolished.

The Seward Machine Shop is significant for its association with prominent Seward tradesman and merchant Charles Lechner, and its contribution -- as a machine shop -- to the construction of Seward's historic infrastructure. Its significance categories would be commerce and industry, under criterion A -- associated with events contributing to the broad pattern of Seward history, and criterion B -- associated with the significant person Charles Lechner, Sr.

National Register Eligibility

The Seward Machine Shop was built in 1915 and began operation as a machine shop at least by 1922. It has had the same function since, and the building has been known as the Seward Machine Shop for 70 years. Architecturally the building is typical of the construction style favored at the time -- concrete where necessary, and stucco-covered wood frame where not. Although the machinery has been recently removed, the exterior and interior of the building appears essentially as it did when it became a machine shop in 1922. In my opinion, the Seward Machine Shop is eligible to the National Register of Historic Places.

> *The part [of the Seward Machine Shop]....that's standing there now, that was built about 1915 or so -- '16, that neighborhood. Then old man Lechner built on a chunk of it, and then he built on again. He built on that in the....late 20s and early 30s. They had lathes and whatnot. Welders. He had engines downstairs. Belts. He his belts overhead, though, not like Cal -- he*

had shafts right under the benches. Gas engines. That was a little bit before diesels. Gas was cheap in those days....
Herman Leirer

That building...that looks like a wreck, that was Lechner's building. Charlie Lechner. He was a plumber....But the original building was the one that's right on the alley, and its really falling apart. It never did look like anything....he had a great big lathe that he could work out shafts for boats and stuff like that....In those days they had to have a lot of heavy stuff for repairing boats, big boats. Freighters would come in here and he could repair things like that. Temporary. Enough for the ship to get back to dry dock....We had sewers by that time, but everything before that used to be on cesspools. The whole town. And that's where Charlie Lechner came in. He had to hook everything up to the sewers. He was a good responsible person....
Barton Stanton

They had bathrooms set up like you'd see them Outside, and that impressed me very much. It wasn't just a working place, it was a display place for salesmen....We'd never had anything like that before. Virgina Darling

I bought the property from the Lechner family last year. It was the last overhead line-shaft machine shop around. A lot of the equipment was handmade. We've still got some of it....There was a grease rack with a home-made air cylinder. The rack was made out of railroad rails welded together. The metal rolls are still operable -- they were made by old man Lechner. The lathe wasn't, but we restored it -- it works....When I got the guy to re-do the roof, he wanted to knock down the false front. I said no, let's leave it....The enamel "Seward Machine Shop" sign on the front was just taken lately. Jim Pruitt

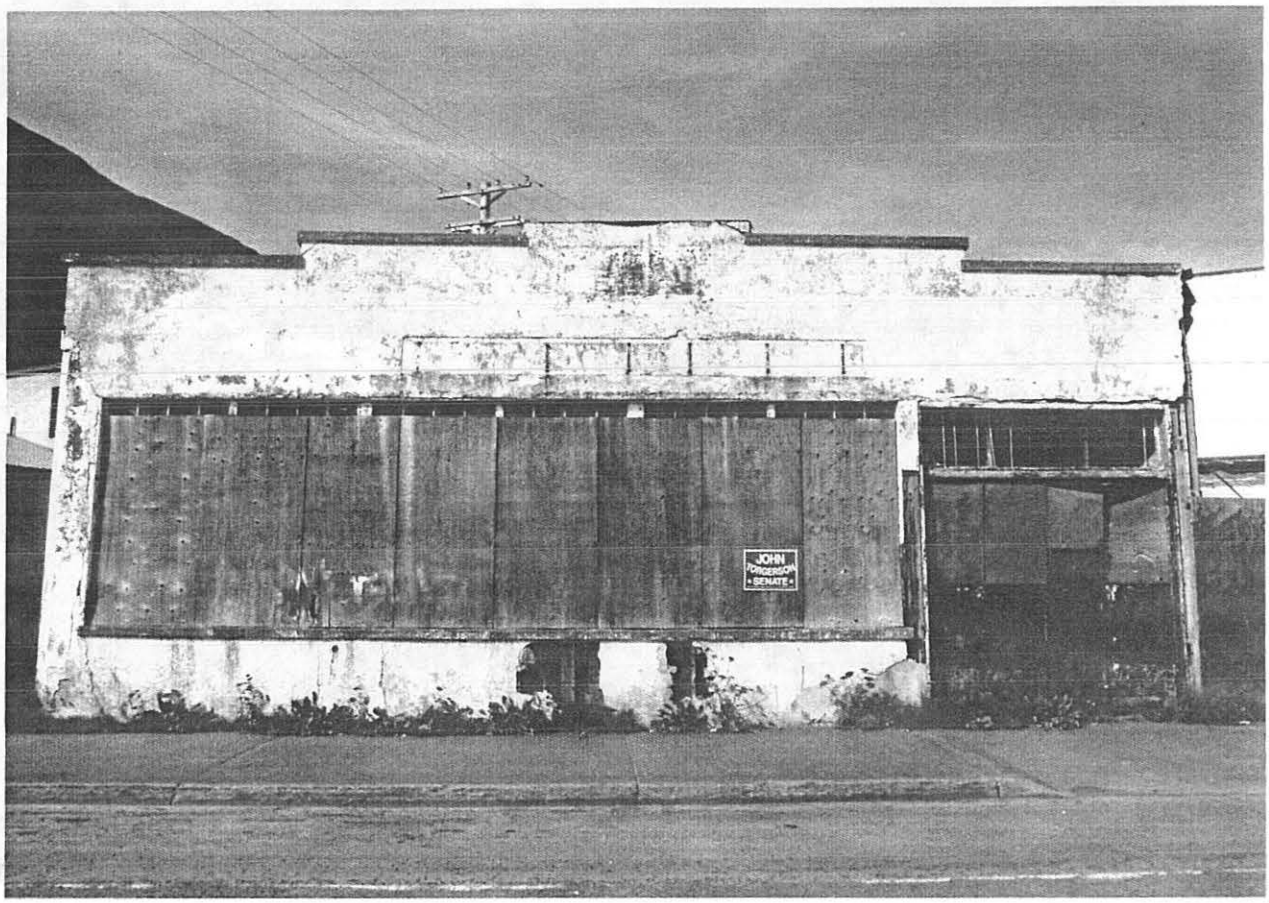


Figure 22. This part of the Seward Machine Shop was built in about 1915.

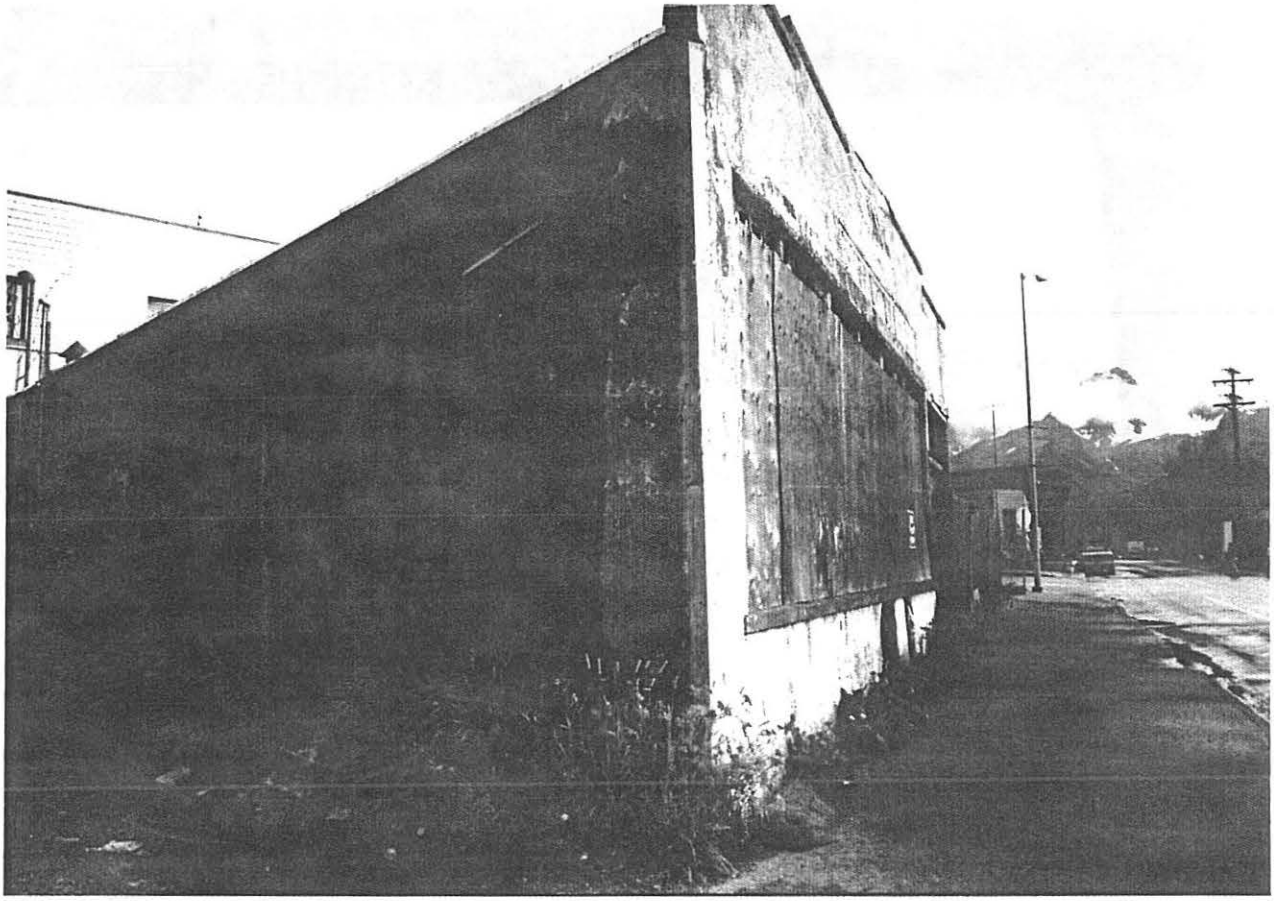
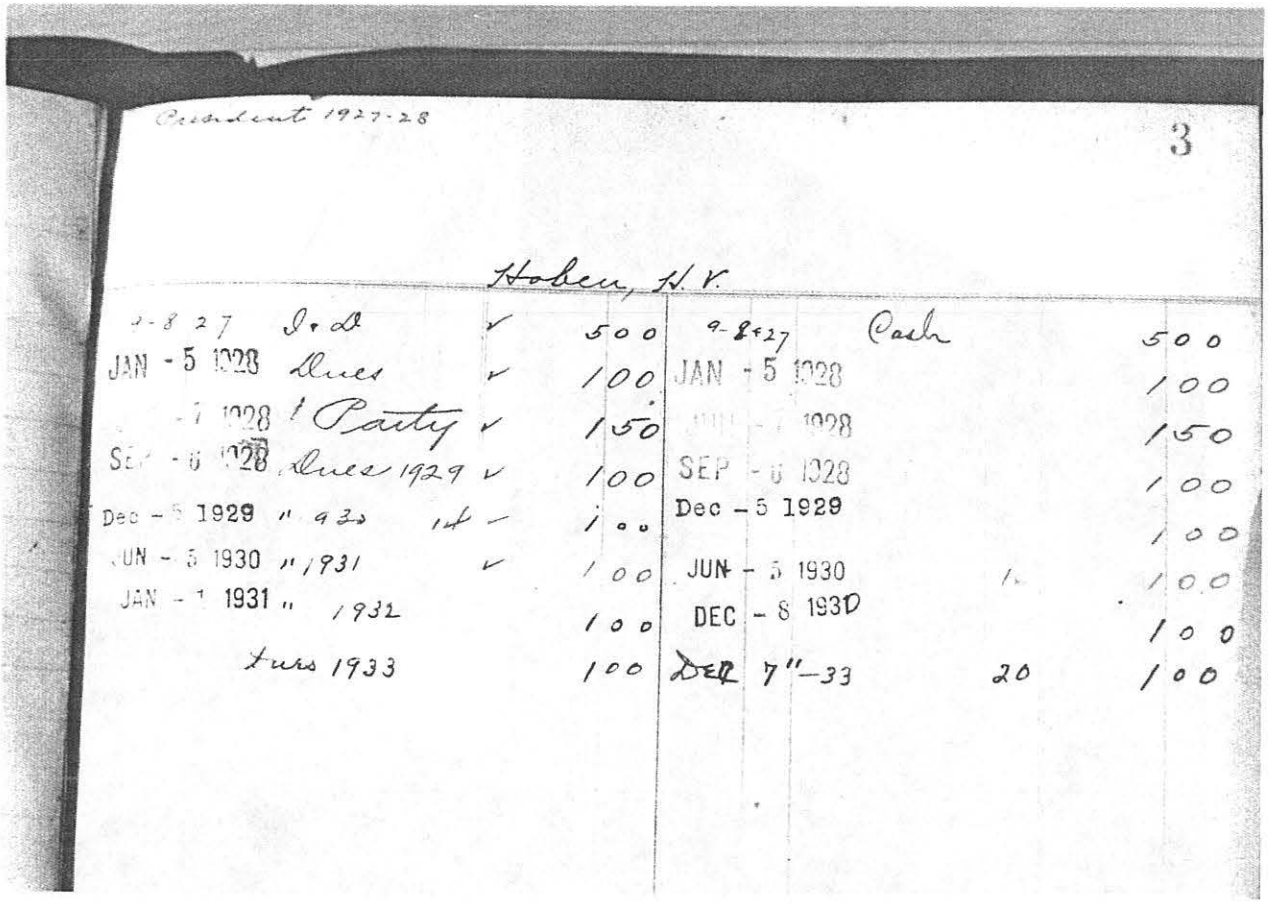


Figure 23. The Seward Machine Shop has north and south walls which are not parallel, to conform to the shape of the lot. This view is looking east, with Railroad Street at the right.



Figure 24. The southwest corner of the Seward Machine Shop was used as an office, and now has several hundred shop manuals and parts catalogs strewn about.



President 1927-28 3

Hoben, H V.

9-8 27	I & D	✓	500	9-8-27	Cash	500
JAN - 5 1928	Dues	✓	100	JAN - 5 1928		100
- 7 1928	Party	✓	150	[illegible] 1928		150
SEP - 6 1928	Dues 1929	✓	100	SEP - 6 1928		100
Dec - 5 1929	" 1930	14 -	100	Dec - 5 1929		100
JUN - 5 1930	" 1931	✓	100	JUN - 5 1930		100
JAN - 1 1931	" 1932		100	DEC - 8 1930		100
	Dues 1933		100	DEC 7"-33	20	100

Figure 25. Among the things in the office of the Seward Machine Shop was the ledger for the Seward chapter of the Masonic Lodge. On this page are entered the dues paid from 1927 to 1933 by Harry V. Hoben -- owner of the old Arcade Building.

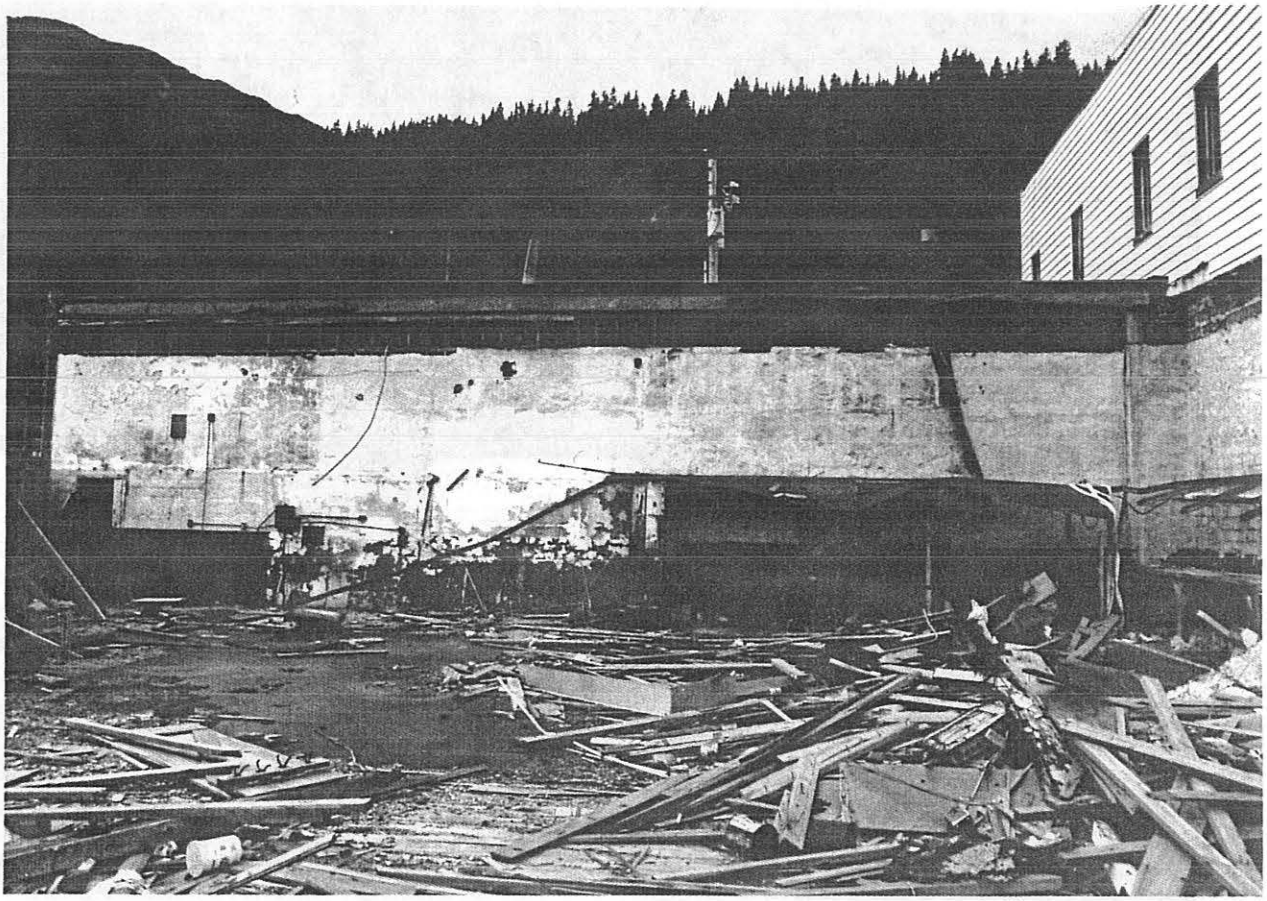


Figure 26. The east wall of the Seward Machine Shop, here seen looking west, became an interior wall after additions were added to expand the shop and make an automobile showroom for Charlie Lechner's Ford dealership.



Figure 27. The interior of the Seward Machine Shop has had most of its machinery moved out within the last year or so by new owner Jim Pruitt.

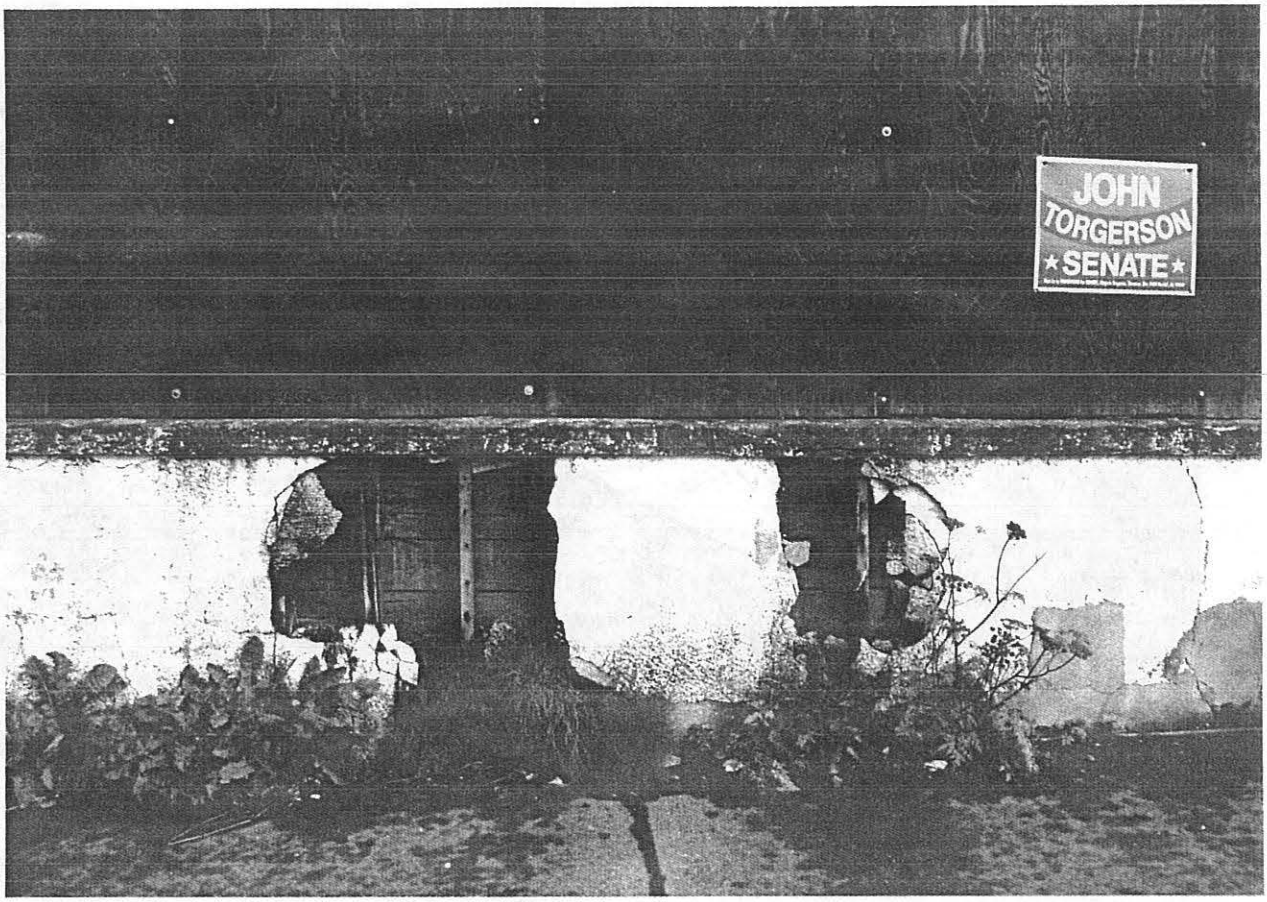


Figure 28. These holes in the exterior of the south wall of the Seward Machine Shop show the wall sandwich: 1" X 8" shiplap on the interior, 2" X 6" studs, and steel mesh over which stucco was applied.



Figure 29. Herman Leirer, here standing in front of the home-made metal garage door into the Seward Machine Shop, remembers when Charlie Lechner operated the shop with an overhead belt system.

Arcade Building

Location: 400 Railroad; Owner: Don Coisman

Description

The Arcade Building is a one-story structure which takes up most of the triangular block between Railroad Street on the south, Washington Street on the north, and 4th Avenue on the west. Across the alley to the east is the Solly Building.

The structure has a concrete foundation and a flat roof. Exterior walls are a combination of clapboard, false brick, stucco, and T-111. The south part of the building is devoted to apartments, with a complicated array of exterior wall angles, doors, and windows facing Railroad Street. The north and west parts of the building have businesses facing Washington Street and 4th Avenue, respectively. Other than "Don's Home Cooking," the interiors of these establishments were not inspected.

Significance

The Arcade Building preserves the name of a former building that was located on the same lot. The former building was a city landmark, three stories tall, built in 1922, sporting such amenities as a central vacuum system for cleaning. Local businessmen were much involved with the old building -- owners were Harry Hoben and Al Davis, Cal Brosius was the building contractor, and Charles Lechner (owner of the Seward Machine Shop) installed the plumbing and heating systems (Barry 1993:97-98). The original Arcade Building was destroyed in the great fire of 1941.

The new Arcade Building, constructed in 1943, according to the Seward Historic Preservation Plan, apparently preserves only the original southwest corner concrete steps of the original building. It is architecturally indifferent, and does not seem to figure in the lives of local citizens in anything other than a strictly utilitarian way.

National Register Eligibility

The new Arcade Building is 51 years old. It is not architecturally distinctive, and not associated with any particular person or event. In my opinion, the structure is not eligibile to the National Register of Historic Places.

> *The Arcade would've never burned, but the Army was in here....And they had to get smart. Jackasses had to get in there with dynamite and dynamite the building. That dynamite just blew the windows out of the Arcade....They should of just left it alone....Some smart jackass in the Army -- some officer there he probably read about it back in the books, back about the time they founded Jerusalem.... Otherwise I don't think that building would have burned, because it was stucco on the outside....No that [Arcade building] was all rebuilt. The only thing that's still there is the step here. That's the original step that was there then.* Herman Leirer

> *It was very cold, and there was a 30-mile-an-hour wind blowing, and the hoses were freezing up on us. And that's when it burned the whole block and a half of the town down on the east side of 4th Avenue. The pumper we had was down on the corner, and the Arcade at that time -*

- the next block -- was a three-story building. And were were keeping that under control, that was the only building we were able to control -- and the Army tried martial law and started using dynamite. They said "It'll blow the fire out." I was on the pumper and a soldier came along and said "I have orders to move everybody out." I said "If we move out we're going to lose that Arcade Building." "I got orders," and he stuck a bayonet, like this, at me....So they blew the dynamite and they blew the fire right over on the Arcade Building. Burned it down. But we did save the Solly Building. It's still standing.... Oscar Watsjold

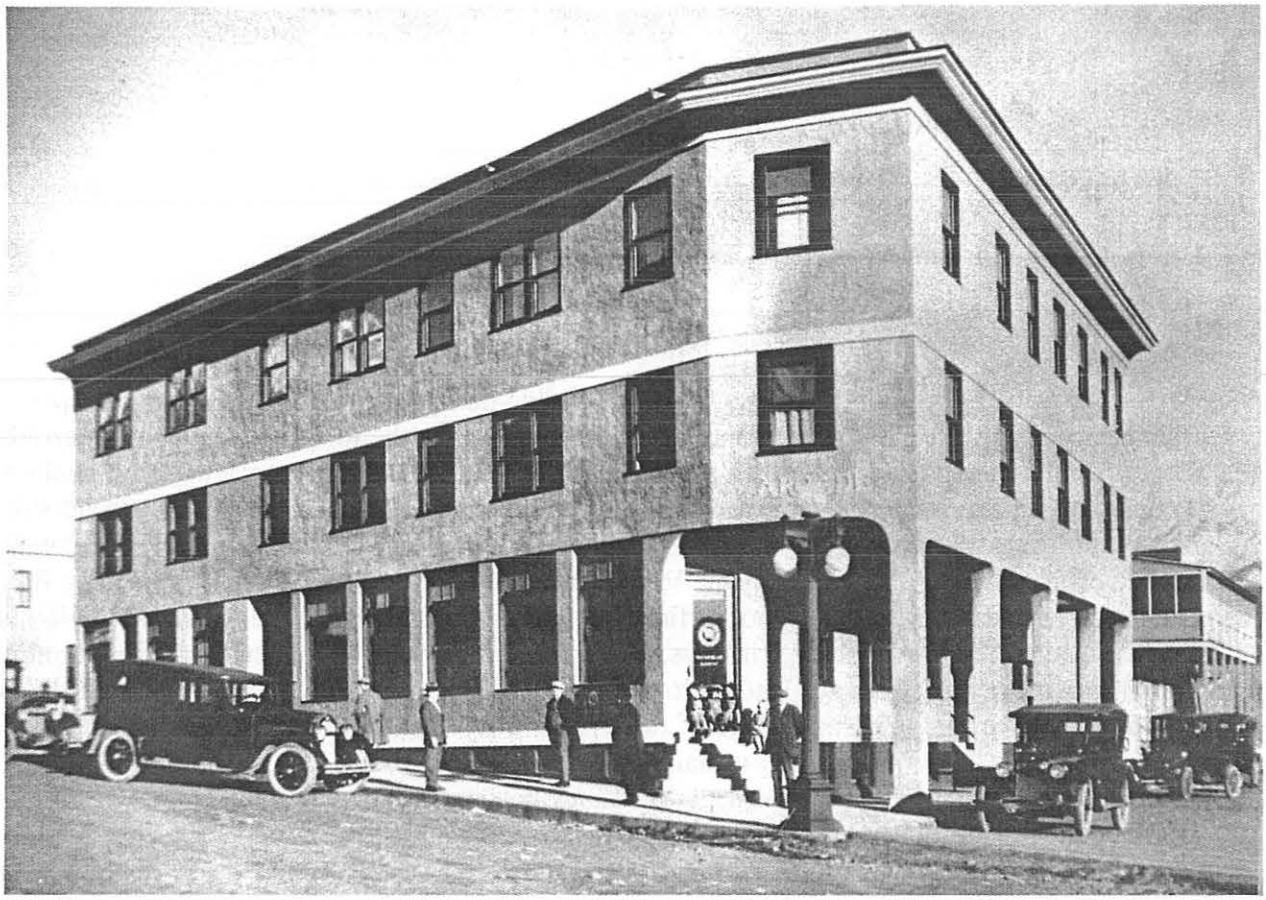


Figure 30. Harry V. Hoben's old Arcade Building was the pride of Seward when it was built in 1922. It burned in the great fire of 1941. (Seward Museum photograph #0013.001/01)

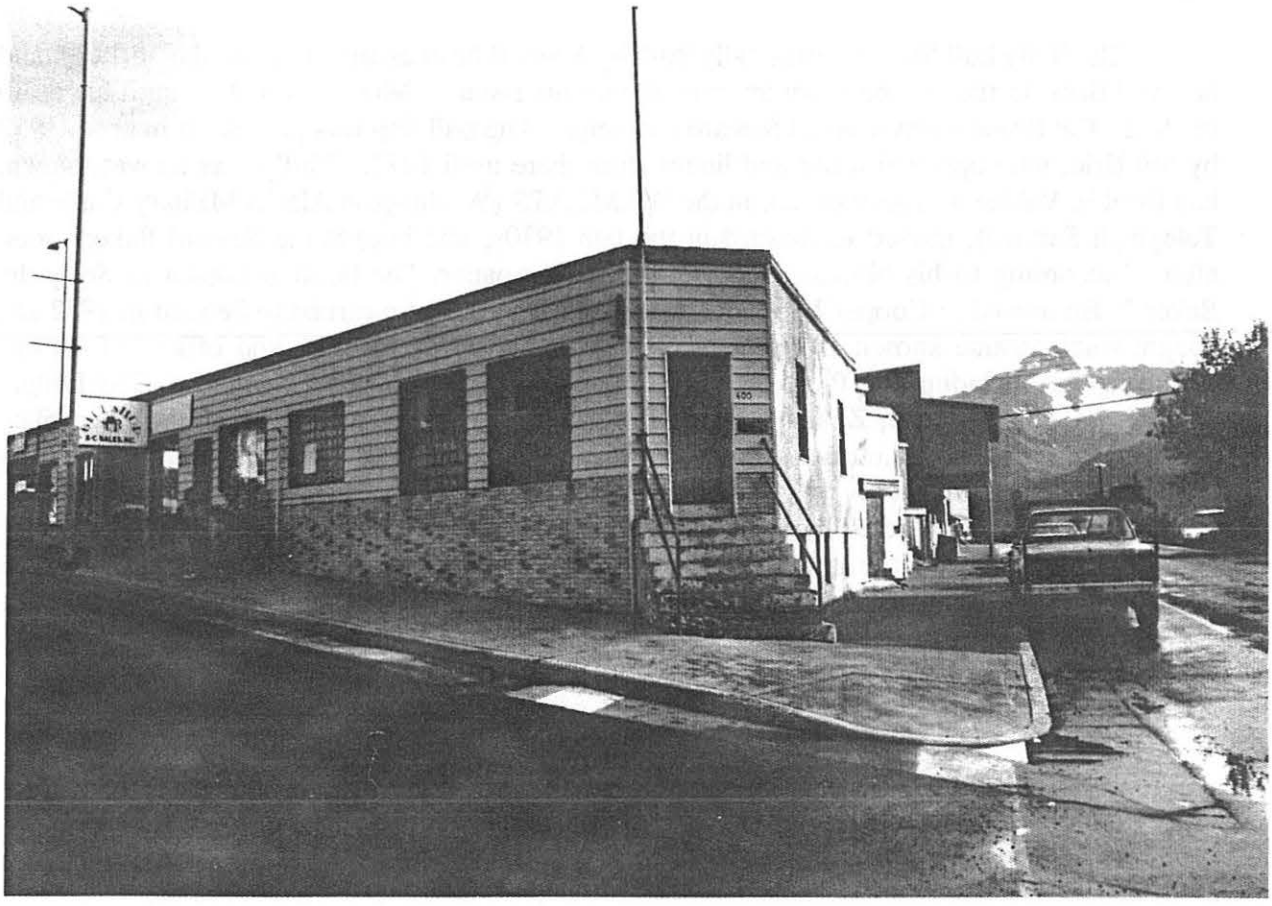


Figure 31. The new Arcade Building is a one-story affair completed in about 1943.

Solly Building

Location: 411 Washington; Owner: Louise M. Tyner-Foosnes

Description

The Solly Building is a two-story office building that generally fits in well with the period architecture of downtown Seward. Its floor plan conforms to the lot plan, having a trapezoidal shape. The basement is accessed by a stairwell on the southwest corner of the building, and was not inspected. The second story floor space is greater than the first, because the second story extends out over the sidewalk, on poles, to the south. The first and second stories contain modern office space, and are used by the Mt. Marathon Native Association, a bookkeeping firm, and other businesses. The interior offices feature acoustic ceiling tile, flourescent lights, sheetrock walls, modern opening windows, modern doors, and plain wooden trim. Wainscotting along the two interior stairways leading to the second floor, and two second-story closet doors, appear to date earlier. The north side of the structure serves all entrance to the building, with six doors -- two of which lead to upstairs offices. A shed roof protects the six doors. All windows in the building are modern, with frames held together by staples. Two downstairs windows facing the north have half-circle decorative panels above them. Exterior siding is horizontal tongue-in-groove on the ground floor, and metal on the second story. The roof has a slight slope to the south.

Significance

The Solly building was originally built by Seward businessman Cal Brosius in 1909, and he lived there in the second-story apartment with his sister -- Mrs. Wybreck -- until his death in 1942. Cal Brosius was a noted Seward character. The building was purchased in about 1952 by Sol Urie, who operated a bar and liquor store there until 1973. "Solly," as he was known, had lived in Valdez as a serviceman in the WAMCATS (Washington Alaska Military Cable and Telegraph Service), moved to Seward in the late 1920s, and bought the Seward Bakery soon after. According to his obituary in the Seward newspaper, "he became known as Solly the Baker." He moved to Cooper Landing after World War II, but returned to Seward in 1952 and bought what became known as the Solly Building. He was a member and officer of various organizations, including the Pioneers of Alaska, Seward Chamber of Commerce, Elks Lodge, Oddfellows, Navy League, Zionist Organization, and Lions Club. At his death he was described as a "colorful 81-year-old businessman" known as "Mr. Seward." The Solly Building is locally significant for its association with Cal Brosius and Sol Urie.

Architecturally the Solly building is interesting for its trapezoid plan -- necessary to conform to the shape of the lot. Its exterior retains some of the original lines of the building, particularly a second-story overhang on the south face. It was the only threatened building firemen were able to save in the great fire of 1943.

National Register Eligibility

The Solly Building is an historic building built in 1909 by a locally notable businessman. For two decades -- 1952-1973 -- it was operated as a bar and liquor store by another notable

Seward businessman. The building is significant for its association with both individuals -- Cal Brosius and Sol Urie.

The building lacks architectural integrity, however. The interiors of the first and second stories have been completely remodeled into modern office space. The only features that appear original are the wainscotting along the two interior stairways leading to the second floor, and two second-story closet doors. The far east corner of the building was originally only one story, but sometime after 1973 the second story was continued out over the east corner, so that the entire building is now two-storied. A shed roof was added to the north side of the building to protect the first floor doorways. Whereas originally the north side had four doors (two leading upstairs and two leading into ground floor rooms), now it has six. Window placements on the second floor are roughly in their original locations, but all windows in the building are modern, with frames held together by staples. Two downstairs windows facing the north have half-circle decorative panels added above them. The once-straight north roof line has been embellished with a slight peak and two raised portions, giving it a false-front appearance which it never had before. The present exterior siding is horizontal tongue-in-groove on the ground floor, and metal on the second story. The metal is certainly recent, and the tongue-in-groove probably dates from the mid- to late-1940s. That is inferred from the fact that the building was unscathed in the 1943 fire even when the old three-story Arcade Building, just 20 feet across the alley to the west, burned to the ground; the original exterior of the Solly Building was probably --like many downtown buildings in Seward -- stucco.

Due to its lack of architectural integrity, the Solly Building, in my opinion, is not eligible to the National Register of Historic Places.

> *The Solly Building belonged to him [Cal Brosius], too. He built it....He never had nothing downstairs. He had an apartment upstairs. Him and his sister lived up there. They redone it, dressed it up inside, but it's about the same inside as then. About the same amount of doors and everything. They just redone a lot of it. The building was old, you know -- 1915-16, when it was built originally. Had good material in it....Solly went in the bar business, then he sold it....they had the liquor store up front there. They had the bar in between, and then that long corner sticking out in kind of a point, that was a garage and whatnot....That building hasn't hardly changed any....I used to go in there and have a few shots.* Herman Leirer

> *...It [Solly's Bar] was a very popular bar....He did real good business there. I think partly it was the personality of Solly that brought them in there....He was a jolly old fellow. He used to be a baker and then he went into the bar business....The building looks just like it did then, front and back....* Oscar Watsjold

> *When I did his [Cal Brosius] cleaning and work where Sollys is, there was a little garage that used to go out there....And I was cleaning his place out, and here was a bag, a little cloth bag, sitting out in the middle of the floor, practically. So I swept, and I picked this little bag up, and at first I was going just throw it in the garbage. But then, it was like a little pouch. So I opened it up, and here was several nuggets, gold nuggets. And of course I knew a gold nugget when I seen one. So I just set it aside and went on with my work. And finally when I got through....I went up and handed her this little bag, and she said "What'd you get there?" I said "Well it was laying down in the middle of the floor, down there in the garage. I opened it up. It's got gold in it. "It HAS? HOW MANY NUGGETS ARE IN THERE?" "Well," I said, "I didn't count them. I didn't even take them out of the bag. There's probably four or five."*

They'd put that thing there to entrap me, you know, to see if I was honest or dishonest....it could have been 1924-28. Barton Stanton

Cal Brosius' sister was named...Wybreck. She owned that [Solly] building....I used to be kind of a housekeeper for her. I'd wash her windows and do all that kind of that stuff....It was a nice big apartment, and it had windows in the back that looked out over the bay, you know. All across that back porch. She occupied the whole thing upstairs....And downstairs was all empty, until Solly and his sons took over the building....They had a bar and a liquor store in there. The liquor store would be on the west end and the bar was on the east end. The garage was on the far east end....I remember one New Years Day. All of us took inventory on New Years Day. I'd always take a vacation and got drunk. There was about seven of us, we went down there and completely wrecked that bar of Sollys. Just completely done it in. We had to pay for it, too. We....took chairs and broke them over one another. I come home, my shirt --brand new shirt that I'd got for Christmas -- all I had was the collar left. The arms were gone and everything. We had a good time. Barton Stanton

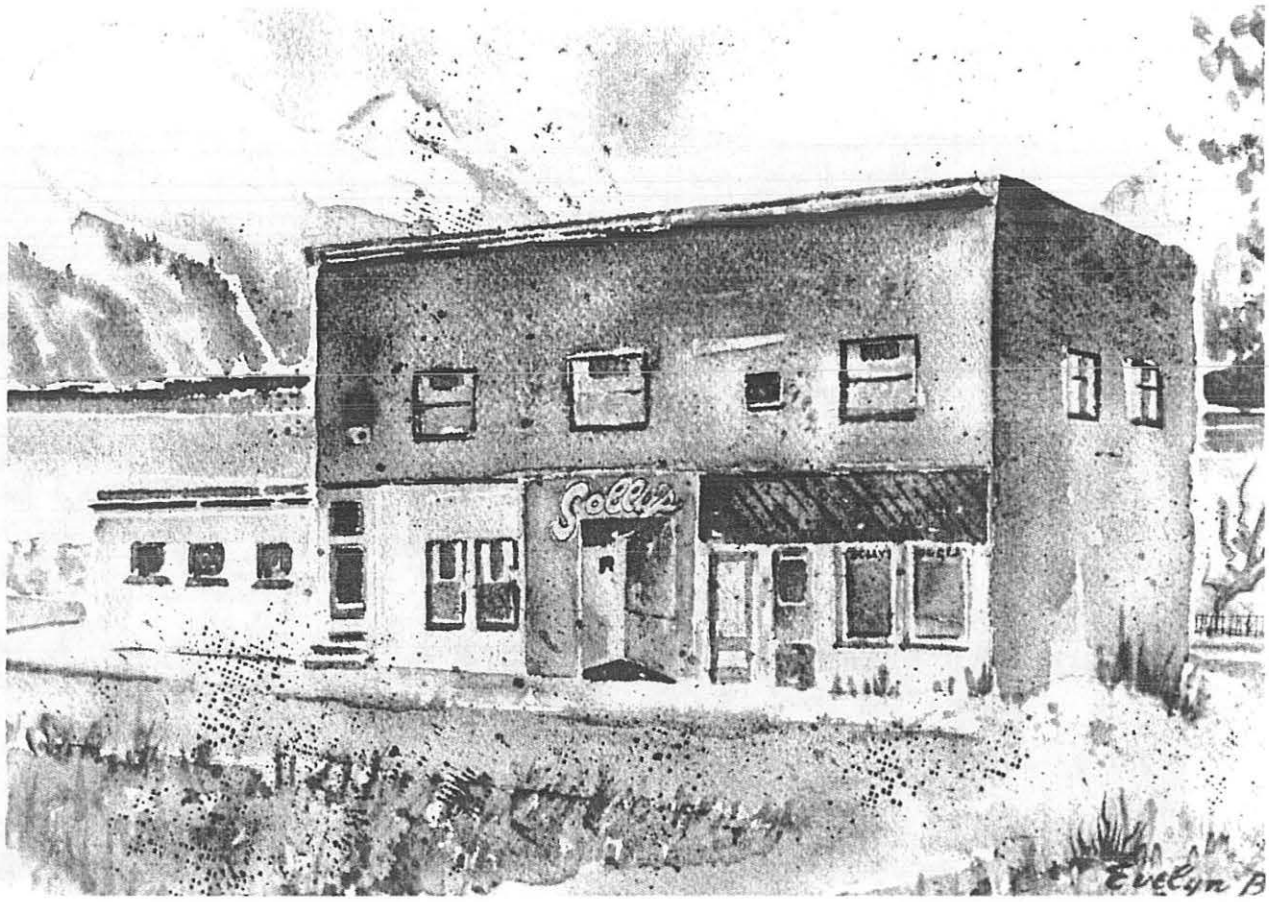


Figure 32. Evelyn Blair painted the Solly Building as it looked in 1973. Note one-story garage at left (east end). (Seward Museum, no photograph #)



Figure 33. Sol J. Urie, owner of Solly's Lounge from about 1952 to 1973, was a noted businessman sometimes known as "Mr. Seward." (Seward Museum, no photograph #)



Figure 34. The Solly Building was originally built by Cal Brosius in 1909. The present north facade, here shown looking south, was not at all like the original.

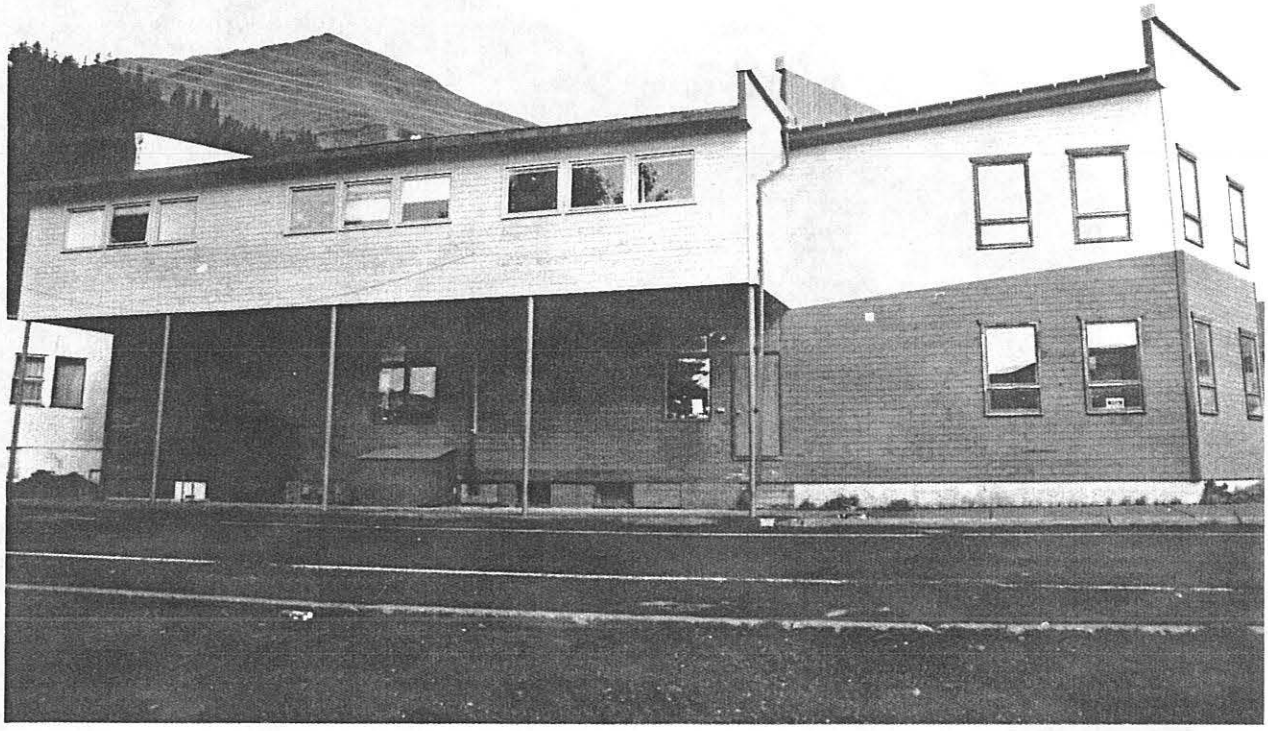


Figure 35. At present the east part of the Solly Building (at right) is two-story like the remainder, but it was originally a one-story garage.



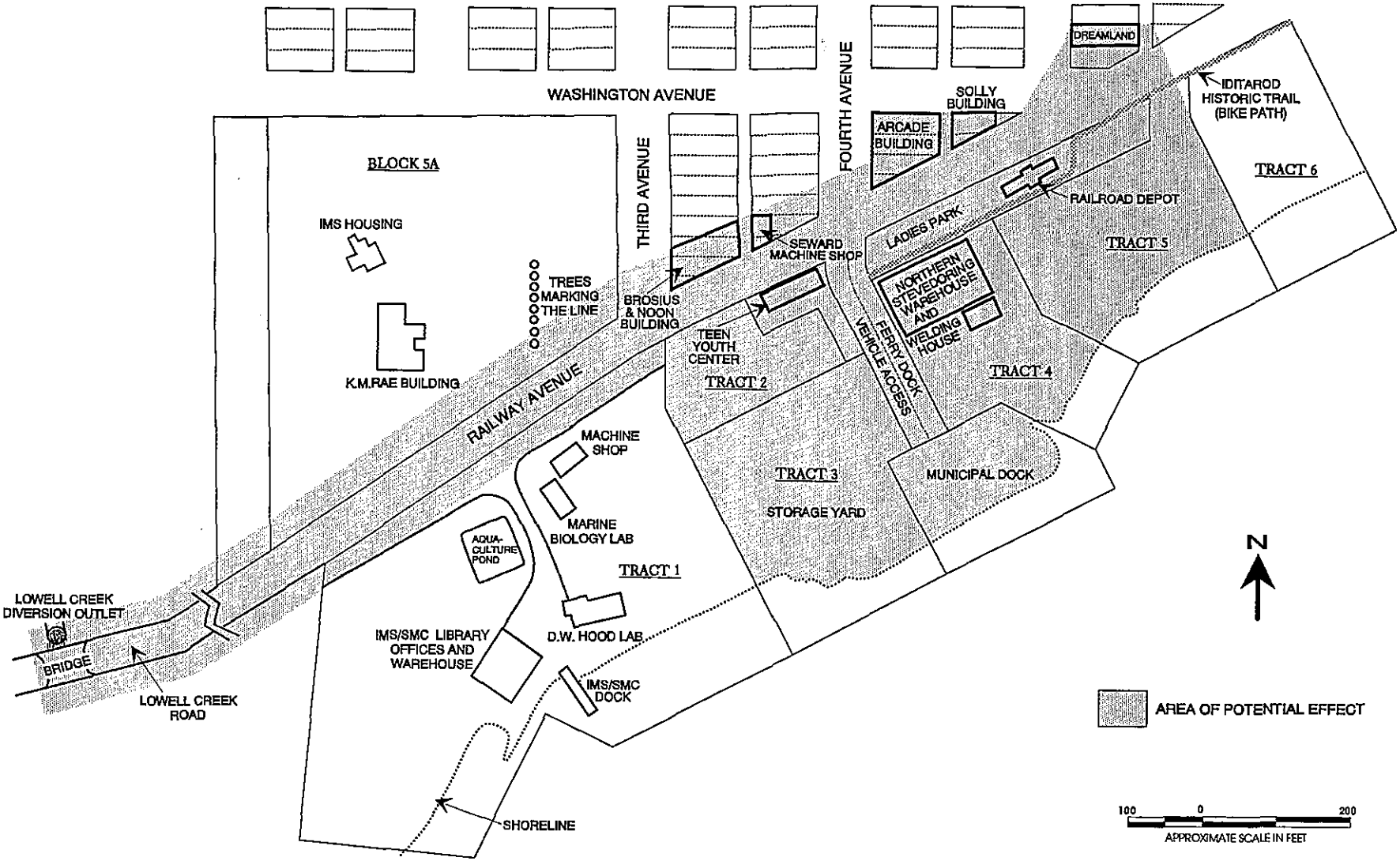
Figure 36. The Solly Building has non-parallel north and south walls to conform to the lot, here shown looking west. Railroad Street is at left, Washington at right.



Figure 37. Barton Stanton, here pointing out the tongue-in-groove siding on the west side of the Solly Building, worked in the building when Cal Brosius and his sister Ms. Wybreck lived there, before Sol Urie purchased it.



Figure 38. The Solly Building holds completely renovated offices inside, such as the bookkeeping business of Debra Hafemeister, shown here in a second-story suite.



HISTORIC ARCHITECTURE SURVEY MAP

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 39

ARCHAEOLOGICAL SURVEY FOR THE PROPOSED INFRASTRUCTURE IMPROVEMENT PROJECT AT THE INSTITUTE OF MARINE SCIENCE IN SEWARD, ALASKA

Prepared By

CULTURAL RESOURCE CONSULTANTS

PRELIMINARY

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September 7, 1994

Gary Hayward
Manager, Environmental Services Alaska
Dames & Moore
5600 B Street, Suite 100
Anchorage, Alaska 99518

Re: Archaeological Survey for the Proposed Infrastructure Improvements Project at the Institute of Marine Science in Seward, Alaska.

Dear Mr. Hayward:

The following is a brief report on my archeological survey of portions of the proposed Infrastructure Improvements Project at the Institute of Marine Science (IMS) in Seward. A detailed description the proposed development can be found in the draft environmental impact statement for the project (Exxon Valdez Oil Spill Trustee Council 1994). Although the Alaska Heritage Resources Survey lists no archaeological sites in the vicinity of the project, this field investigation, conducted on August 23 and 24, 1994, was done because of concerns expressed by the State Historic Preservation Officer (SHPO) about possible effects on previously undiscovered archeological remains (Bittner 1994).

This survey focused on three areas: a roughly 900 by 100-foot strip of land along Railway Avenue that forms the northern margin of the project site, a proposed expansion of the existing IMS Rae Building parking lot, and the route of a possible water line from a spring along Lowell Point Road (Figure 1). The survey area along Railway Avenue comprises the northern portions of Tracts 2, 4, 5, and 6 of Block 5, U.S. Survey 1116. A comparison of historic and modern maps shows that this is the only section of the project site that is not composed of fill. This area was covered with fill sometime between 1950 and 1958, at the same time as the original wooden railroad pier was replaced with a concrete dock. Improvements on these tracts today include the Railroad Depot, Ladies Park, the Seward Youth/Teen Center, the Iditarod Commemorative Trail, and a Northern Stevedoring Handling Corporation warehouse.

The parking lot expansion will extend north of the existing IMS Rae Building lot. This site, at the corner of Third Avenue and Washington Avenue, is currently an open, grass-covered field. The spring, one possible source of fresh water for the proposed facility, is located along Lowell Point Road, approximately 200 feet south of the project site. Water would be piped through a line running along an existing easement beneath the road.

Excluding Ladies Park, which was not tested, there is little vegetated ground in the survey area along Railway Avenue. There is some grass and a few alders between the road and the paved commemorative trail in Tract 5, north of the Railroad Depot, between the commemorative trail and the Northern Stevedoring warehouse, and south and west of the Youth/Teen Center. However, except as noted below, this vegetation is growing out of impenetrable gravel.

There were only five areas of the strip between Railway Avenue and the commemorative trail where there was enough sand mixed with the gravel to allow testing. From these tests came an unfired "W-W Super .30-30 WIN." rifle cartridge, scraps of paper, tin foil, fragments of amber and green glass, pieces of rubber, a rusted tin can, a small scrap of tar paper, and numerous items of plastic: sheeting, bits of white Styrofoam coffee cups, red cellophane strips, electrician's tape, a six-pack ring, and a jar lid.

Datable items among this debris include the cartridge and a green glass bottle finish made by an automatic bottle machine. According to Joe Andries, a local Anchorage gun dealer, the cartridge, found in the easternmost of the tests, most likely dates to the 1940s or 1950s. The automatic bottle machine has been used since 1920 (Newman 1970:Figure 1). However, the most chronologically sensitive of these artifacts may be the pieces of Styrofoam. Styrofoam is a polystyrene plastic that was invented in 1940s and probably first used for coffee cups in the 1960s (King 1991:7, personal communication 1994).

The other locale where testing was possible was immediately west of the Youth/Teen Center. Here there is a 25 by 50-foot patch of grass and alders that is cut by an abandoned sewer line. This area is also primarily gravel overlain by thin cover of vegetation, although in one spot along the Youth/Teen Center fence there is an accumulation of sandy soil. A shovel test here revealed more Styrofoam, a screw top beer bottle, plastic sheeting, a coat hanger, and a length of heavy gauge insulated wire. Along the western edge of this area is a sod-covered, partially decayed, sawed timber. It is roughly 6 inches thick, 12 inches wide, and at least 15 feet long, although its southern end is buried under a berm of spoil from an adjacent parking lot. This isolated timber is not associated with any other structural elements.

Survey of the proposed parking lot expansion revealed that despite its lush cover of grass, the area is sandy gravel with little to no top soil. None of the attempted shovel tests penetrated more than a few centimeters. There is, however, a building footprint near the corner of Washington and Third Avenues. This shallow depression marks the former site of a structure that faced Third Avenue and was roughly 25 feet wide and 80 feet long. According to long time Seward resident Pat Williams (personal communication 1994), this was the location of an Alaska Transfer Company stable.

She remembers that the stable extended from Third Avenue to an alley that ran between Washington and Railway Avenues. She also recalled a small office that sat on the corner of Third and Washington.

Mrs. Williams' recollections are confirmed by 1927 and 1947 Sanborn Map Company fire insurance maps that show the Alaska Transfer Company yard. On the 1927 map, the stable is depicted as a large structure with an adjoining garage. Behind the stable and to the south along the alley was a wagon shed. The small office at the corner was actually in the Washington Avenue right-of-way. The arrangement of the buildings had not changed by 1947, although the office had become a dwelling, and the wagon shed had been converted to coal and ice storage.

The spring proposed as a fresh water source flows from the base of the rock cliff along the western side of Lowell Point Road. The only "improvement" at the spring is a bulldozed channel that contains runoff flowing to the south. To the north, along the route of the proposed water line, the area between the road and cliff is badly disturbed. North of Lowell Creek and east of the road is a massive body of fill that supports the IMS warehouse.

None of the cultural material discovered during this survey is old enough or sufficiently significant to be eligible for the National Register of Historic Places. Except possibly for the cartridge case, I would judge the items found in the survey area along Railway Avenue to be no more than 25 to 30 years old. This material simply appears to be part of the scatter of debris that can be found in any urban area.

The building footprint at the corner of Third and Washington dates to the early years of this century, but is associated with no other historic remains. Although of some historical interest, this depression has little potential to yield any information on the history of Seward that is not available from the Sanborn maps. Therefore, it is doubtful that it is eligible for listing on the National Register.

As defined for the purpose of this survey, the project site contains no significant archeological properties. Nonetheless, Kerry Martin, Community Development Director for the City of Seward, and local archeologist Mark Luttrell have expressed concern about cultural material that might be incorporated into the fill along the waterfront. They feel that the project could possibly affect the remains of early twentieth century structures that were offshore on pilings or items that were dumped along the original shoreline.

There is the possibility of historic material in the fill. For example, a 1989 conductivity analysis of Tract 2, a former railroad storage yard, suggested that "tracks remain buried at the site" (Nortech 1993:14). However, any older material is likely at or below sea level, and should not be reached by planned

excavations for the facility's foundations. Notwithstanding that, concerns about historic remains in the fill can probably best be addressed by periodic archeological monitoring. Should cultural resources be encountered during construction, work that could potentially damage these resources should be halted and the SHPO contacted immediately.

If you have any questions about my survey or this report, please contact me.

Sincerely,

Michael R. Yarborough
Archeologist

Enc. 2

References Cited

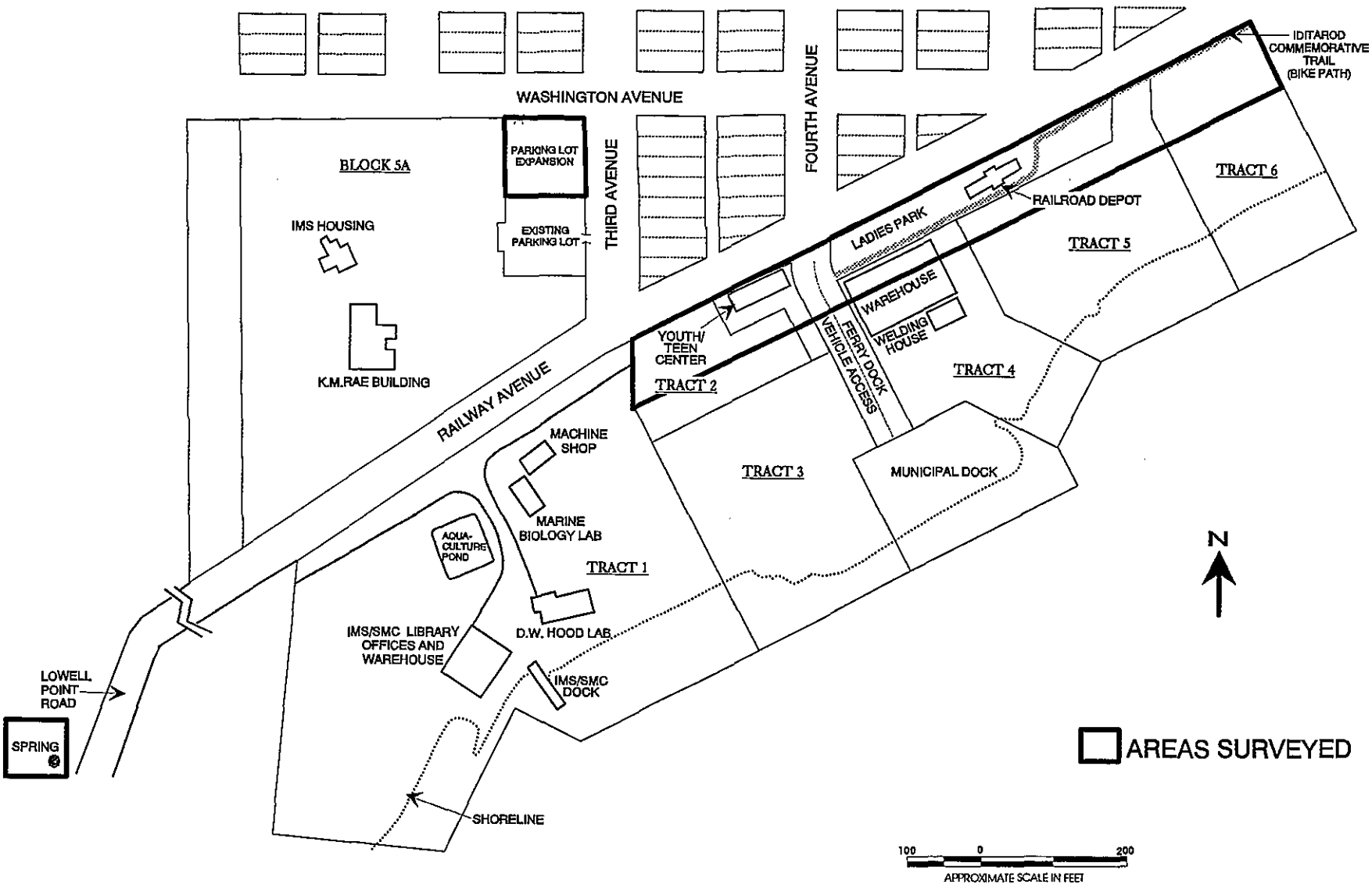
Bittner, Judith E.
1994 Letter to Nancy Swanton, EIS Project Manager, IMS Infrastructure Improvement Project. Ms. on file, Office of History and Archaeology, Alaska Division of Parks, Anchorage.

Exxon Valdez Oil Spill Trustee Council
1994 *Proposed IMS Infrastructure Improvement Project, Seward, Alaska.* Draft Environmental Impact Statement, USDI Exxon Valdez Oil Spill Trustee Council, Anchorage.

King, Robert E.
1991 Plastics in Archaeological Sites: A Brief History. Paper presented at the 18th Annual Meeting of the Alaska Anthropological Association, Anchorage.

Newman, T. Stell
1970 A Dating Key For Post-Eighteenth Century Bottles. *Historical Archaeology* 4:70-75.

Nortech, Inc.
1993 Phase I Site Assessment, Alaska Sea Life Center, S10, T1S, R1W, SM, WT 2,3 & East Port. of 1, Seward, AK. In *Proposed IMS Infrastructure Improvement Project, Seward, Alaska,* Appendix B. Draft Environmental Impact Statement, USDI Exxon Valdez Oil Spill Trustee Council, Anchorage.



SITE MAP

IMS Infrastructure Improvement Project
Seward, Alaska
FIGURE 1

APPENDIX C

EXECUTIVE SUMMARY:
UPDATE AND EXPANSION OF MARKET DEMAND ANALYSIS FOR THE ALASKA SEALIFE CENTER

Prepared By

FOX PRACTICAL MARKETING AND MANAGEMENT

EXECUTIVE SUMMARY

UPDATE & EXPANSION OF MARKET DEMAND ANALYSIS for the ALASKA SEALIFE CENTER

AUGUST, 1994

PREPARED BY:

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EXECUTIVE SUMMARY

This report is an update and expansion of a Market Demand Study prepared for the Seward Association for the Advancement of Marine Science prepared in July, 1993.

General growth in Alaska tourism:

Tourism to the state of Alaska has experienced long and sustained growth for over 40 years. The state has experience particularly strong growth in recent years:

- Visitors to Alaska have grown from 531,100 in 1989 to 836,900 in 1993, reflecting a 63 percent increase.
- Visitors to Alaska on a vacation/pleasure trip -- the market holding the most promise for the SeaLife Center -- are growing faster than other segments.
- Visitor expenditures in Alaska have nearly doubled, with spending up from $304.1 million in 1989 to $597.9 in 1993 statewide.

Alaska SeaLife Center: A "must-see" attraction

The Alaska SeaLife Center is slated to be a project of such quality and appeal that it is expected to become one of the most visited attractions in the state charging an admission. The outlook for the SeaLife Center successfully attracting visitors is promising.

Scope of this report:

In addition to summarizing markets that have remained unchanged since the FPMM 1993 report, this document examines two markets with measurable changes for the SeaLife Center: *non-resident cruise visitors and non-resident/non-cruise visitors.* Visitor projections for these markets are based upon an updated and expanded analysis of the recently released 1993 Alaska Visitors Statistics Program. In addition, interviews with cruise and tour company executives were expanded to broaden understanding of the industry's outlook on this project.

SUMMARY OF FINDINGS:

Non-resident/Non-cruise:

The market of non-resident/non-cruise visitors to Seward has grown substantially over the last decade, with growth rates averaging about 10 percent annually. This year, Seward will host about 155,000 non-resident/non-cruise visitors.

Future growth is conservatively estimated at 5 percent and with a penetration rate maintained at 40 percent, consistent with our previous report and the assumed "must-see" nature of this attraction. By 1997, the non-resident/non-cruise market is slated to produce 180,000 visitors for Seward and an estimated 72,000 visitors for the SeaLife Center.

It is significant that these penetration rates are applied just to projected visitors to Seward, not to *all* visitors to the Kenai Peninsula, as was calculated in the earlier report. Therefore, these estimates are more focused and consequently have more strength.

Non-Resident/Cruise

In this report, we show that the robust health of the Alaska cruise industry reflects a formidable growth trend for North American cruising. This growth is expected to continue because of the demand created by maturing baby-boomers.

Cross-Gulf sailings are estimated to increase at 8 percent annually. Seward, as a preferred port in Southcentral Alaska, is in a prime position to attract future cruising growth because Glacier Bay restrictions have forced many new cruise entrants across the Gulf of Alaska.

For the purposes of our report, we examined a number of factors that influence the marketplace. Most significant is the potential for a road to be built to Whittier. With more convenient road access, Whittier stands to capture a percentage of the cruise ship market crossing the Gulf now and in the future. For this report we assumed that road access is going to become a reality and that Whittier will capture one-third of the cross-Gulf cruise market. Even with an one-third loss of market, Seward's position as a major Southcentral cruise port remains secure into the future.

Expanded interviews with cruise lines indicated wide acceptance for the SeaLife Center. In our previous report, Princess Tours was the project's strongest supporter, while other companies took a more conservative "wait and see" approach. Now, as planning for the project solidifies, each cruise line we interviewed expressed enthusiasm for the project. This level of support will start out small and grow as the Center's quality and reputation becomes more widely known.

Cruise line interviews suggest that port-of-call visitors will visit to the attraction in large percentages. Northbound (disembarking) passengers will support the project in larger numbers than Southbound (embarking) passengers due to logistics and marketing issues.

In 1997, we estimate 194,311 cruise passengers will arrive at Seward, of which 24,600 will visit the SeaLife Center. These numbers will drop slightly if the road to Whittier goes in, but will grow again as the project matures and as the cruise industry grows.

Resident

In our previous report, we showed that Southcentral residents are frequent travelers to the Kenai Peninsula and to Seward. Our polls showed that 69 percent of Southcentral residents answered they would probably or definitely visit an attraction like the SeaLife Center. Based on this large percentage, we estimate that 105,000 residents will visit the facility in its first two years while it is a novelty. As initial high demand from residents levels off, this market will drop to a more modest 90,000 in future years.

Fall/Winter/Spring (FWS) and other groups

FWS markets include visitors who come to Alaska in the fall, winter or spring, pre- and post- convention travelers, and school groups. In our previous report, FPMM estimated that approximately 21,000 visitors from this category would visit the center each year.

While new developments like the Alyeska Ski Resort may strengthen these markets and eventual visitation to the SeaLife Center, we maintained the same level of visitation as was shown in our previous report.

Southcentral Untapped

Based on our interviews with a number of smaller volume tour operators, we project that there will be a growing number of day-tours from Anchorage offering the SeaLife Center. It is also estimated that a number of those currently visiting the Kenai Peninsula but not Seward will want to see this attraction. We project 10 percent of the Southcentral visitors not presently visiting Seward will add Seward to their itinerary in order to visit the SeaLife Center, yielding a range of 28,465 to 34,599 visitors to the Center.

Critical Assumptions

In this report, FPMM has adopted a more conservative position on the Center's potential visitation. Our calculation of market penetration for the SeaLife Center is based on assumptions derived from our long industry experience, extensive secondary research, surveys and interviews conducted for this study, and discussions with other project consultants and promoters. Among the key assumptions are:

- *the SeaLife center design and construction will produce a quality attraction with outstanding facilities and interpretive displays;*
- *the center will become a "must-see" attraction with the necessary appeal to encourage repeat visits by Alaskans;*
- *the project will be well-managed and responsive to the needs of the travel industry and the general public;*
- *the SeaLife Center's marketing will be strong, with substantial focus on each of the target markets. This is a significant requirement throughout the life of the project, but it is especially critical during the pre-opening phase and the center's early years of operation;*
- *the outstanding attraction combined with strong marketing will result in travel industry acceptance, particularly with cruise companies;*
- *the visitor industry will remain healthy and growing, and that Seward's share of the visitor market will continue to grow as well.*

Conclusions

Market analysis suggests that the overall visitation to the Alaska SeaLife Center, derived from all market segments, will range between 250,000 and 283,000 over the five year period, as shown below:

Five-year Visitor Projections
Alaska SeaLife Center

	1997	1998	1999	2000	2001
Non-resident/non-cruise[1]	72,007	75,607	79,388	83,357	91,901
Non-resident/cruise segment[2]	24,600	19,362	29,112	43,259	46,720
Resident[3]	105,142	105,142	89,422	89,422	89,422
FWS and other markets[4]	20,370	20,370	20,370	20,370	20,370
Southcentral untapped market[5]	28,465	29,888	31,383	32,952	34,599
TOTAL	**250,584**	**250,369**	**249,675**	**269,360**	**283,012**

---

1 Reflects 40% market penetration with market growing at 5 percent.

2 Assume that Alaska cruise market grows at 8% and that Whittier captures 1/3 of cross-Gulf of Alaska cruise market.
Port-of-call: Assume that 5% of Seward's cruise visitors are visiting as a port of call. We project a 60% market penetration of port of call visitors.
Northbound:
Year 1 & 2: Assumes 40% penetration of 1/3 of Seward's disembarking cruisers.
Year 3: Assumes 45% penetration of 40% of disembarking cruisers.
Year 4: Assumes 50% penetration of half of disembarking cruisers.
Southbound:
Year 1 & 2: Assumes 40% penetration of 15% of Seward's embarking cruisers.
Year 3: Assumes 45% penetration of 25% of embarking cruisers.
Year 4: Assumes 50% penetration of 35% of embarking cruisers.

3 Residents currently traveling to Seward, 50% first two years; 30% after second year. Residents not currently traveling to Seward, 10% the first two years and 20% after the second year.

4 No growth shown, as many of these markets will maintain similar numbers, although it is expected that each sub-market will have its own development cycle.

5 Reflects 10% market penetration and 5% growth.

APPENDIX D

PHASE I SITE ASSESSMENT
ALASKA SEALIFE CENTER
S10, T1S, R1W, SM
WT2,3, AND EAST PORT. OF 1
SEWARD, ALASKA

Prepared By

NORTECH, INC.

PHASE I SITE ASSESSMENT
ALASKA SEA LIFE CENTER
S10, T1S, R1W, SM
WT 2,3, & East Port. of 1
Seward, AK

Prepared for

Peratrovich, Nottingham & Drage, Inc.
1506 West 36th Avenue
Anchorage, AK 99503

November 11, 1993

Prepared by

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November 11, 1993

Peratrovich, Nottingham & Drage, Inc.
1506 West 36th Avenue
Anchorage, AK 99503

ATTN: Douglas Kenley

RE: **Phase I Site Assessment**
Section 10, Township 1 South,
Range 1 West, Seward Meridian
Waterfront Tracts 2,3, and Eastern Portion of 1
Seward, AK

Dear Mr. Kenley:

Attached is a report of our investigation, findings, analysis and opinions regarding the Phase I Site Assessment (SA) and limited site sampling of the property located at the Waterfront Tracts 2,3 and the eastern portion of Tract 1 of Section 10, Township 1 South, Range 1 West, Seward Meridian, subsequently referenced as "the Property." The purpose of our investigation was to identify significant environmental liabilities or concerns that would have a major impact on the financial condition of the property and its proposed improvements. It is our understanding that the information will be used to ascertain environmental concerns that would impact construction of the Alaska Sea Life Center (ASLC).

Based on the analysis of the investigation's findings as well as the considerations and assumptions set forth in the report, we are of the opinion that:

- Considering the site's: 1) extensive history as a railroad yard and industrial site, 2) confirmed solid waste debris and Hydrocarbon concentrations and 3) fuel storage tanks, the Property has been rated as "Medium Risk" and warrants additional investigation.

- This investigation has found the potential for significant hazardous waste/material contamination on-site to be minimal. Detectable levels of Total Petroleum Hydrocarbon (TPH) concentrations, in the 200-300 ppm range, have been found in sampling throughout the site, both in previous assessments and in this effort. These reported TPH concentrations may contain a biogenic hydrocarbon component and are not considered significant. The identified presence of TPH throughout the site, however, generates concern that areas of high TPH concentration may exist.

- Multiple Underground Storage Tank (UST) systems, some in service since before the 1964 earthquake, exist on site and/or adjacent to the property. Based on available information, none of these UST systems have been evaluated using contemporary UST assessment.

- It is recommended that, during the design phase, additional assessment efforts be completed within the proposed building footprint. The work scope should include random and bias sampling to address identified concerns and a description of required site work for construction, while taking into account acceptable levels of project risk and the available budget.

Although the findings of this limited property assessment warrant further analysis, it is ***NORTECH***'s opinion that the identified concerns are not of a severity that would require delays or cancellation of the proposed project. Properly delineated, all concerns identified can be routinely addressed during the design and construction phase without significant project impact.

The unavailability of the prior Site Assessments to ***NORTECH*** before we conducted our site examination and the budgetary constraints of the Project have limited our ability to investigate the environmental conditions of the Property. In the preparation of this report and these opinions, we have made certain assumptions based on the investigation's findings. It is our opinion that these assumptions are reasonable and adequate for the purposes of this report. However, the work scope was restricted to a Phase I Assessment with limited site sampling. Actual site conditions may differ. Our primary considerations and assumptions are presented in detail in the attached report.

NORTECH Environmental & Engineering Consultants (***NORTECH***) has enjoyed working with you and PN&D. We would like to thank all the individuals who assisted ***NORTECH*** in data collection and resolution of project concerns.

We trust that this information is sufficient for your needs at the present time. If you have any questions or we can be of further assistance, please contact me.

Sincerely,
NORTECH

John Hargesheimer, PE, DEE
Principal

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Appendix D: Otter Rescue Center -- Environmental Services Limited Report
Appendix E: Otter Rescue Center -- Harding Lawson Associates Report

1.0 INTRODUCTION

NORTECH assisted PN&D in the evaluation of the property located at Waterfront Tracts 2,3 and the eastern portion of 1 of Section 10, Township 1 South, Range 1 West, of the Seward Meridian by completing a Phase I Site Assessment (SA), as well as a limited site-sampling effort. The initial scope of our services for the SA was in accordance with our letter proposal dated August 10, 1993 and revised per our letter of August 11, 1993. As stated in this proposal, this Phase I SA was not to include building inspections, but rather a limited site inspection, review of available material on the past uses and current condition of the Property, and limited site sampling of geotechnical bore holes being completed by PN&D. We understand the information will be used by PN&D and investors to ascertain the risk associated with environmental concerns in constructing the Alaska Sea Life Center on the Property.

This report summarizes our investigation, findings, analyses, and opinions regarding the environmental condition of the property. The project scope and extent of our examination was not of a depth necessary to reveal all environmental issues. It was, however, considered sufficiently thorough to identify major environmental concerns associated with the proposed construction.

Information is provided within the report to assist in the effort of "all appropriate inquiry into the previous ownership and uses of the Property consistent with good commercial or customary practice" to address liability determined by current environmental legislation regarding real estate. The environmental statutes that are most frequently encountered in real estate and considered in this investigation include the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or "Superfund"), the Resource Conservation and Recovery Act (RCRA), the Clean Air Act and Clean Water Act. Included in this report are:

- A brief project background description and an explanation of the purpose and the scope of work.
- Historical data reviews and information including review of regulatory agency files, oral reports, and property ownership records.
- Records of site-visit observations, investigations and interviews completed with involved personnel.
- Analysis of information provided, including classifying the site into one of four degrees of risk of having environmental concerns.
- Conclusions are presented regarding *NORTECH*'s opinion of whether there is significant indication of contamination based on the findings.
- Recommendations are provided, where appropriate, for further investigation in order to delineate and characterize any significant indication of contamination.

2.0 METHODOLOGY

2.1 Assessment

The Phase I SA was completed in accordance with ***NORTECH***'s standard Property Assessment Services Scope of Work. A copy of the summary in its entirety is enclosed in Appendix A. Upon completion of the historical research of the uses of this Property and those in close proximity, ***NORTECH*** rates the site on its risk of having contamination and/or of being the source of contamination on-site. The risk categories are: No risk, Low risk, Medium risk and High risk. ***NORTECH*** cannot state with surety that there is no contamination on-site. We can, however, evaluate the probability with which this site was a source of contamination to the area. This evaluation addresses the liability issue, which is key to determining who ultimately is responsible for costs of cleaning up any contamination.

Due to the urban nature of this site, the proximity analysis has been reduced to the buildings in the immediate vicinity of this site. We believe that this assumption is justified. Those properties which we have investigated, i.e., those directly surrounding the Property including the ones across Railway Avenue, have been primarily industrial in nature and are of concern to this study. In contrast, those sites further north, or up-gradient from this site, are primarily commercial and residential in nature and less likely to have deleterious environmental impact.

2.2 Site Sampling

All field sampling efforts were completed in general accordance with ***NORTECH***'s Quality Assurance Program Plan (QAPP) for Underground Storage Tanks (UST). The QAPP, written specifically for UST investigations, includes sampling procedures applicable to this project. The Plan meets Alaska Department of Environmental Conservation (ADEC) regulations and has been approved by the Department. The QAPP is available upon request from ***NORTECH*** and on file with ADEC. The information provided in the QAPP includes:

- Organization and Responsibilities
- Field Sampling Procedures
- Analytical Procedures
- Data Reporting
- References

Soil samples taken on the site were subjected to field screening analysis with an Organic Vapor Monitor (OVM), which measures headspace concentrations of organic vapors in parts per million. Those samples showing the higher organic vapor concentrations were then submitted to

Commercial Testing & Engineering Laboratories (CT&E) in Anchorage for more detailed analysis. The laboratory is ADEC- and U.S. Corps of Engineers-certified to perform the required analysis and is located at 5633 "B" Street in Anchorage. Two different types of laboratory analyses were used: EPA Method 418.1 to detect Total Petroleum Hydrocarbons (TPH) and EPA Method 8020 to detect Aromatic Volatile Compounds.

TPH is to some extent a misnomer; total petroleum hydrocarbons may be found in soils due to spillage of petroleum products onto soils, but they can also result from decay of certain natural substances such as peat. While EPA Method 418.1 will detect the presence of petroleum-related substances in soil, it will also detect biogenic hydrocarbons, hydrocarbons which are the by-product of biologic activity. Based on this test alone, it is not possible to differentiate the source of measured TPH between petroleum products or naturally occurring decay of organic material.

3.0 BACKGROUND

NORTECH was retained by PN&D to complete a Phase I Site Assessment as well as a limited site sampling at the Property. Site investigations of a portion of the City of Seward Waterfront Tracts were conducted in October, 1993 as part of development plans for an Alaska Sea Life Center by the Seward Association for the Advancement of Marine Science (SAAMS). The investigations were conducted in order to identify any past, existing, and/or potential environmental concerns at the site.

3.1 Site Location

The City of Seward is located on the eastern side of the Kenai Peninsula along the headwaters of Resurrection Bay, Section 10, Township 1 South, Range 1 West of the Seward Meridian in the Kenai Peninsula Borough. Figure 1 shows the subject site location.

The subject site is located at the end of Third Avenue in Seward, immediately west of the City Dock. Figure 2 is a topographical map of the Seward Area, showing the location of the Property in Seward. The site consists of the eastern unimproved portion of City Waterfront Tract 1, a fenced unpaved parking area including the Teen Center approximately occupying Tract 2, and a fenced, paved, storage area approximately occupying Tract 3. A 6-foot break wall borders the subject site to the south along the shoreline of Resurrection Bay, and Railway Avenue borders the site to the north. Figure 3 shows the subject area, site improvements and proposed building footprint. Figure 4 details the utilities on-site.

3.2 Physical Setting

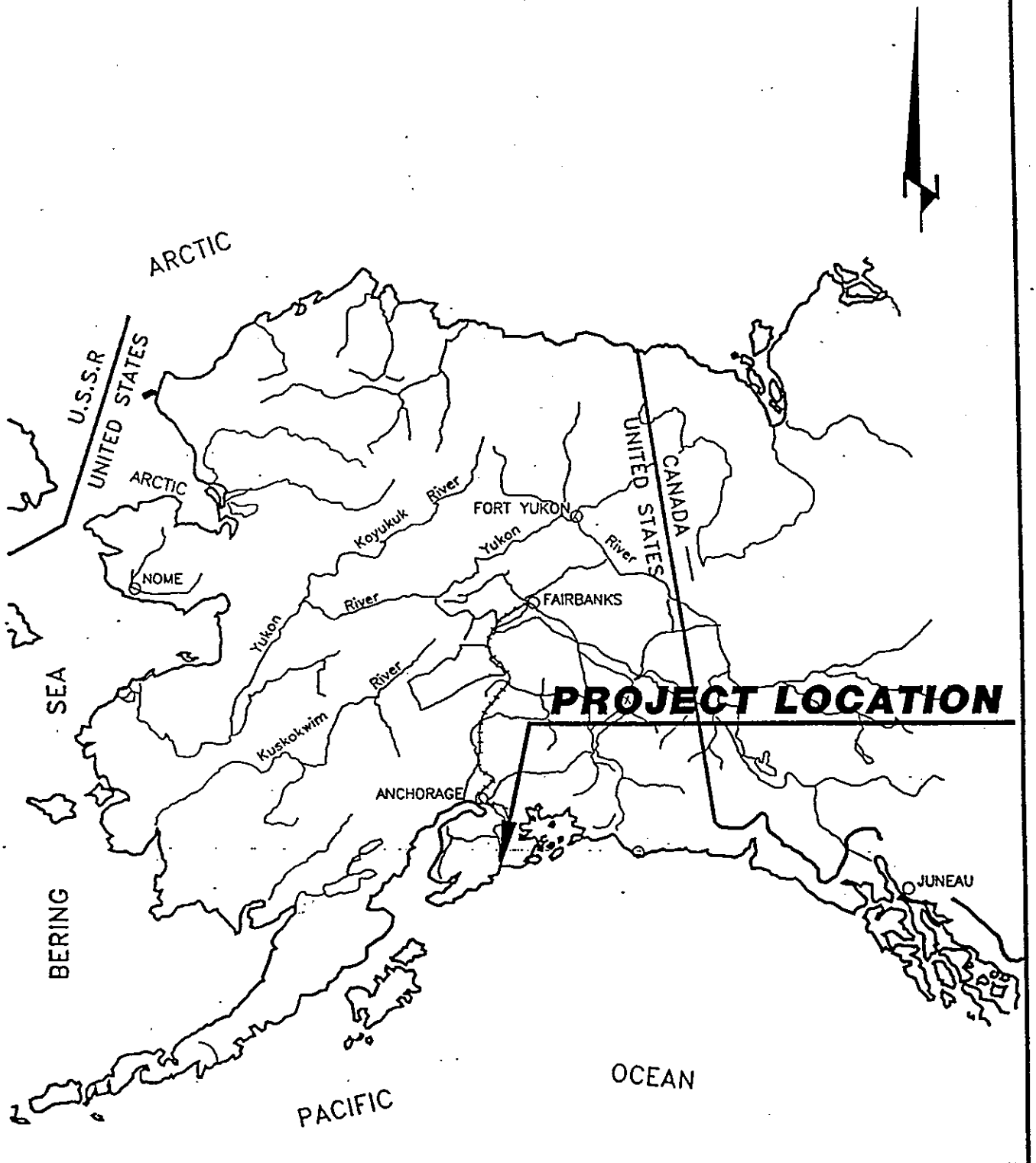
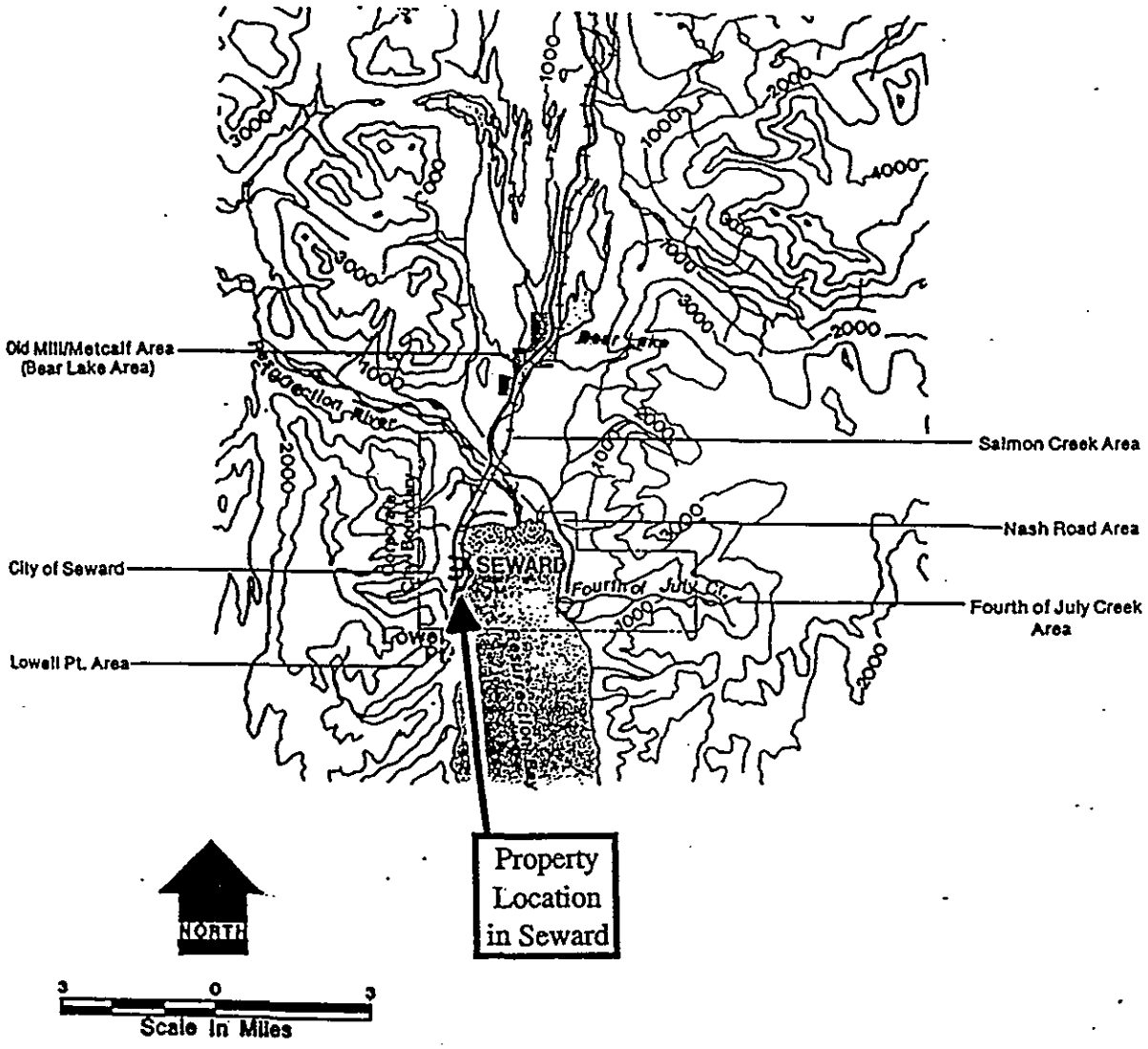


FIGURE 1

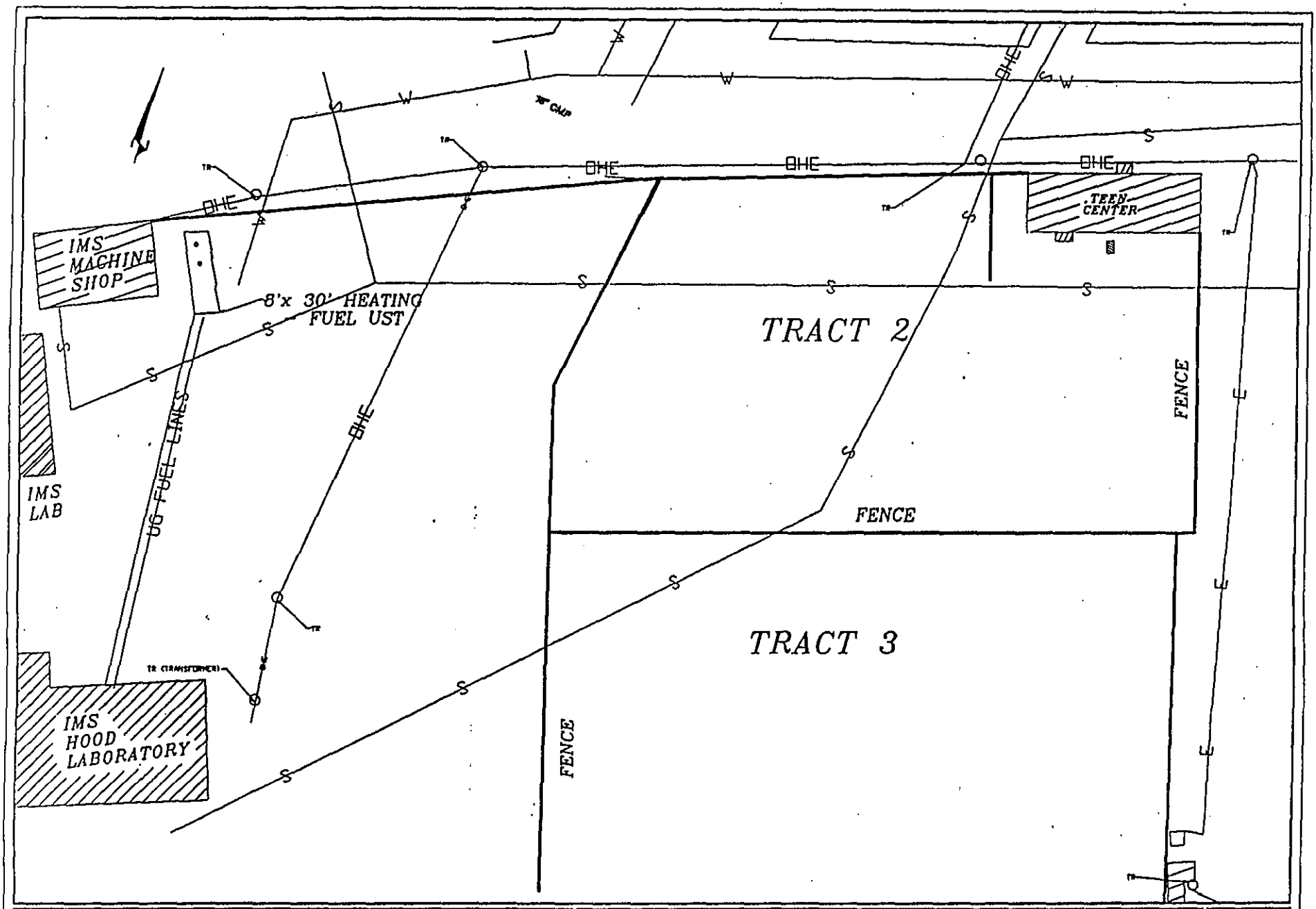
DATE: 10-27-93 DESIGN: JH DRAWN: KIM PROJECT NO: 93145 DWG. NO: 145_VIC	NORTECH Environmental & Engineering Consultants P.O. BOX 72020 Fairbanks, Alaska 99707 (907) 452-5688 FAX: (907) 452-5694	VICINITY MAP ASLC SITE ASSESSMENT



THIS MAP TAKEN FROM GROWTH MANAGEMENT STRATEGY REPORT, SIMPSON USHER JONES, ANCHORAGE AK 1979

FIGURE 2

DATE: 11-2-93 DESIGN: JH DRAWN: MNB PROJECT NO: 93145 DWG. NO: FIG2	NORTECH Environmental & Engineering Consultants P.O. BOX 72020 Fairbanks, Alaska 99707 (907) 452-5688 FAX: (907) 452-5694	SEWARD AREA MAP ASLC SITE ASSESSMENT



NORTECH Environmental & Engineering Consultants P.O. BOX 72020 Fairbanks, Alaska 99707 (907) 452-5688 FAX: (907) 452-5694	SITE UTILITIES ASLC SITE ASSESSMENT	DESIGN: RHC	PROJECT NO: 93145	FIGURE 4
		DRAWN: MNB	DWG. NO: 145_1	
		DATE: 10-28-93	SCALE:	

The City of Seward is located on the eastern side of the Kenai Mountains which transect the Kenai Peninsula. The City occupies the northwestern margin of Resurrection Bay on the Gulf of Alaska. Local physiography consists of nearby mountains to the east and west and Resurrection Bay to the south and east. Depths in Resurrection Bay extend to 900 feet and mountain elevations are as high as 4,000 feet. Lowell Creek is the main drainage for the downtown Seward area. Figure 2 is a topographical map of the Seward Area.

Seward is constructed on the Lowell Creek alluvial fan and alluvial deposits of the Resurrection River. Lowell Creek drains the ice fields to the west and contributed large amounts of detritus to the alluvial deposits on the south (downtown) side of Seward. In the past, Lowell Creek drained down Fourth Street and into the Bay until construction of an aqueduct diverted the Creek west of the downtown area.

Seward has a maritime coastal climate with 75 inches per year average precipitation. The mean annual temperature is 43° F, with a winter average of 30° F and a summertime average of 54° F. The average tidal range at Seward is approximately 9 feet with a maximum range of 15 feet at certain times of the year.

3.3 Site Conditions

The subject site slopes south towards the shoreline. Surface and subsurface water flows from north to south across the site.

The portion of Tract 1 under consideration is essentially unimproved and used for outdoor storage of IMS facility equipment. The area is bordered on the east by a chain link fence and to the south by a six-foot riprap sea wall. Underground sewer and water utilities and overhead electric which serve the IMS facility on the western portion of Tract 1 are located on the west side of the Property. An underground heating fuel storage tank and underground fuel lines also exist on the west side of the site near the Machine Shop.

The Tract 2 area is a fenced parking lot owned and operated by the City of Seward. The City Teen Center is located at the northwest corner of the lot. The area had previously been the subject of environmental investigations as part of the Seward Otter Rescue Center during the 1989 Exxon Valdez oil spill.

The Tract 3 area is fenced on three sides and bordered by a six-foot riprap seawall on the waterfront. The site is paved with asphalt concrete and used for outdoor storage of fishing equipment. It is leased by the City of Seward to Northern Stevedoring & Handling Corp.

4.0 SITE HISTORY AND INTERVIEWS

4.1 Past Use and Ownership

City records indicate that the Property was transferred by the Alaska Central Railroad Company to the City of Seward for $10 and other good and valuable considerations in 1968. The Railroad had owned the Property since buying it from Frank Ballaine in 1905. The site was used as a railroad yard from 1906 until the Good Friday Earthquake of 1964, at which time the railroad yard was destroyed. The City has owned the Property since 1968 and has leased out portions of it. Currently, a portion of the Property is leased to Northern Stevedoring & Handling Corporation.

4.2 Interviews with Key Site Personnel

Key site personnel were interviewed to discover any past, present or potential environmental conditions at the site.

4.2.1 Mr. Kerry Martin, City of Seward Planning Department

Mr. Kerry Martin, City of Seward Community Development Director, was interviewed by *NORTECH* to obtain a general history of City of Seward activities and ownership of the subject property. Mr. Martin indicated that the City Waterfront Tracts had been given to the City by the Federal Government (Alaska Railroad) after the 1964 Earthquake. He also indicated that the area was extensively used by the military during World War II. A review of information in the City archives discovered no maps or documents associated with past use of the subject site.

Mr. Martin indicated that in 1989, Exxon entered into an agreement with the City of Seward to lease part of Tract 2 (behind the Teen Center) in order to establish an Otter Rescue Center (ORC). He also indicated that part of the lease agreement involved pre- and post-lease environmental site assessments. He did not have copies of these documents. Mr. Martin had no knowledge of any other environmental documents or conditions associated with the subject site.

4.2.2 Mr. Darryl Schaeffermeyer, Seward Association for the Advancement of Marine Science

Mr. Darryl Schaeffermeyer, Seward Association for the Advancement of Marine Science (SAAMS) site manager, was interviewed by *NORTECH*. Mr. Schaeffermeyer provided brief descriptions of the history and use of Institute of Marine Science (IMS) facilities. Mr. Schaeffermeyer had no knowledge of environmental conditions associated with the subject site or surrounding areas.

4.2.3 Mr. Tom Smith, IMS Facilities Manager

Mr. Smith was interviewed concerning condition of the underground heating fuel tank by the Machine Shop on Tract 1. Mr. Smith believes that the tank was an old railroad tank car which had been buried for service as an underground storage tank. He indicated that the tank had been in use there since before the 1964 earthquake. He estimated the capacity of the tank as 10,500 gallons. Mr. Smith also indicated that underground fuel lines serving the Hood Lab Building were connected to the tank. The approximate location of these lines is indicated on Figure 4.

4.3 Municipal Records

Seward municipal employees were interviewed to obtain salient information regarding past or present environmental conditions at the site. Where possible, municipal records were examined for information regarding areas of environmental concern. No evidence of illegal discharges, spills, hazardous substances, petroleum products, or environmental conditions which indicate an existing release, past release, or material threat of a release was discovered from municipal sources in connection with the subject site or surrounding area.

4.3.1 City of Seward Planning Department

An information request was made to the City Clerk's Office to discover records of past ownership, deeds, and assessment records pertaining to the Property. No environmental liens were found on the subject site.

City of Seward archives were searched with the assistance of Mr. Kerry Martin to discover any information pertaining to the site prior to City ownership. Some maps describing the site during Alaska Railroad ownership were reviewed but no descriptions of structures or specific use information was noted.

4.3.2 City of Seward Engineering Department

Ms. Marilyn Reynolds, City Engineering Office employee for 12 years, indicated no knowledge of environmental conditions or documents pertaining to such for the Property or surrounding area. Documents reviewed at the Engineer's office included Disaster Relief Service Reports prepared in 1964 after the Earthquake and after the flood in 1986. No areas of environmental concern associated with the subject site were identified.

4.3.3 City of Seward Electrical Department

Mr. Dave Calvert, head of the City Electrical Department, was interviewed regarding the overhead electrical utilities on-site. He indicated that all the electrical transformers had been

tested for polychlorinated biphenyls (PCB's) and no PCB-containing transformers were present on-site. He has no knowledge of any rupture or release of transformer oil at the site.

4.3.4 City of Seward Utilities Department

Mr. Lloyd Welch of the City's Utility Department indicated that the Institute of Marine Science (IMS) was served by City utilities (water and sewer) and that no citations for illegal discharge had ever been issued. He also indicated that he had no knowledge of past or present leaks, discharges or environmental conditions on or near the subject site.

4.4 1964 Good Friday Earthquake[1]

At 5:36 PM on Good Friday , March 27, 1964, a great earthquake with a Richter magnitude of 8.4 to 8.6 struck southcentral Alaska. The ground motion did some building damage in Seward, but its greatest immediate effect was the rupture of several large fuel storage tanks on the waterfront, which quickly ignited, spilling blazing fuel that was spread by the waves and burned on the water for half a mile along the waterfront. Then 4,000 or more feet of waterfront north of Washington Street slid into Resurrection Bay, taking with it, among other things, 14 of the Standard Oil fuel storage tanks within one third of a mile of the Property under investigation. From the submarine landslide, water "boils" were created in the Bay which formed a large wave that hit the Seward waterfront. Then, about 30 minutes later, a seismic sea wave entered Resurrection Bay, increasing in height as it entered shoaling water, and inundated the low areas of Seward. In most places, this wave was estimated to be 25 to 35 feet above the water surface, which was at low tide at the time. This second wave was higher and more forceful than the first wave and caused most of the wave damage in Seward.

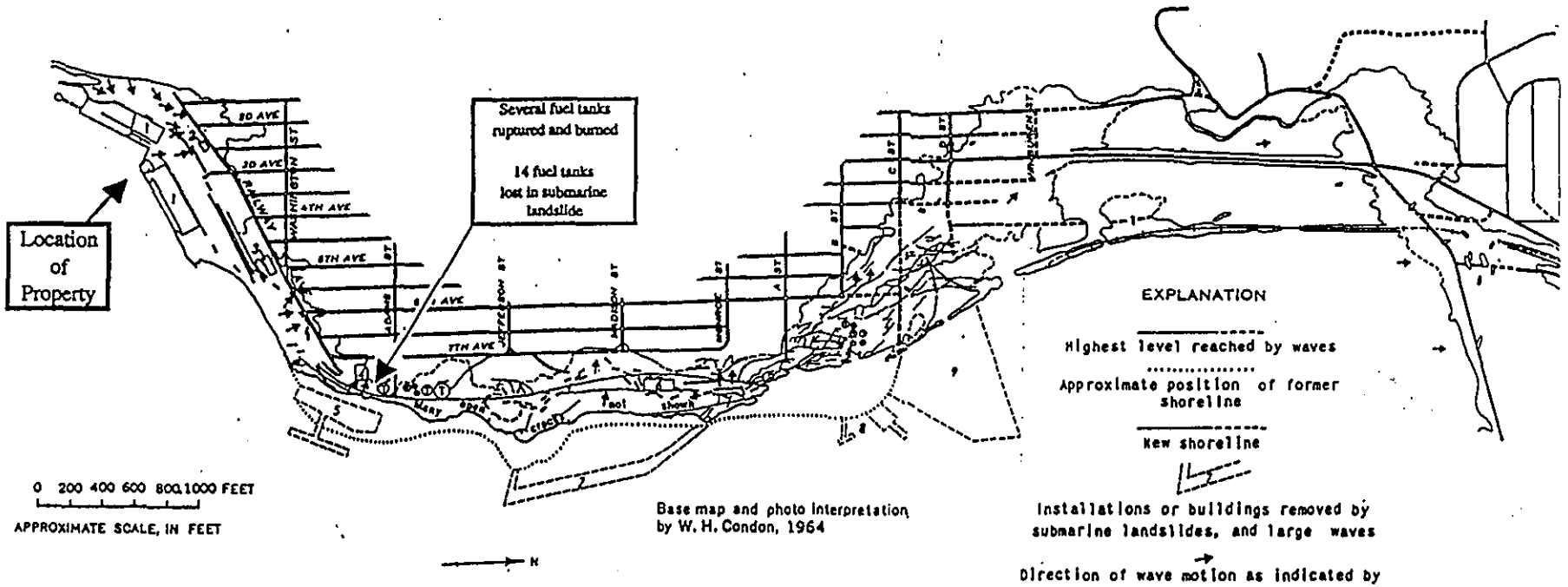
Significant damage was done to the Property, then a railroad yard. One half of one railroad transit shed was washed away and the larger transit shed was destroyed. Rails were ripped up and box cars, tank cars and even a train engine were hurled about pellmell. The damage to the Seward waterfront is detailed in Figure 5.

4.5 Environmental Protection Agency

A request was submitted to the Environmental Protection Agency (EPA) asking for any information in their files of contaminated sites (see Appendix B). The EPA conducted a

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[1]This section has been summarized from the following publications: 1) After Action Report: Alaska Good Friday Earthquake, Alaska District, U.S. Army Division, January 1968. 2) Alaska's Good Friday Earthquake March 27, 1964: A Preliminary Geologic Evaluation, U.S. Geological Survey Circular 491, Washington, 1964. 3) Seward Quake, Lantz and Kirkpatrick, Seward, AK, 1964.



Map of Seward Showing Damage by Submarine Landslide and Large Waves

Installations or Buildings

1. Alaska Railroad Transit Sheds (Heavy damage)
2. Boiler House
3. Depot
4. Power Plant (Burned)
5. Standard Oil Docks and Warehouses (Destroyed)
6. Engine House
7. Army Docks and Warehouses (Destroyed)
8. San Juan Dock, Cement Plant, Marine Ways (Destroyed)
9. Small Boat Harbor, City Dock, Scow Grid (Destroyed)

Map taken from "Alaska's Good Friday Earthquake, March 27, 1964: A Preliminary Geologic Evaluation," U.S. Geological Survey Circular 491, Washington, 1964.

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EFFECTS OF 1964 EARTHQUAKE
N SEWARD
SITE ASSESSMENT

DESIGN: JH	PROJECT NO: 93145
DRAWN: MNB	DWG. NO: 145_B6
DATE: 10-28-93	SCALE:

FIGURE 5

address/zip code search of their data bases in the Air and Toxics, Water and Hazardous Waste Divisions. No information was reported in the Air and Toxics Division. A printout from the Comprehensive Environmental Response, Compensation and Liability Information System (CERLIS) database showed only one listing in Seward, which is not in the proximity of the Property. A list of hazardous waste generators in Seward who have notified the EPA is available from the RCRA Database; no violations have been reported.

4.6 Alaska Department of Environmental Conservation

A request was submitted to the Alaska Department of Environmental Conservation for any information which it has about contamination at or near the site under consideration. A copy of their list of Seward-related files is found in Appendix B. Unfortunately, their listing of these files does not include the specific location in Seward. Reports on the Alaska Railroad's UST's, Seward Hotel UST, and City of Seward UST's were reviewed in detail. No indications of environmental conditions which may affect the subject site were indicated.

5.0 PREVIOUS INVESTIGATIONS

In 1989, Environmental Services Ltd. (ESL) prepared a site assessment of a portion of Tract 2 that was then under construction to be used by Exxon as an Otter Rescue Center (ORC). This SA documented the condition of the Property prior to Exxon's occupancy of the site (although sitework had actually already begun). A second site assessment was completed by Harding Lawson Associates (HLA) at the end of Exxon's use of the Property. These reports are discussed individually below. These reports are contained in their entirety in Appendixes D and E.

5.1 ESL Site Assessment

ESL produced a report summarizing their findings of the existing environmentally relevant land uses of this and neighboring properties and the results of their soil samples. The following summarizes ESL's findings of concern, stating their opinions. This section should be construed only as ESL's findings and opinions; they have not been verified or critically evaluated by *NORTECH* in this section.

5.1.1 General Area

The entire area under consideration has a history of commercial and industrial uses. Tracts 1-6 were used as a railroad yard from 1906 to 1964. This site was used extensively by the military during World War II. During the 1964 Earthquake and resulting tidal waves, the railroad yard suffered extensive damage and was abandoned by the railroad at that time. During that same

Earthquake, several fuel tanks north of the Property were washed away, while others overturned and spilled large amounts of refined fuel which ignited.

5.1.2 Tract 2

Teen Center

The Teen Center, in the northeast corner of Tract 2, has an underground storage tank which has probably been used for heating oil. Between 1979 and 1985, an above-ground heating oil storage tank (250-gallon capacity) was added to the facility. ESL found evidence of overfilling and spillage around this above-ground tank, which was confirmed by a sample result from beneath the tank with a measured total petroleum hydrocarbon concentration of 15,600 parts per million.

Railroad Artifacts

Prior to the Railroad's 1964 cessation of use, this was a railroad storage area. Many tracks ran across the property and goods were stored beside the tracks. Conductivity analysis suggests that tracks remain buried on the site.

Sewers and Storm Drains

Two active sewer lines are on or near the property. One runs northeast to southwest across the Property, parallel to Railway Avenue. Another is assumed to be underneath Railway Avenue. An abandoned sewer line runs from north to south on the Property, but was observed to be used as a storm drain. Another storm drain, reported by the City to be abandoned, runs northwest to southeast, but this, too, was speculated to be still in use. ESL felt that, because these sewers and storm drains have been in the ground since before the 1964 Earthquake, it is likely that they may leak and be depositing wastes from the rest of the City in this area.

Drainage Ditch

ESL observed a drainage ditch south of the northernmost rail in aerial photos from 1964. This ditch would have drained from Tract 4 onto Tract 2. It was observed to be partially filled in a 1975 aerial photograph and completely filled in a 1985 photograph. A subsurface conductivity analysis of this ditch was performed, leading ESL to conclude that this ditch was filled in part with some metallic debris such as 55-gallon drums. The filling of the ditch was done as part of a general filling of the lot, which has been ongoing since 1964, with most of the activity occurring in the 1980's.

Storage Activities on Site

Since 1964, this site has been used for materials storage and possibly equipment maintenance. Twenty-five 55-gallon drums were removed from the site for the construction of the ORC, some leaking oil-like substances.

Otter Rescue Center

The ORC was located on a portion of Tract 2. ESL states that there was no sewer connection for this facility at the time of their report. They also reported that the fill used for the ORC contained TPH, as verified by their sample results.

Sample Results

Several soil samples were tested for polychlorinated biphenyls, but no detectable concentrations were reported. Several samples were taken at various depths about the site. All samples detected TPH. The concentrations of TPH ranged from a low of 4.6 ppm (called background concentration by ESL) to a high of 15,600 ppm directly under the above-ground storage tank of the Teen Center. These results are discussed in greater detail in conjunction with *NORTECH*'s sample results in the Analysis Section below. The locations of ESL's samples are shown in Figure 6. Sample results within Pit 6 found a significantly lower TPH concentration of 9.5 ppm in damp soil (at 8 feet in depth) than in wet soil (at 8.5 feet) of 93.1 ppm. ESL concluded from this that the ground water was contaminated.

5.1.3 Tract 3

Tract 3 is a paved storage yard. Storage observed on it included 35 55-gallon drums. Six rusty drums had labels on them that they contained ethylene glycol. One of the unlabeled drums was leaking. A trailer was also stored on the lot.

5.1.4 Tract 1

This lot contained a large pile of creosote-treated logs.

5.1.5 Property Across Railway Avenue

In addition to a warehouse and the Seward Machine Shop across Railway Avenue north of Tract 2, ESL reports the charred remains of a service station that had burned in 1988 or early 1989. The gas pump was still on-site, leading ESL to conclude that the underground storage tanks were

still in the ground. As this service station was operating prior to 1964, these USTs would be more than 25 years old. The service station is higher than the Property and up-gradient from it.

5.2 HLA Site Assessment

HLA undertook an evaluation of the portion of Tract 2 used by Exxon as the Otter Rescue Center. Their investigations were confined to the surficial soils of this area. The following are their observations and conclusions; ***NORTECH*** has made no attempt to critically evaluate them in this Section.

5.2.1 Pre-Exxon Use

The Property was used by the Alaska Railroad as dock facilities prior to the 1964 Earthquake. The Railroad replaced the original wooden pier with a concrete dock prior to the 1964 Earthquake, building the new dock on the area south of Railway Avenue which had been filled with poorly sorted sand and gravel from Lowell Creek deposits.

5.2.2 Exxon Use

The ORC was used from April 26 to October 1, 1989 to wash and care for oiled sea otters, other marine mammals, and sea birds. The Center consisted of animal husbandry trailers; sea otter cages, totes and pens; two personnel trailers; and miscellaneous storage trailers. Two below-ground 2,500-gallon collection tanks were located on-site, one to store fresh water for circulation and one as a wastewater collection tank. The wastewater collection tank was emptied periodically using a vacuum truck that transported the wastewater off-site for treatment and disposal. Exxon installed one above-ground 500-gallon heating oil tank at the site to heat the animal husbandry trailers. The tank was placed in a lined area surrounded by a gravel berm. An awning was constructed over the tank to protect it from rain and snow. A propane tank was used to heat the personnel trailers. The Center was only used during 1989, although it was left intact through the end of the 1990 cleanup season.

5.2.3 Surficial Soils Analysis and Excavation

HLA was directed to evaluate the TPH concentrations in the near-surface soils of the ORC, the assumption being made that only these soils could have been impacted by Exxon's use of the Property for only 17 months. Soil samples taken near the surface in various locations around the Property were found to have TPH concentrations between 14.6 and 372 ppm. Several soil samples exceeded the then-applicable, ADEC-recommended, soil cleanup guideline of 100 ppm. Based on these results, it was decided to complete a soil removal program near the sample locations above the cleanup-guideline level. In addition to removing all improvements to the

property as the ORC was being demobilized in 1990, Exxon excavated approximately 1 ton of soil in these samples' general locations.

A second sampling program of soils from 3 - 5 inches below ground surface around the Property found TPH concentrations ranging from 36 to 222 ppm. As 4 of the 10 samples significantly exceeded the ADEC-recommended guideline, Exxon decided to complete a second soil removal program at the site. Approximately 6 inches of soil from a large area of the Property in which the elevated sample results were obtained, about 230 tons of soil in all, was excavated and disposed. Prior to disposal, these soils were analyzed for chlorinated volatile hydrocarbons using EPA Method 8010. The only compound detected was tetrachloroethylene, found in only one of the two samples tested, at a concentration of 0.12 ppm. The excavated area was filled with new gravel. The source of the fill material was tested for TPH and reported to have a TPH concentration less than the detection limit of 20 ppm.

6.0 SITE RECONNAISSANCE AND SAMPLING

6.1 Visual Inspection

During October, 1993, ***NORTECH*** conducted a limited, visual site inspection of the property. A number of east-west trending railroad tracks were observed at or just below surface grade at several locations on the subject site. The Site's property boundaries, fencing locations, overhead electrical lines, and underground utilities are illustrated in Figure 4.

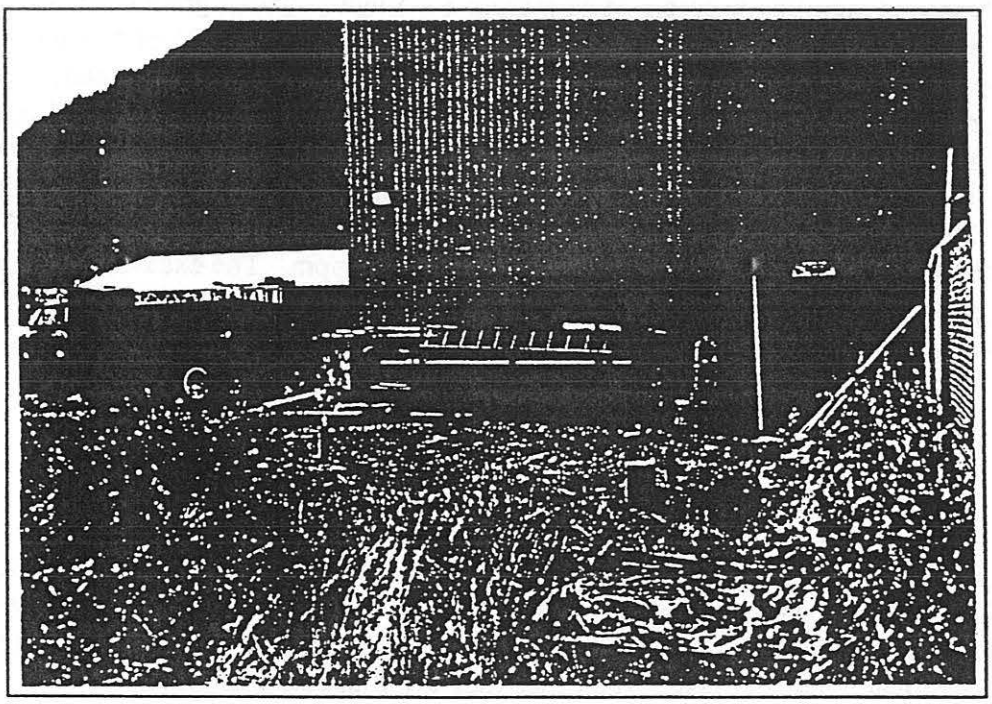
The site inspection was to identify any possible existing physical evidence of contamination and/or presence of toxic and/or hazardous substances. Specifically, the site was inspected for evidence of the presence and location of surface spills or other visible contamination, underground tanks and lines, drum and chemical storage areas, existing water supply wells, existing ground water monitoring wells, or other indications of potential environmental concern. The visual site inspection identified no areas of significant environmental concern other than the underground storage heating fuel tank (UST/H), which is discussed in more detail in the following sections.

6.1.1 Tract 1

City Waterfront Tract 1 is occupied by the University of Alaska Fairbanks Institute of Marine Sciences (IMS). Several buildings exist on-site, including a warehouse building (half of a railroad maintenance building, the other half of which was washed away in the 1964 Earthquake and tidal waves), a machine shop facility (former generator building), a laboratory building and an office/research facility (Hood Laboratory). The Seward IMS facility is shore-based support for the marine research vessel Alpha Helix. The project site includes that area east of the shop

and office/research facility buildings. No current improvements exist on the project site of Tract 1 other than the underground fuel storage tanks and piping, and it appears to be used primarily for outdoor storage.

Light duty trucks, automobiles, and heavy equipment were being parked/ stored near the Shop Facility. Vent and fill pipes associated with an underground storage tank were observed adjacent the east side of the Shop Facility. The tank was measured to be eight feet in diameter, buried four feet below grade. A dark stain approximately four feet in diameter was noted around the fill pipe. Photograph 1 is of the tank area. The stained soil had a distinct diesel fuel odor. Site personnel report that the tank is a buried railroad tanker car and supplies heating fuel for the office/ research building to the south. Approximate location of buried fuel line is illustrated on Figure 4.



Photograph 1: Tract 1 Underground Storage Tank Area by Machine Shop

The southern portion of the subject site is primarily used for storage of marine equipment such as buoys, lines, nets, etc. It was also noted that a number of creosote-treated power poles were being stored in this area. Several transformers on poles for overhead electric lines were also observed. Locations of the transformers are indicated on Figure 4.

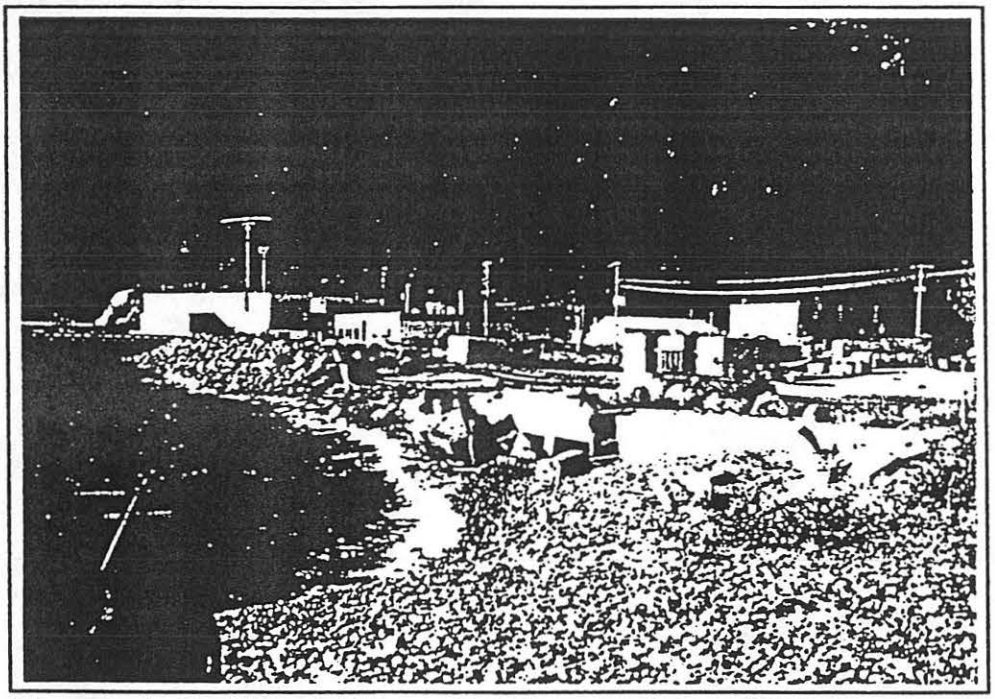
6.1.2 Tract 2

The Teen Center is located at the northeast corner of Tract 2. The building is approximately 16x40 feet and supported on a post and pad foundation. The heating fuel supply for this facility

appeared to be an approximately 300 gallon above-ground storage tank. No indication of leaks or spills such as vegetative stress were observed around the fuel lines or tank. All fittings seemed to be tight and in good condition. No internal inspection of the facility was made.

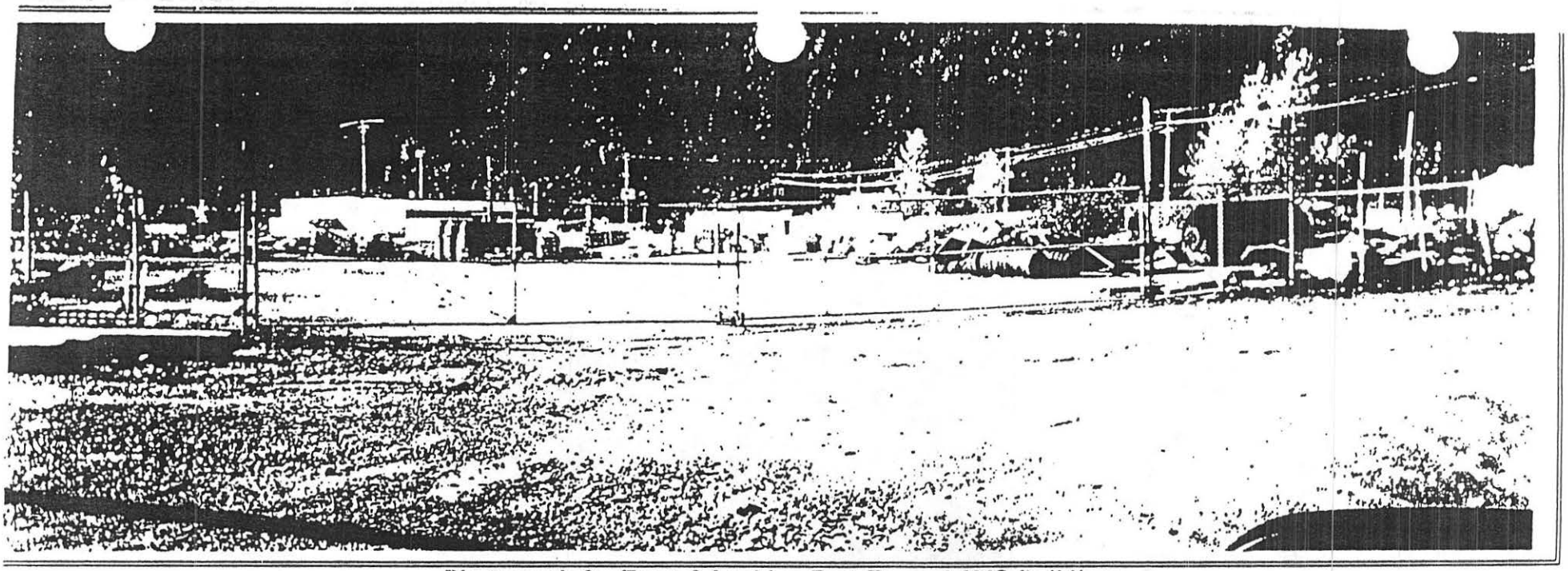
The remainder of Tract 2 is unpaved and designated as a City Parking facility. No appreciable stains or indications of a surface release were observed. The lot is surrounded by a 6 foot chain link fence. An abandoned rail track was observed running just inside and parallel to the southern property fence.

6.1.3 Tract 3

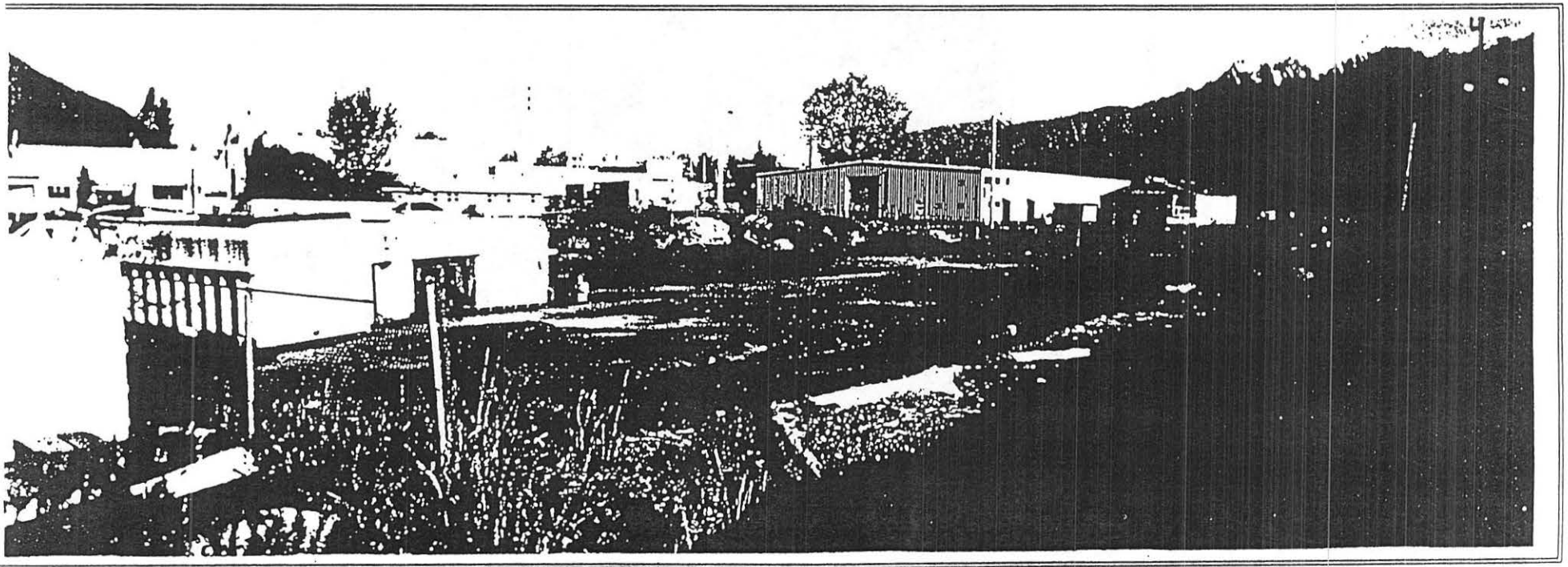


Photograph 2: Tract 3 Riprap Wall Looking Toward IMS

Tract 3 is located immediately south of Tract 2 and borders the City Dock to the west. It is enclosed on three sides by cyclone fencing. The southern (seaward) part of the Tract is protected by a riprap seawall. No permanent structures or improvements exist on the site. The area is used for outdoor storage for fishing equipment such as nets, crab pots, etc. Several steel marine storage containers were also observed. As with the other tracts, several pairs of abandoned rail tracks exist at or just below grade at the site. One boat, two automobiles, and some fish processing equipment were also stored on-site. No indications of petroleum, oil and lubricants (POL) or hazardous substance storage such as drums, etc. (other than automobiles and a boat) were observed.



Photograph 3: Tract 3 Looking East Toward IMS Buildings



Photograph 4: Tract 3 Looking West Toward Northern Stevedoring Warehouse

6.2 Surrounding Land Use

Site observation combined with site interviews and air photo interpretation was used to gather information about the primary activities associated with the surrounding properties. In general, the south Seward area immediately north of the subject site appears to be the City center, including main municipal departments (Planning, Engineering, Electric, Utilities, Fire and Police), commercial buildings, banks, hotels, bars, restaurants, and the City library. Residential housing is found north of the City center.

The remainder of Tract 1 is occupied by the University of Alaska Institute of Marine Science. Four main buildings exist on-site including a warehouse, a machine shop facility (former generator building), a laboratory building and an office/research facility (the Hood Laboratory). The primary purpose of the Seward IMS facility is shore-based support for the marine research vessel Alpha Helix. Phone interviews with Dr. I. Paul, IMS researcher, indicate that generally "no significant quantities of hazardous substances are stored on-site." Dr. Paul also indicated that no radioisotopes were stored on-site, and when employed for scientific study, are brought from the IMS facility in Fairbanks.

The warehouse east of the subject site is located on Tract 4 and is occupied by Northern Stevedoring & Handling (NS&H). An extension of Forth avenue to the City Dock separates the subject site from Tract 4. The site is owned by the City of Seward, along with Tracts 5 and 6 to the east. NS&H has occupied the warehouse facility and adjacent storage building since 1979. According to Jack Goodwill, NS&H general manger, the warehouse stores primarily fishing gear, as well as a grain terminal for the City of Seward and drill rig support equipment for ARCO. It was reported that no hazardous substances or wastes are stored or generated at the facility.

Immediately northeast of the warehouse facility is the former Alaska Railroad Depot. The Depot is currently a tourist information center and gift shop. East of the depot is a public parking lot and a City park.

6.3 Air Photos

Site maps presented in this report were prepared primarily through aerial photo interpretation combined with site as-built surveys conducted by PN&D. Conclusions drawn concerning pre- and post-1964 earthquake conditions were also aided by the use of aerial photographs. Air photo interpretation was also used to estimate the age of certain site improvements and past land uses not available through other historical sources. Dates of air photos reviewed include 1963, 1964 (post earthquake), 1979, 1985, and 1993. Significant conclusions drawn from the air photograph review of the site are as follows:

- The subject site was used as a rail yard prior to the earthquake. Numerous switches and unloading facilities were observed on the subject site.

- After the 1964 earthquake, extensive damage was done to the buildings, rail yard, tankcars, and surrounding buildings. Numerous shipping containers were overturned and damaged. Many large-capacity above-ground fuel storage tanks were overturned north of the site.

- The gas station from previous reports was still active in 1985. A new building has been constructed on the site since then.

- The above-ground tank for the teen center was installed after 1979.

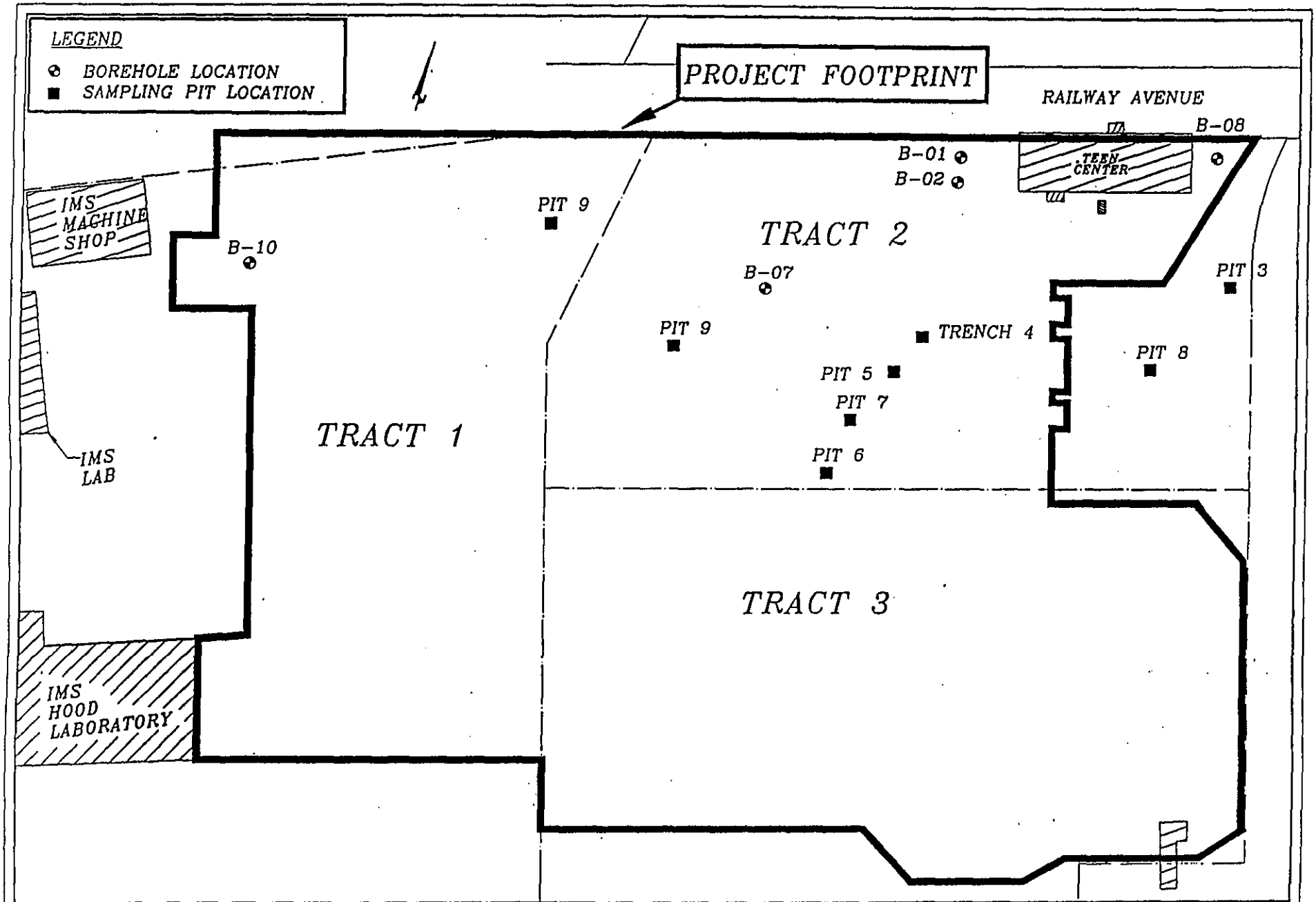
6.4 Borehole Sampling

Borings were completed by Discovery Drilling Inc. using a truck-mounted CME 75 equipped with a 6" hollow-stem, continuous flight auger and a 340-lb. hammer-anvil assembly for driving the sampling barrel for soil sampling. Environmental sampling of the borings was accomplished concomitantly with geotechnical sampling. All field sampling efforts were completed in accordance with *NORTECH*'s Quality Assurance Program Plan. All drilling equipment was cleaned prior to collection of environmental samples. Cuttings from each boring were returned to the drill hole.

Boring locations were limited to those required for geotechnical investigation. Location of borings selected for environmental sampling are shown on Figure 6. Two samples were collected from each of the three selected borings for environmental investigations. One sample was collected from the unsaturated zone above the zone of seasonal water table fluctuation and one sample was collected at the water table from each boring. Samples were field screened using an OVM in order to select samples for laboratory analysis. The following section contains results of field screening and laboratory analysis. The OVM instrument employed during the field screening was calibrated prior to use in the field and calibration data entered into the fieldbook. Copies of all laboratory results are included as Appendix C. Logbooks, field notes, and chain of custody records will be maintained for at least three years by *NORTECH*.

7.0 LABORATORY RESULTS

Laboratory analysis of a selected number of soil samples was completed as a screening effort to help identify existing or previous environmental conditions at the site. Commonly, many environmental pollutants associated with industrial and commercial activity (fuels, waste oils, solvents, lubricants) are associated with refined petroleum products. Analysis for TPH by EPA



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PROJECT FOOTPRINT AND SAMPLE LOCATIONS ASLC SITE ASSESSMENT

DESIGN: JH	PROJECT NO: 93145
DRAWN: MNB	DWG. NO: SAMPLOC
DATE: 10-28-93	SCALE: NTS

FIGURE 6

Method 418.1 was employed to detect the presence of hydrocarbons at the site. Additionally, EPA Method 8020 analysis for aromatic volatile organics was run concomitantly with TPH for one sample to better characterize any contamination detected in samples collected at the water table. Laboratory analysis of soil samples was completed by CT&E.

All QC samples and calibration checks were reported within acceptable limits for all analyses performed. All holding times were met, and samples arrived at the laboratory preserved and in good condition. No spikes, surrogates, blanks, or calibration checks were reported out of QC limits. Copies of laboratory data transmittals and custody forms are presented in Appendix C. The following table summarizes the results of laboratory analysis.

Table 1
Summary of Laboratory Results

Sample I.D. Number	Organic Vapor Concen (ppm)	TPH (418.1) (ppm)	8020 BTEX (ppm)	Depth (feet)	Sample Description
S-07-05	13.9	274	*	5-6.5	sndy bl GW grvl., mod org n/o
S-07-15	3.3	*	*	15-16.5	water table, sndy bl GW grvl.n/o
S-08-05	4.7	*	*	5-6.5	sndy bl GW grvl. n/o
S-08-13	7.1	27.3	ND	13-14.5	water table sndy bl GW grvl.n/o
S-10-05	10.7	64.5	*	5-6.5	sndy bl GW grvl. w/<20%slt
S-10-14	3.3	*	*	14-14.5	water table sndy bl GW grvl n/o

* = Not Analyzed, ND = Non-Detect (Below Practical Quantification Limit), org = organics, n/o = no hydrocarbon odor, grvl = gravel, slt = silt, bl = black, sndy = sandy

8.0 ANALYSIS OF FINDINGS

The following analysis of the investigation findings is based on the information reviewed, laboratory results, our professional experience, and the considerations and assumptions set forth in the report.

Several aspects of this Property warrant its rating by ***NORTECH*** as **"Medium Risk."** This risk category indicates that potential contamination has been found and further investigations are warranted. The industrial nature of this site, as a railroad storage yard when the Railroad was operating at this site and for other storage since the Property was given to the City, warrant environmental concern. In addition, the 1964 Earthquake may have added petroleum-related

compounds to the site with the rupture of storage tanks nearby and the disappearance of 14 others. Exxon, although taking precautions to minimize the negative environmental impact of the Otter Rescue Center to the site, focused their remediation efforts as they were vacating on only the surficial soils. The assumption that they could only have impacted the immediate ground surface soils is questionable, due to Exxon's previously buried tanks and leaching potential of contaminants from the surface.

Levels of TPH have been found which are not a cause for concern in and of themselves, but may be an indication of even greater concentrations elsewhere on the Property. Several fuel storage tanks exist on the Property and in its immediate vicinity which are of an age and nature that warrant further assessment of their environmental impact. These points are discussed in greater detail below.

8.1 Total Petroleum Hydrocarbons On-Site

The analysis of our limited sampling is better viewed in conjunction with the sampling results obtained by ESL in their prior assessment of the Property. Table 2 gives the measured concentrations of Total Petroleum Hydrocarbons in parts per million for all soil samples of both *NORTECH* and ESL. HLA sample results have not been included, as the relevant samples were of soils that were subsequently excavated. These samples results are displayed in order from west to east and by sample depth.

Hydrocarbons as detected by EPA Method 418.1 (TPH) are present on-site. *Every soil sample analyzed for Total Petroleum Hydrocarbons contained detectable concentrations.* Concentrations varied from a low of 4.6 ppm to a high of 15,600 under the heating oil tank at the Teen Center. TPH is used as a general indicator when the exact nature of contamination is unknown, but does have limitations in its use to assess contamination, as discussed in Section 2.0 Methodology. While ADEC cleanup requirements have been established for specific contaminants, such as gasoline- and diesel-range petroleum hydrocarbons, they no longer recommend a cleanup level for TPH in soils, although there was one in existence when the HLA study was done.

The highest concentrations other than at the Teen Center (discussed below) have been in the 200-300 ppm range, sampled at a depth of 4 to 5 feet in three different locations on the Property. This level is somewhat high, but not considered significant unless it is an indication of greater concentrations elsewhere on the property or determined to actually be diesel- or gasoline-range petroleum hydrocarbons.

The sample in this range taken by *NORTECH* contains at least a certain amount of biogenic hydrocarbons, i.e., TPH generated by organic substances such as peat. Our sample result for Boring 7, with a TPH concentration of 274 ppm, was found by the lab to contain some but not all biogenic hydrocarbons. The individual percentage contributions of biogenic and petroleum

Table 2 -- Total Petroleum Hydrocarbons (ppm)

Depth of	Sampling Locations from West to East												
Sample	Boring	Boring		Boring	Boring					Teen		Boring	
(feet)	10	7	Pit 9 (1)	2	1	Pit 7	Trench 4	Pit 5	Pit 6	Center (2)	Pit 8	8	Pit 3
< 1							36.9			15,600.0			
1			4.6				44.4	19.4					75.0
1-2			4.9		18.0	42.5			85.8		35.4		
3											17.0		
4				10.2									202.0
5	64.5	274.0				59.6			204.0				
7													114.0
8									9.5				
8.5									93.1				
13												27.3	

Observations in boxes sampled by NORTECH

(1) Denoted by ESL as background

(2) Sample taken from directly below above-ground storage tank at depth of 0.1'

hydrocarbons in these concentrations will require further analysis. To this end, *NORTECH* recommends further random sampling and analyses within the footprint of the project.

8.2 Other Hazardous Wastes

No indications exist that other hazardous waste contamination is a concern on this site. The one sample tested for volatile organic compounds was found to have no detectable levels of contamination. Polychlorinated biphenyls testing done on-site by a previous consultant found no detectable levels. An EPA Method 8010 analysis of surficial soils removed from the site by Exxon was found to have no chlorinated volatile hydrocarbons above detection levels other than a slight concentration of tetrachloroethylene. Ethylene glycol is the only nonpetroleum substance documented to have been stored on-site. ***NORTECH***'s investigation has discovered no significant potential of hazardous waste contamination.

In addition to potential soil contamination, debris from the railroad yard and subsequent fills can be expected to be found during excavation. Railroad tracks at or below grade are currently visible in Tract 2, and ESL gave indications that other debris also exists in the planned excavation area.

8.3 Fuel Storage Tanks

8.3.1 Former Service Station Across Railway Avenue

From the sample result of Boring 08 at the water table, we can conclude that the former service station across Railway Avenue from the Property is not currently having a significant environmental impact on the Property. The soils at the water table down-gradient (assuming a predominant north-south gradient) from the service station show only a modest TPH concentration of 27.3, with no volatile aromatic compounds detected. These tanks have not been registered with the ADEC. If the tanks still exist, they are in violation of current ADEC UST regulations and should be registered.. As a source of environmental uncertainty to the Property, these tanks should also have a focused environmental assessment done.

8.3.2 Heating Oil Storage Tanks

The assessment of the fuel storage tanks on-site was beyond ***NORTECH***'s scope of work in this Phase I SA, but needs to be formally studied. The above-ground tank at the Teen Center has been found to be a source of TPH contamination to the environment: ESL found visual evidence of spillage from the above-ground Teen Center tank and confirmed this with sample test results. In addition, *NORTECH* detected evidence of overfills and spills at the UST by the IMS Machine Shop.

ESL had sample results which warrant further investigations into the effects of the two Teen Center tanks. The 10-fold increase in TPH concentration in Pit 6, from 9.5 ppm at 8' to 93.1 ppm at 8.5', with a change from damp to wet soil, caused ESL to conjecture that the ground water is contaminated. As this sample location is directly down-gradient from the Teen Center (assuming a north-south gradient), spillage or leakage Teen Center's storage tanks is one possible explanation of these results. Further testing is necessary to confirm or deny the existence of unacceptable TPH levels in the ground water and to link such contamination, if discovered, to the Teen Center tanks.

The two underground storage tanks (one with extensive piping) and the above-ground tank have never been formally assessed. These tanks are old and evidence has been found that they may have impacted the environment. We recommend a formal assessment of each fuel storage tank at this time. These suggested impact studies can be performed in conjunction with the recommended testing within the footprint of the project.

9.0 CONCLUSIONS AND RECOMMENDATIONS

Based on our investigation's findings and analysis as well as the considerations and assumptions set forth in the report, we conclude the following:

- Considering the site's: 1) extensive history as a railroad yard and industrial site, 2) confirmed solid waste debris and Hydrocarbon concentrations and 3) fuel storage tanks, the Property has been rated as "Medium Risk" and warrants additional investigation.

- This investigation has found the potential for significant hazardous waste/material contamination on-site to be minimal. Detectable levels of Total Petroleum Hydrocarbon (TPH) concentrations, in the 200-300 ppm range, have been found in sampling throughout the site, both in previous assessments and in this effort. These reported TPH concentrations may contain a biogenic hydrocarbon component and are not considered significant. The identified presence of TPH throughout the site, however, generates concern that areas of high TPH concentration may exist.

- Multiple Underground Storage Tank (UST) systems, some in service since before the 1964 earthquake, exist on site and/or adjacent to the property. Based on available information, none of these UST systems have been evaluated using contemporary UST assessment.

- It is recommended that, during the design phase, additional assessment efforts be completed within the proposed building footprint. The work scope should include random and bias sampling to address identified concerns and a description of required site work for construction, while taking into account acceptable levels of project risk and the available budget.

Although the findings of this limited property assessment warrant further analysis, it is *NORTECH*'s opinion that the identified concerns are not of a severity that would require delays or cancellation of the proposed project. Properly delineated, all concerns identified can be routinely addressed during the design and construction phase without significant project impact.

11.0 LIMITATIONS

NORTECH provides a level of service that is performed within the standard of care and competence found within this practice and the engineering profession. It must be recognized that limitations in a site investigation exist. Specifically, the unknown nature of exact subsurface physical conditions, sampling locations, the analytical procedures' inherent limitations, as well as financial and time constraints are limiting factors.

The report provided presents results from analysis and observations of a limited number of samples. Consequently, the results reported may not represent the highest levels of contamination present or accurately represent the contamination present at each site. It is possible that undetected contaminants are present in the soil or groundwater in other portions of the property. While there are no observations suggesting otherwise, the report does not confirm or deny that all contamination associated with the property has been identified.

It was also not the intent of the project scope to detect contamination other than for those parameters requested for analyses. Therefore, no conclusions can be drawn on the presence or absence of other contaminants. The extent of our assessment, by definition, was not of an intensity necessary to reveal all conditions with regard to environmental contamination or conformance with regulations, codes, permits of all the agencies having jurisdiction. The work scope requested by PN&D was considered adequate to identify significant indications of contamination and major concerns that would represent pivotal environmental issues important to a property owner.

NORTECH's inability to review the Otter Rescue Center Site Assessment before we performed our site examination and limited sampling is unfortunate. This ORC Assessment raised points and discussed site features that we were not able to adequately investigate on-site, as we did not know of their existence until after the site examination had been performed. The predetermined location of geotechnical bore holes as sampling locations limited our ability to investigate environmental issues as they arose in our on-site investigation.

The report is a record of observations and measurements made on the subject system as described. No other warranty or presentation, either expressed or implied, is included or intended. The recorded results reported may be dependent on the general passage of time, especially if a spill is ongoing and/or contamination is migrating, as well as seasonal fluctuations

of the groundwater, which is typical of the project area. The data should be considered representative only of the time at which the site investigation was completed.

The report was prepared for the exclusive use of PN&D and ASLC investors. If it is made available to others, it should be for information on factual data only and not as a warranty of surface or subsurface conditions, such as those interpreted from the results presented or discussed in the report.

We certify that, except as specifically noted in this report, all statements and data appearing in this report are in conformance with the provisions of the Quality Assurance Program Plan (QAPP) prepared by ***NORTECH***, dated 16 June 1993, and on file with the Alaska Department of Environmental Conservation. ***NORTECH*** has performed the work, made the findings, and proposed the recommendations described in this report in accordance with generally accepted environmental engineering practices using the best technology available at the time the work was performed.

NORTECH

Judith A Hawkes — November 12, 1993

Judith A. Hawkes — Date
Site Assessment Manager

J A Hawkes for — 11/12/93

Robert Cahoon — Date
Geologist/Quality Assurance Officer

John Hargesheimer — Nov 12, 1993

John Michael Hargesheimer, PE, DEE — Date
Principal

Appendix A

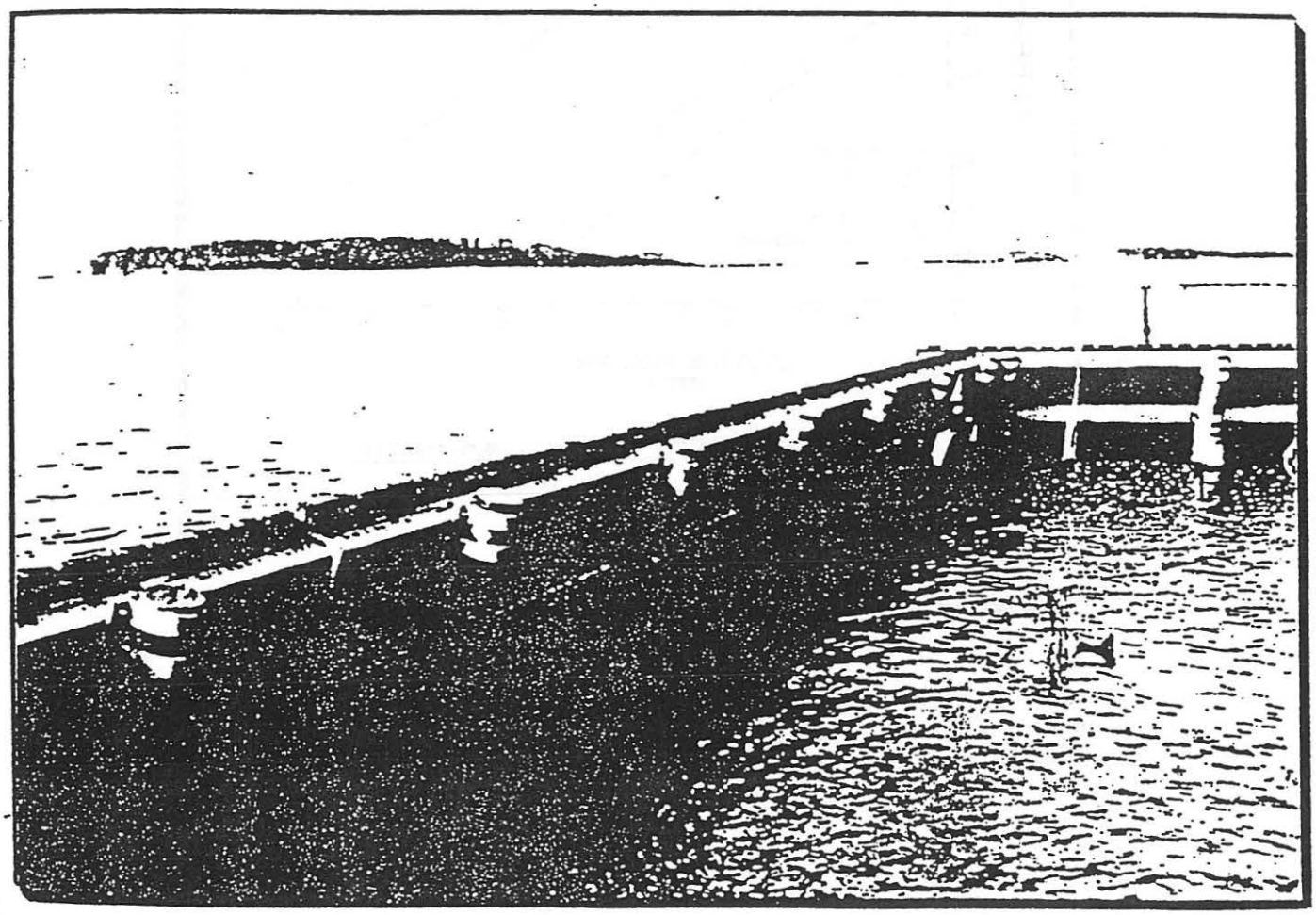
NORTECH's Property Assessment Services

Peratrovich, Nottingham & Drage, Inc.
Engineering Consultants
Engineering Report
Issue No. 30

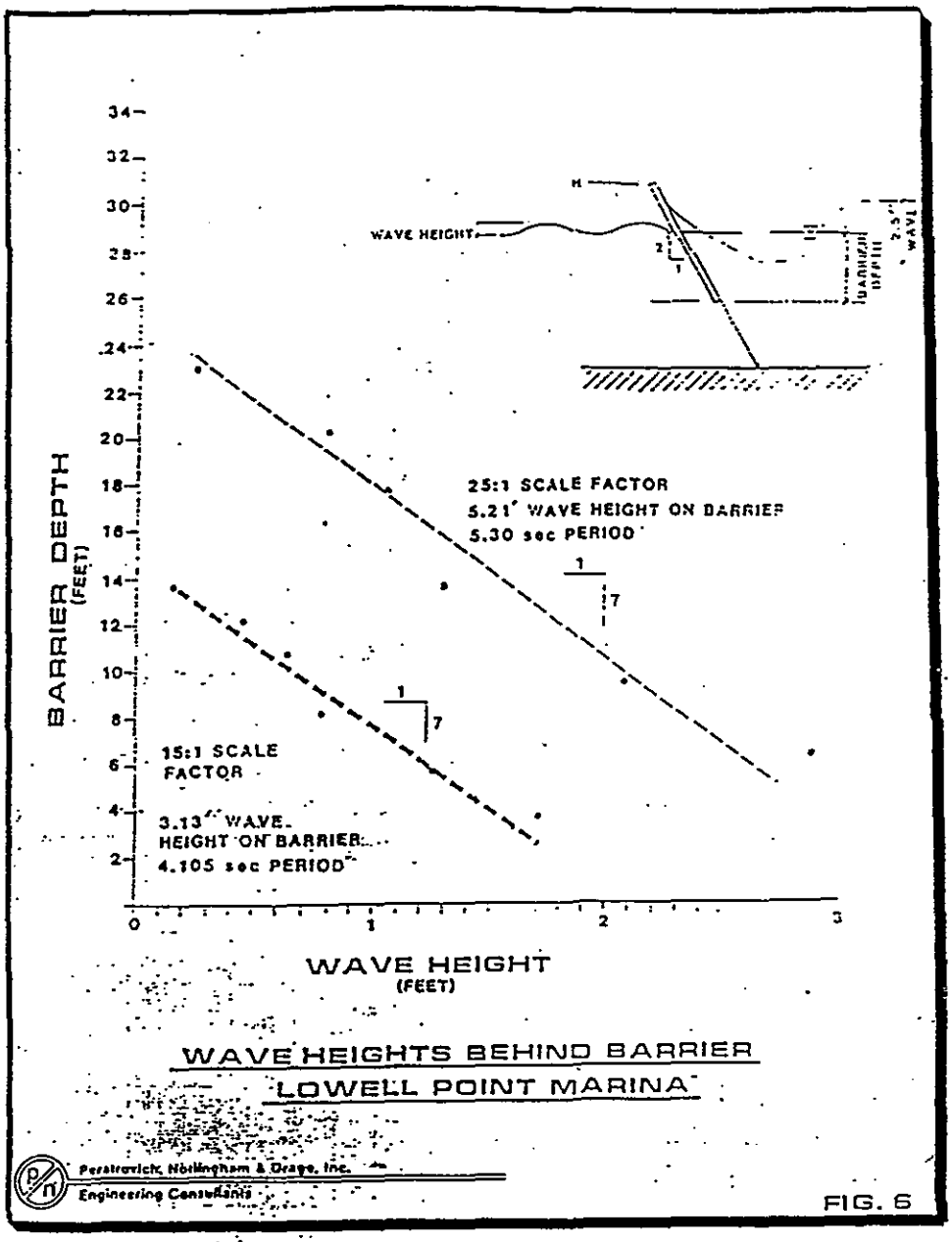
PERMEABLE WAVE BARRIER

Peratrovich, Nottingham & Drage, Inc. (PN&D), has conducted limited model testing for a new type of breakwater in the form of a permeable wave barrier. This wave barrier will have a very positive impact on harbor development in the future.

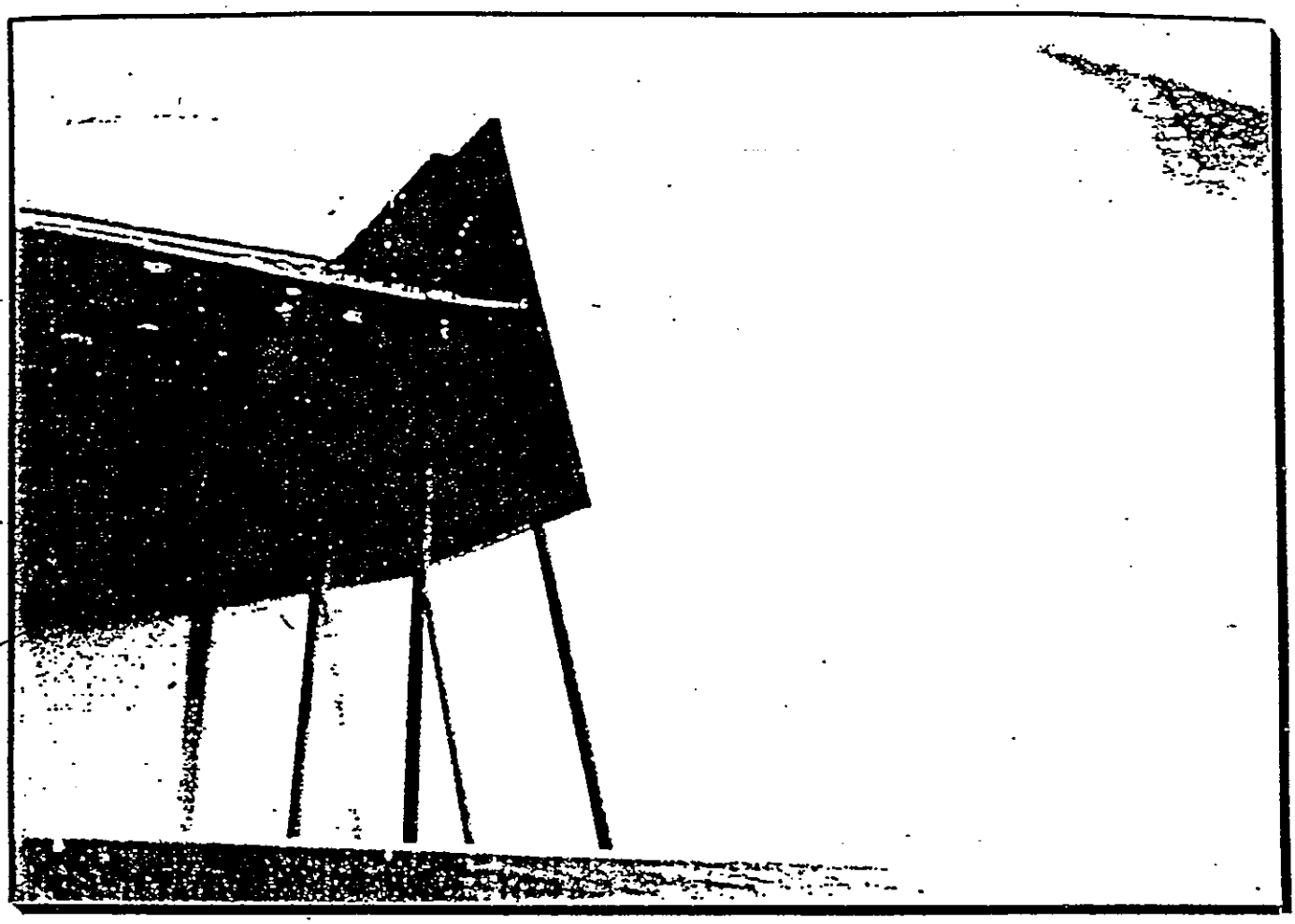
Our investigation of this system was prompted chiefly by environmental concerns for improved harbor sanitation and reduction of the great expense of large rock fills. The traditional rock breakwater prevents basin flushing and causes stagnation in the harbor. The rock breakwater configuration also occupies large bottom areas and hampers or prevents future basin development.



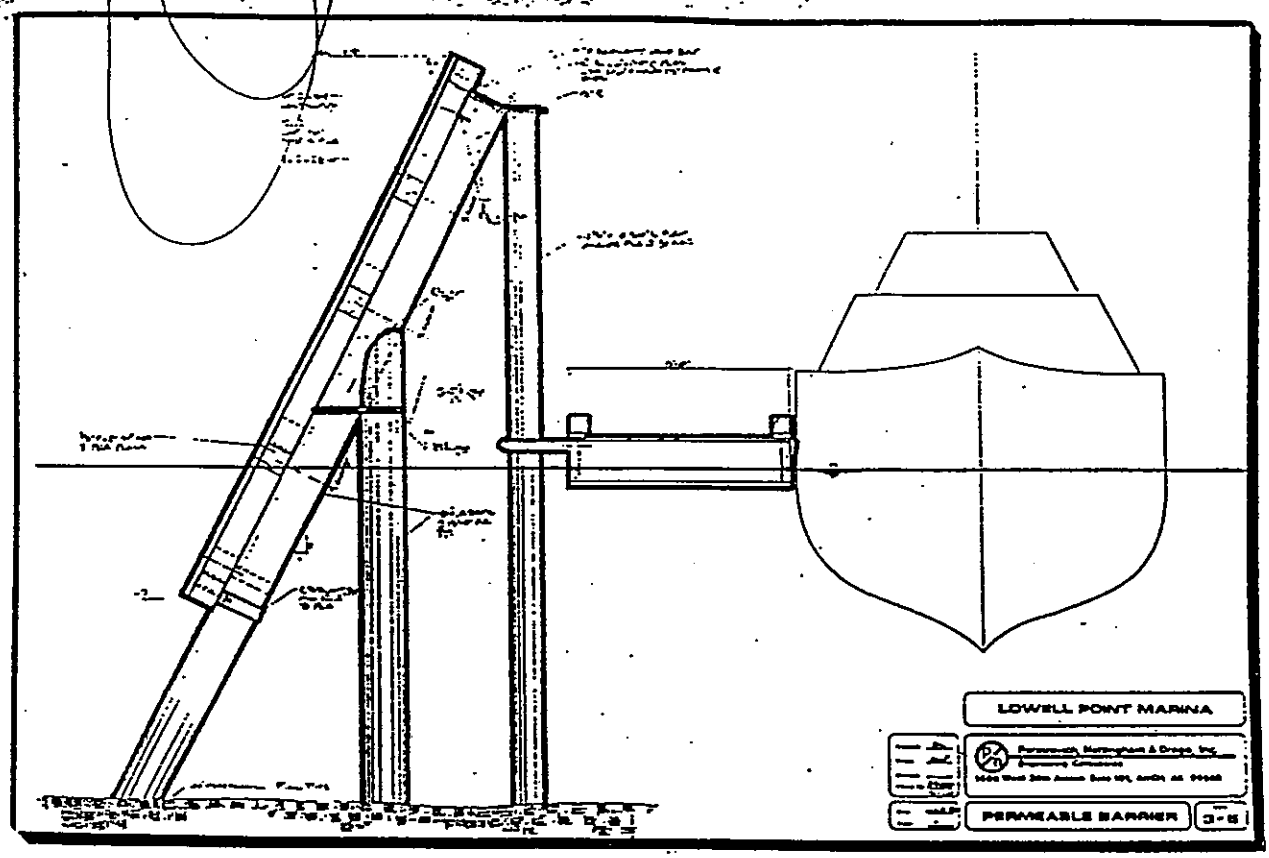
The first permeable wave barrier designed by PN&D to withstand 3-foot, short period waves was constructed at Garibaldi, Oregon in 1980. The facilities withstood a major storm in 1986 (6-foot waves in Garibaldi Harbor) and has been performing well without any maintenance.



Our permeable wave barrier model testing established basic design criteria regarding wave height, period, run-up, and forces for various structural configurations. From these criteria, suitable structural solutions and use limitations were developed for different soil conditions, water depths, and other factors.



Preliminary testing was performed in a wave tank which is 16 feet long by 1 foot wide by 2 feet deep. By use of breakwater models with scales of 1:15 and 1:25, we are able to study waves equivalent to those common to the inland waters of the Pacific Northwest. These include waves up to 5 or 6 feet high with periods ranging from 2 to 5 seconds (wave lengths up to 150 feet).



The permeable wave barrier has the following advantages:

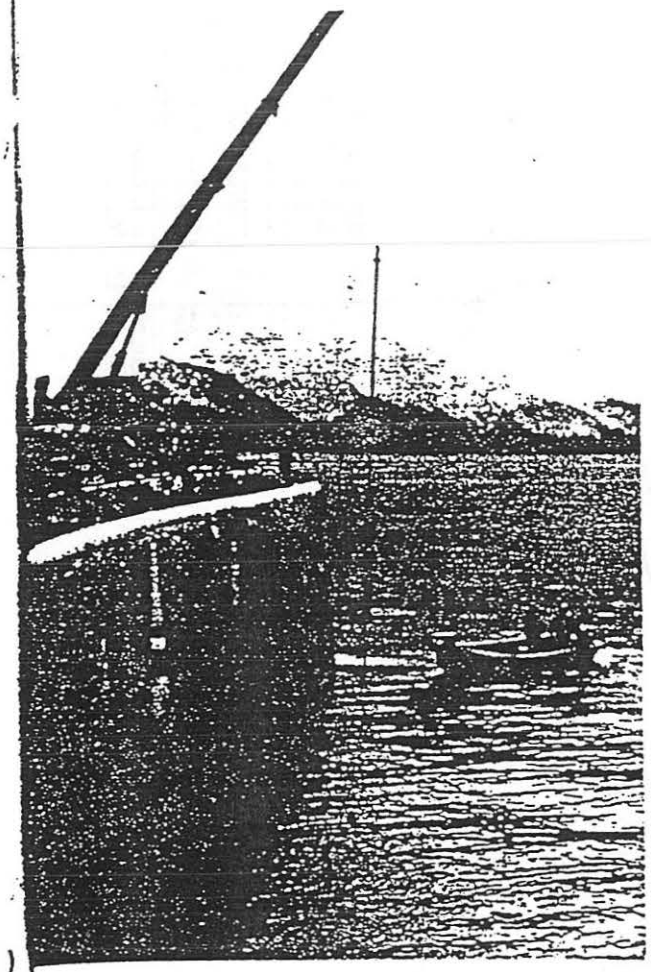
- o Allows natural basin flushing
- o Minimizes impact on marine environment
- o Minimizes superimposed loading on submarine soils
- o Reduces the breakwater's susceptibility to seismic damage
- o Reduces construction costs and time
- o Does not require rock quarrying and related activities
- o Methods and materials of construction similar to docks
- o May be attached directly to existing dock
- o May be used as part of foundation system for future dock
- o Can be removed readily for modification or expansion
- o Allows construction in deep water
- o Can provide mooring directly to the breakwater
- o Can be constructed with steel or prestressed concrete piles
- o Can be constructed with treated timber or concrete panel face
- o Utilizes the new spin-fin pile development

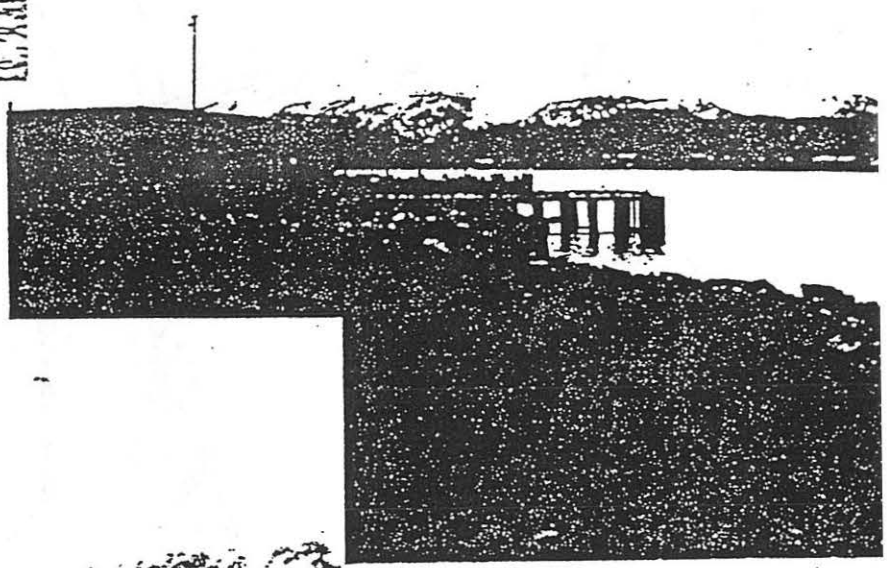
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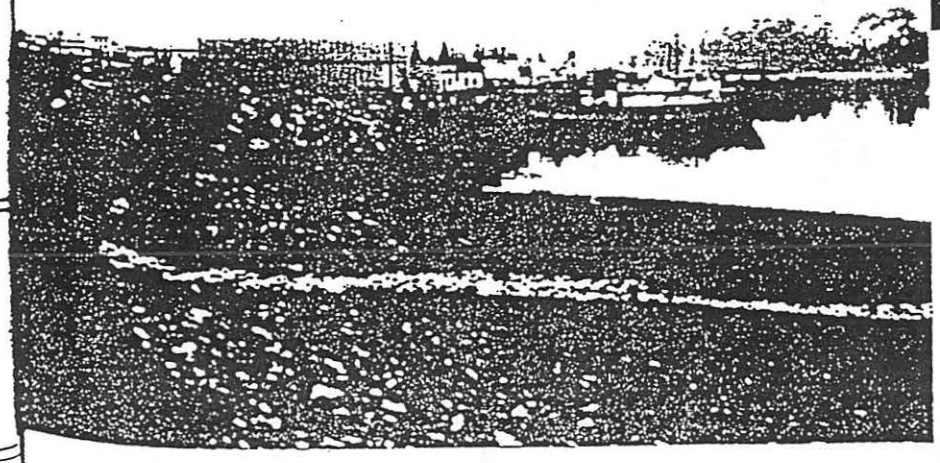
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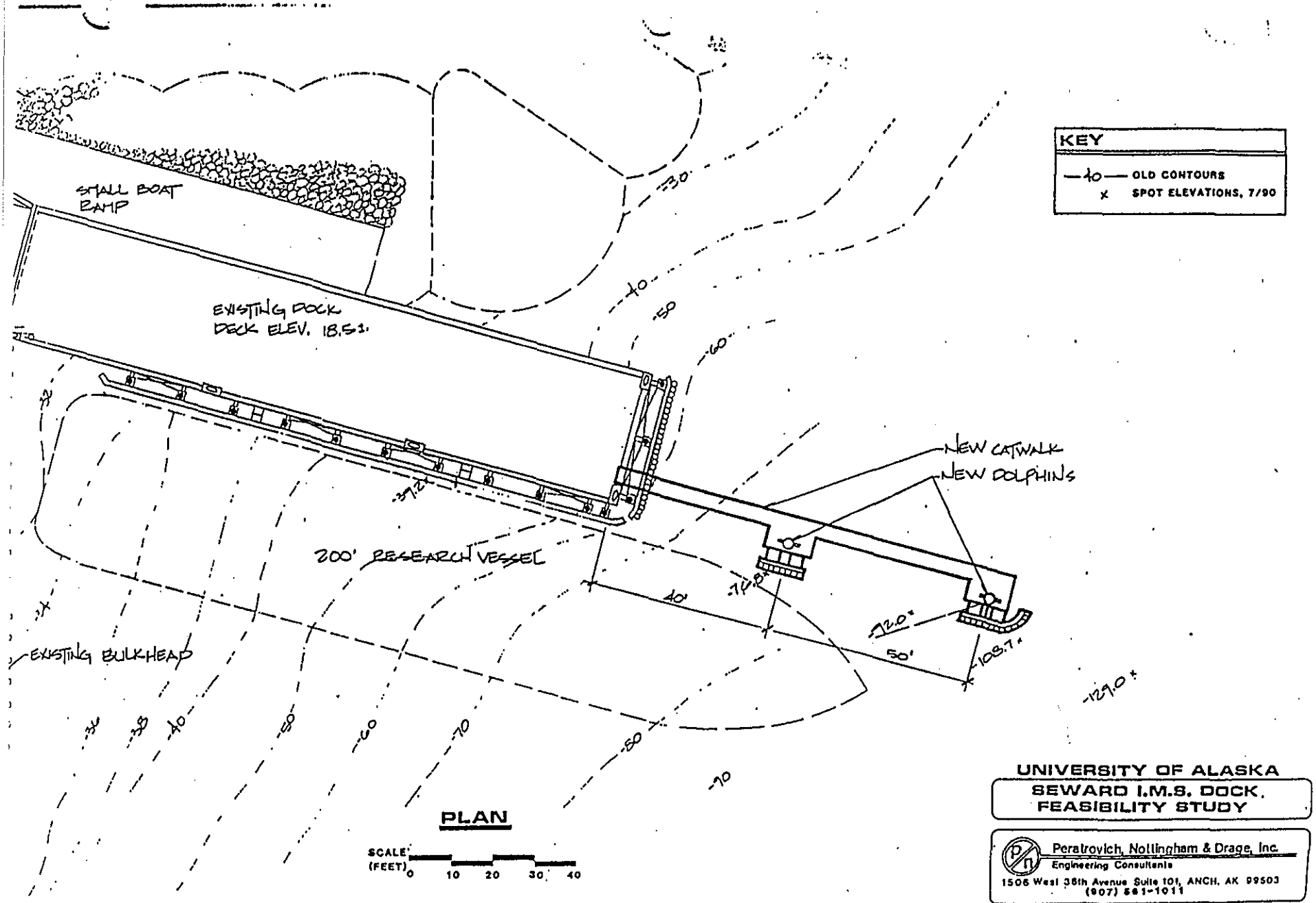
Civil Engineering ● Marine Facilities ● Coastal Engineering ● Bridges/Structures ● Foundations
Hydrology/Hydraulics ● Permafrost and Ice ● Planning ● Construction Management







I.M.S. DOCK



UNIVERSITY OF ALASKA

SEWARD I.M.S. DOCK FEASIBILITY STUDY

Peratrovich, Nottingham & Drage, Inc.
Engineering Consultants
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PROPOSED I.M.S. DOCK/ DOLPHINS

APPENDIX E

SOCIOECONOMIC ANALYSIS
SUPPORTING DATA

APPENDIX E

SOCIOECONOMIC ANALYSIS

Calculation #1 - Alaskan Family Household Size

In 1990, 82.7 percent of all Alaska residents lived in family households in which one or more persons were related by birth or marriage. An average of 3.4 persons lived in each of these family households (454,726 people lived in 132,837 family households). If 82.7 percent of 25 people (21) arrive with an average-sized family household of 3.4, 21 x 3.4 = 70.295 or 70, plus four non-family people (25-21) for a total of 74.

Calculation #2 - Estimated Number of New Resident Children

Assuming that the employees come from Alaska and, as a group, they mirror Alaska's demographics statewide in 1990; 82.7 percent of the 25 employees, or 21, have a household of 3.4 people. Assuming 2 adults and an average of 1.4 children, that is 29.4 children total. The other 4 new employees would arrive without children.

Calculation #3 - Estimated Current Revenues, Iditarod Campground

4th of July, 100% capacity:	75 spaces x $8 = $600/night on peak nights 3 nights x 600 = $1,800/3-day weekend
Silver Salmon Derby, 80 % capacity:	75(.8) x $8 = $480/night 7 nights x 480 = $3,360/week
Other non-peak summer nights, 50%:	75(.5) x $8 = $300/night 77 nights x 300 = $23,100 (Assumes 30 in June, 27 in July and 20 in August).
"Winter" nights Labor Day - Memorial Day	300 nights @ $2 = $600
TOTAL	$28,860

Calculation #4 - Potential Home Construction and Resulting Property Taxes

The median value of owner-occupied housing units in Seward in 1990 was $92,400 (Northern Economics, et al, 1994). Assuming 1/3 of the 25 new employees who move to town build a new house within the city at the median value, the increase in taxable property would be approximately 8 houses at $92,400 = $739,200. Property taxes levied by the City at 3.00 mils would amount to $2,218 per year (.003 x $739,200). Property taxes levied by the Borough at 8.55 mils would amount to $6,320 per year (.00855

x 739,200). With these assumptions, the total of new property tax revenues from new employee house construction would be $8,538 per year.

Calculation #5 - Summer Visitors to Seward

Total existing visitors to Seward:

150,000	resident Alaskan visitors
130,000	non-resident, non-cruise visitors
160,000	cruise ship visitors
440,000	visitors per year

85% of these visitors arrive in summer. (.85x440,000=374,000)

This project contributes 27,000 new visitors in summer; (50,000 total; 23,000 in fall/winter/spring) 27,000=7% increase in tourists during the summer period over existing 374,000 summer visitors.

Calculation #6 - Estimated Annual Local Expenditures

According to the Draft Proposed Operating Characteristics, local annual expenditures are estimated as follows: (telephone/postage) $60,000 + (equipment) $12,500 + (printing) $100,000 + (miscellaneous) $25,000 = $197,000.

Calculation #7 - Potential Sales Tax Revenues

The table below portrays projected visitation in the first 5 years of operations, and estimated sales tax revenues which could be generated. The figures are based on an estimated average per capita admission income of $9.01. (This figure takes into account the different admission prices to be charged of groups, individual adults, and children.) In addition to admissions income, it has been estimated that each visitor to the facility would spend an average of $5.00 per visit on educational materials at the facility's outlet (see assumptions in Draft Proposed Operating Characteristics).

TABLE E-1
POTENTIAL SALES TAX REVENUES

Operating Year	Projected Visitation	City Sales Tax (3%)		Borough Sales Tax (2%)	
		Admissions	Purchases	Admissions	Purchases
1	250,551	$ 67,724	$ 37,583	$ 45,149	$ 25,055
2	252,819	$ 68,337	$ 37,923	$ 45,558	$ 25,282
3	247,040	$ 66,775	$ 37,056	$ 44,517	$ 24,704
4	254,452	$ 68,778	$ 38,168	$ 45,852	$ 25,445
5	262,085	$ 70,842	$ 39,313	$ 47,228	$ 26,209
Totals		$ 342,456	$ 190,043	$ 228,304	$ 126,695

Note: This table is provided for informational purposes only. Calculations are based on hypothetical visitation, admission, and purchase projections derived by Public Financial Management, Inc.

APPENDIX F

TRAFFIC AND TRANSPORTATION ANALYSIS SUPPORTING DATA

APPENDIX F

PROJECT TRAFFIC VOLUMES

This appendix documents the development of project traffic volumes used in the analysis of project traffic impacts for the proposed project. It is intended to generally reflect the high end of the reasonably expected range of potential vehicular travel to the site. This approach will help ensure that the project traffic impacts associated with the proposal are not underestimated.

Traffic volumes associated with the proposed action were developed using a multi-step process. First, the number of person trips generated by the proposed IMS facility was determined. The person trips were segregated into market segments, each of which would have unique travel characteristics. Next, a mode split is developed for each market segment. Mode split is a term used to describe the relative utilization of various transportation modes (auto, RV, bus, train, ferry, other). At this point, person trips by mode can be determined. Then average vehicle occupancy for each mode and market segment is developed in order to determine the number of vehicle trips which would be generated by the project. Finally, the resulting vehicle trips are assigned to the vicinity street system.

Person Trip Generation

Person trip generation is based on visitor and employee estimates for the proposed IMS facility. Each visitor and employee would generate 2 person trips, one trip entering the site and one trip leaving the site. Development of visitor and employee estimates are described in detail under a previous section of the DEIS document. The estimates are based on expected operating characteristics and market penetration for the proposed action. Estimates of annual visitors to the IMS were made for the year of opening and for the first 5 years after opening. The estimates indicate visitor numbers are expected to increase by approximately 5 percent over the entire 5 year period from 250,550 the first year to 262,100 the fifth year. For the purposes of the traffic impact analysis, the higher estimates for the fifth year were used to develop project trip generation in order to assure that project traffic impacts are not underestimated. Table D-1 summarizes average high day and peak period person trip generation for the project.

The data in the table is summarized by market segment. The market segment shares were determined from market analyses as described in a previous section of the DEIS document. The average high day figures represent visitor counts which are 20 percent higher than that expected on an average day during the peak summer tourist season. A total of 5,950 person trips would be generated during an average high day. The peak period figures represent 30 percent of an average high day. This is the expected peak accumulation of visitors within the proposed facility at any one time. As indicated in the table, 1,870 person trips would be generated during the peak period on an average high day.

TABLE F-1
PERSON TRIP GENERATION[1]

	PERCENT OF TOTAL VISITORS	AVERAGE HIGH DAY	PEAK PERIOD
Seward Residents	1%	60	22
Cruise Ship Visitors	21%	1,200	358
Non-resident/Non-cruise	33%	1,940	582
South Central/Alaska	45%	2,620	788
Employees	N/A	140	0[2]
TOTAL	100%	5,960	1,750

[1]Each visitor and employee generates 2 person trips - one entering the site and one leaving the site.
[2]There would be no employee trips during the peak period since all employees are assumed to already be on-site prior to the peak visitor times and would not leave within the peak time period.

The average duration of a visit to the site is expected to be approximately 1-1/2 hours. For the purposes analyzing a peak hour traffic scenario (the typical time period used for traffic impact analysis), it is assumed that the entire peak accumulation of visitors would turnover (arrive and depart) within a peak hour. This assumption accounts for any potential peaking characteristics within the 1-1/2 hour peak accumulation period, as well as potential overlaps in visitor arrivals and departures. This is a conservative assumption to use for analysis since it may overestimate the actual rate of peak visitor arrivals and departures occurring in a one-hour period.

Travel Mode Split

Mode split characteristics for each population group is summarized in Table D-2.

The mode splits for each population group summarized in the table are based on the assumptions following the table.

Seward Residents: It is assumed that the almost all Seward residents visiting the proposed facility would arrive at the site by car. A small number of residents would arrive by other modes such as walking or bicycling.

TABLE F-2
TRAVEL MODE SPLIT BY PERCENTAGE

	AUTO	RV	BUS	TRAIN	FERRY	OTHER
Seward Residents	90%	--	--	--	--	10%
Cruise Ship Passengers	--	--	100%	--	--	--
Non-resident / Non-Cruise	37%	5%	46%	4%	1%	7%
South Central / Alaska	77%	5%	2%	2%	1%	13%
Employees	90%	--	--	--	--	10%

Cruise Ship Passengers: Virtually all cruise ship passengers are currently transported to and from the cruiseship dock by bus. It is expected that all IMS visitors from the cruise ships would also be transported to and from the project site by bus, either on organized charter buses or informally, on existing public shuttle buses. For this analysis, all buses were assumed to be charters which would be new traffic added to the vicinity street system.

Non-Resident / Non Cruise: The auto mode split shown in the table for non-resident / non cruise visitors is the balance of what remains after determining the other mode splits described below. A range of sources were used to develop the mode split among RV, bus, train, ferry and other travel modes. They include the ADOT & PF, feasibility and marketing studies prepared for the project, the Alaska Railroad, and the Alaska Marine Highway System.

RV's, for the purposes of this analysis, are defined as the larger vehicles with six tires or multiple rear-axles. Smaller vehicles such as pick-up truck campers and minivans are categorized as "autos" as they impact traffic operations in a manner similar to autos. RV use was determined from ADOT & PF count data which categorizes RV's according to the above definition. The data indicates that RV's account for approximately 4 percent of traffic volumes on the Seward Highway just north of downtown. North of the Seward city limits, near Grouse Lake, RV's account for 5 percent of traffic volumes. For this analysis a 5 percent RV mode split was used.

It is assumed that non-resident / non-cruise visitors arriving at the site by bus would be part of a tour package. A marketing study prepared by Fox Practical Marketing and Management (July 1993) indicates that 33 percent of visitors to the South Central area are exclusively on package tours and 27 percent are on combination package/independent tours. It is assumed that the 33 percent exclusively on package tours would arrive at the site on tour buses. Of the 27 percent on combination tours, it is estimated that half would visit the site as part of the package portion of their tour and would arrive by bus. The half of the 27 percent would visit the site as part of the independent portion of their tour and arrive by car.

Train mode split was developed using a ratio of train ridership to total number of visitors to Seward. The train ridership counts were taken from the Alaska Railroad data and the visitor data were taken from a feasibility study prepared by Thomas J Martin Economic Research and Management Consultants (August 1993) and from the previously cited market demand study prepared by Fox Practical Marketing and Management.

Ferry mode split was developed using a ratio of ferry ridership to total number of visitors to Seward. Ferry ridership data was obtained from the Alaska Marine Highway System. The assumption was made that half of project visitors arriving by ferry would bring a car and are added to the auto mode split. The remaining half of the ferry visitors would be walk-ons with no car.

Mode split listed in the table under "other" for non-resident / non-cruise visitors consists of those arriving by auto who first stop in Seward someplace other than the project site and then walk to the site or use the existing shuttle service. This multiple-stop scenario is supported by the feasibility and marketing studies which indicate that no additional out-of-state visitors would be attracted to Seward by the proposed project. The non-auto modes discussed above would be utilized by 56 percent of the non-resident / non-cruise market segment. The remaining 44 percent would arrive by auto. It is assumed that 15 percent of those arriving by auto, or 7 percent (0.44 x 0.15) of all non-resident / non-cruise visitors, would fall into this "other" category. The remaining 85 percent arriving by auto, or 37 percent (0.44 x 0.85) of the total would drive to and park at the site.

South Central / Alaska Residents: Mode split for South Central / Alaska resident market segment was developed using the procedure described above for the non-resident non-cruise market segment. The primary difference between the two market segments is significantly less utilization of buses by the South Central / Alaska market segment. It is expected that very little of this market segment would visit as part of a package tour which makes up most of the bus mode for the non-resident / non-cruise segment. Bus use by the South Central / Alaska resident segment would consist of those utilizing the scheduled bus service between Seward and Anchorage and other areas of the Kenai Peninsula.

Employees: Employee mode split would be mostly auto oriented with 90 percent commuting by auto. The remaining 10 percent would utilize other modes such as walking or bicycling.

Person Trips By Mode

The mode split factors were applied to total person trips to arrive at person trips by mode. Table F-3 summarizes daily person trips and Table F-4 summarizes peak hour person trips. As indicated in the tables, approximately half of all visitors to the site would travel by private auto or RV and slightly more than one-third would travel by bus. The remaining modes would account for less than 15 percent of visitors.

TABLE F-3
DAILY PERSON TRIP GENERATION BY MODE

	AUTO	RV	BUS	TRAIN	FERRY	OTHER	TOTAL
Seward Residents	54	--	--	--	--	6	60
Cruise Ship Visitors	--	--	1,200	--	--	--	1,200
Non-resident/Non-cruise	718	97	892	78	19	136	1,940
South Central/Alaska	2,018	131	52	52	26	341	2,620
Employees	126	--	--	--	--	14	140
TOTAL	2,916	228	2,144	130	45	497	5,960
TOTAL MODE SPLIT	48%	4%	37%	2%	1%	8%	100%

TABLE F-4
PEAK HOUR PERSON TRIP GENERATION BY MODE

	AUTO	RV	BUS	TRAIN	FERRY	OTHER	TOTAL
Seward Residents	20	--	--	--	--	2	22
Cruise Ship Visitors	--	--	358	--	--	--	358
Non-resident/Non-cruise	215	29	268	23	6	41	582
South Central/Alaska	607	39	16	16	8	102	788
Employees	--	--	--	--	--	--	0[1]
TOTAL	842	68	642	39	14	145	1,750
TOTAL MODE SPLIT	48%	4%	37%	2%	1%	8%	100%

[1]There would be no employee trips during the peak hour since all employees are assumed to already be on-site prior to the peak visitor times and would not leave within the peak time period.

Vehicle Trip Generation

In order to translate person trips into vehicle trips, average vehicle occupancies for the motorized vehicle modes were developed. These average vehicle occupancies are summarized in Table F-5. For private autos, data from studies of special event generators such as sports, theater, opera, etc indicate that average vehicle occupancies range from approximately 2.0 to 3.5 persons per vehicle. Due to the family-oriented nature of the proposed IMS facility and the distance traveled by most visitors, vehicle occupancies are expected to be at the higher end of this range. However, for employees, car occupancy

is expected to be about one person per vehicle. Average vehicle occupancies for RV's are expected to be similar to that for private autos. It is expected that buses used for tour packages and for transfer of cruise ship passengers would typically operate at near capacity for reasons of efficiency. Average vehicle occupancies for buses were assumed to be 35 passengers per bus. This would represent a nearly full 40-passenger bus.

TABLE F-5
AVERAGE VEHICLE OCCUPANCIES

	AUTO	RV	BUS
Seward Residents	3.0	--	--
Cruise Ship Visitors	--	--	35.0
Non-resident / Non-cruise	3.0	3.0	35.0
South Central / Alaska	3.0	3.0	--
Employees	1.0	--	--

Vehicle trips generated by the proposed project are arrived at by applying the average vehicle occupancies to person trips. The resulting project generated vehicle trips are summarized in Table F-6.

TABLE F-6
VEHICLE TRIP GENERATION

	DAILY				PEAK HOUR			
	AUTO	RV	BUS	TOTAL	AUTO	RV	BUS	TOTAL
Seward Residents	18	--	--	18	7	--	--	7
Cruise Ship Visitors	--	--	34	34	--	--	10	10
Non-resident / Non-cruise	239	32	25	296	72	10	8	90
South Central / Alaska	672	44	--	716	202	13	--	215
Employees	126	--	--	126	--	--	--	0[1]
TOTAL	1,055	76	59	1,190	281	23	18	322

[1]There would be no employee trips during the peak hour since all employees are assumed to already be on-site prior to the peak visitor times and would not leave within the peak time period.

As shown, approximately 1,190 daily and 322 peak hour vehicle trips would be generated at the project site driveways. One-half of the trips would be entering trips and one-half would be exiting trips. These vehicle trips translate into 595 daily vehicles and 161 peak hour vehicles, with each vehicle accounting for two vehicle trips, one entering the site and one exiting the site.

Autos would account for 87 to 89 percent of the vehicles, RV's would account for 6 to 7 percent, and buses would account for 5 to 6 percent. As discussed previously, the perception of RV use may be higher than indicated in the table. RV's, for the purposes of this analysis, are defined as the larger vehicles with six tires or multiple rear-axles. Smaller vehicles such as pick-up truck campers and minivans are categorized as "autos" as they impact traffic operations in a manner similar to autos.

Vehicle Trips New To Seward

It is assumed that all project generated trips would represent new trips to and from the project site. This means that the traffic would not occur at the project site if not for the proposed action. However, a significant proportion of project visitors would be in Seward or in the downtown area regardless of whether the proposed project is constructed. As a result many of the project trips, although new to the project site, would not be new trips to the Seward area. The general influence of project traffic would decrease with increasing distance from the site as more activity nodes are encountered. These nodes, such as the downtown and the small boat harbor, would have attracted many of the trips whether or not the proposed project was constructed.

Market studies indicate that the proposed facility would attract approximately 27,000 new visitors in the South Central / Alaska market segment during the peak summer season who would not otherwise visit Seward. This represents approximately 26 percent of the South Central/Alaska market segment or 12 percent of the total IMS visitors during the peak summer season. The remaining 88 percent of IMS visitors would visit Seward with or without construction of the proposed project. The project is not expected to generate any new visitors to Seward in either of the out of state market segments. Visitors to the project from those market segments would visit Seward whether or not the proposed project was constructed. Table F-7 provides a comparison total project-generated vehicle trips with net new trips. Less than 20 percent of project vehicle trips would be new trips to the Seward area.

Project Trip Assignment

After the number of vehicle trips which occur at the project driveways is identified, this traffic is then assigned to the local street system according to the travel paths they are most likely to follow. The intent of this process is to determine how the local traffic volumes that would occur in the future without the project would change as a result of the project. This section addresses each of the trip assignment components, and presents the net new trip assignment associated with the development of the project.

TABLE F-7
NET NEW VEHICLE TRIP GENERATION

	DAILY				PEAK HOUR			
	AUTO	RV	BUS	TOTAL	AUTO	RV	BUS	TOTAL
Total Vehicle Trips	1,055	76	59	1,190	281	23	18	322
Net New Trips to Seward[1]	175	11	--	186	53	3	--	56
Percent Net New Trips	17%	14%	0%	16%	19%	13%	0%	17%

[1]26 percent of the projected South Central/Alaska market segment identified in previous Table F-7 (672 x 0.26 = 175).

Trip Assignment Components: For this project, the traffic assignment was developed in components, which reflect different travel pattern characteristics. Three traffic assignment components were identified for this project. First, new visitor trips to Seward were assigned. Second, Seward visitor trips which would occur with or without project development were assigned. Finally, local Seward trips (visitors and project employees) were identified. The results of the addition of these trip assignment components is the actual traffic impact which would occur on Seward streets.

New visitor trips to Seward were assigned as primary trips between the project site and Seward Highway south of Seward. Inbound and outbound vehicle trips were assigned via the Seward Highway and Third Avenue, to Railway Avenue and into the site. It is recognized that other routes may receive some of this traffic, however the majority would likely use the primary route indicated because it would be the most direct. Assigning *all* of the traffic to the primary travel route tends to overestimate impacts along this key route, and thus results in a conservative representation of project traffic impacts.

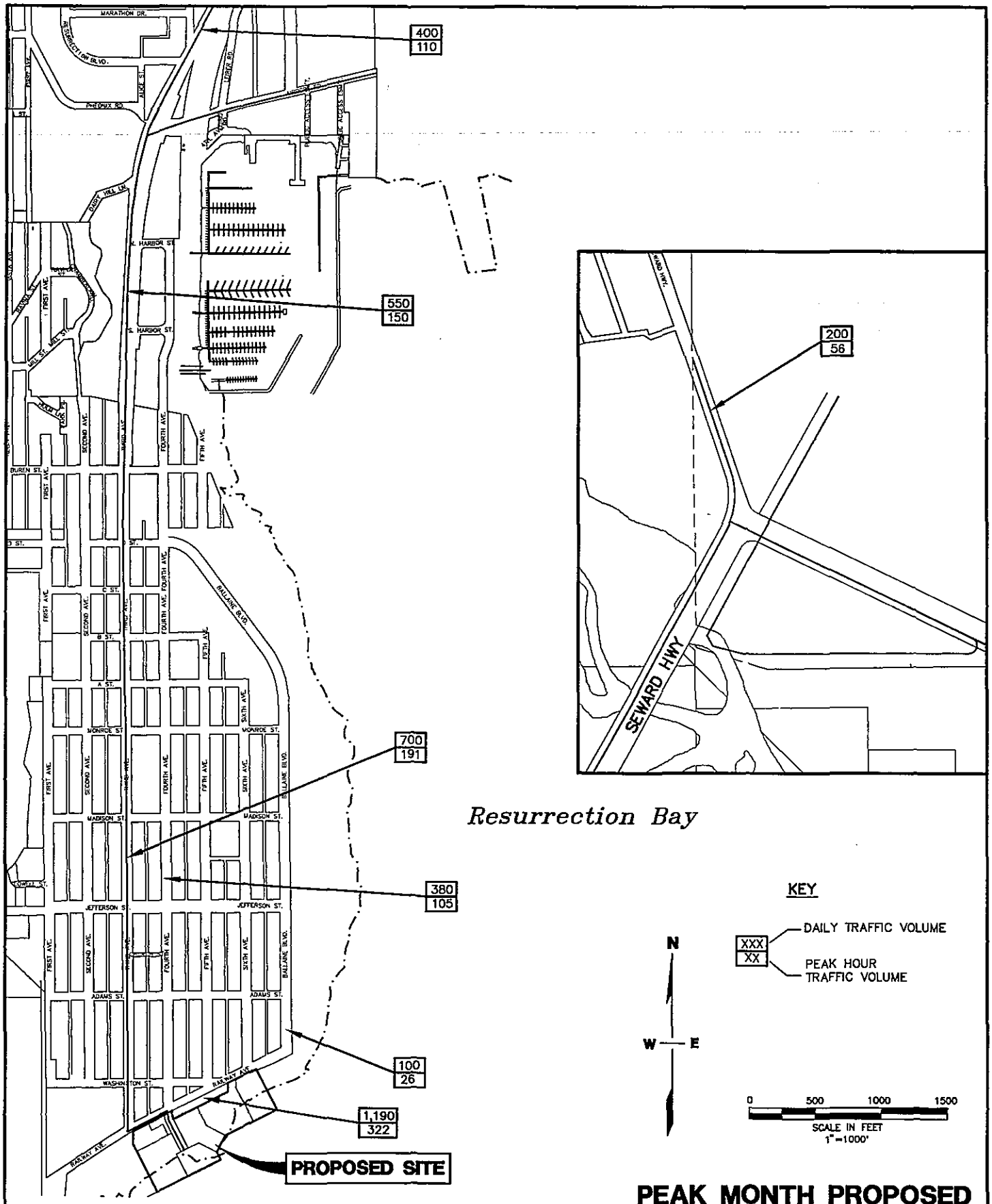
Traffic associated with visitors who would already be traveling to Seward, as well as local trips by visitors and employees, would follow more complex traffic patterns. These trips were assigned locally, with a majority oriented to the parking areas associated with the existing small boat harbor. These destinations reflect areas where the parking spaces are available in lots or otherwise concentrated. Other project trips could link with the Exit Glacier, the camping area along the bay near Ballaine Avenue, the downtown area near the project site, or more generally throughout the Seward area where informal parking on and off street occur.

Net New Trip Assignment: All of the trip patterns associated with the local destinations are not *new* trips. Many simply redirect or extend trip patterns that would occur if the project were not built. For example, traffic patterns without the project might have an inbound trip from the Seward Highway turning left to South Harbor Drive and parking, with the outbound trip turning directly back onto the Seward Highway. A revised trip pattern due to the project might have the same initial trip to parking

via South Harbor Avenue; however, the outbound trip would be extended to turn left onto the Seward highway and continue to the IMS site, visiting, then leaving directly north on the Seward highway. the net effect of this trip would add a trip in both directions to the Seward highway south of South Harbor Avenue, add a left turn and subtract a right turn onto Seward Highway from South Harbor Avenue, and have no impact on Seward Highway north of South Harbor Avenue. Similar shifts in traffic patterns could occur elsewhere in the town of Seward.

The results of adding the effect of each of the trip components together is shown in Figure F-1. As indicated, the net effect of the project traffic impact increases closer to the site. The majority of the site traffic is likely to access the site via Third and Fourth Avenues, through the downtown area, before accessing the site via Railway Avenue. Approximately 60 percent of the site traffic is forecast to use Third Avenue. The majority of the remaining traffic was primarily assigned to Fourth Avenue, through the downtown, since it provides a direct connection to the Small Boat Harbor. Less than 10 percent of the site trips would be oriented along Railway and Ballaine Avenues, immediately east of the site, since this route is more circuitous and provides a less convenient linkage to the harbor area. This assignment may assign more traffic to Third Avenue than would actually occur, while Fourth Avenue may be somewhat under-assigned. Of the two streets, Third Avenue carries more traffic and is the more congested of the two streets. The assignment pattern used for project traffic assures that traffic impacts along the primary street serving downtown Seward are not underestimated.

Figure F-1 also shows that the only traffic which would effect the Seward Highway north of Nash Road are the 56 PM peak hour and approximately 200 daily vehicles associated with the new visitor trips to Seward from other areas in South Central Alaska.



PEAK MONTH PROPOSED PROJECT GENERATED TRAFFIC VOLUMES

Filename: FIG3-03.DWG

Job No. 28347-002-160

DAMES & MOORE

IMS PROPOSED INFRASTRUCTURE PROJECT
SEWARD, ALASKA
FIGURE F-1

APPENDIX G

PUBLIC SAFETY CONCERNS

CHEMICAL HYGIENE PLAN FOR SEWARD MARINE CENTER, R/V *ALPHA HELIX*, AND KANTISHNA BAY

APR 24 199

Institute of Marine Science
SEWARD MARINE CENTER

Phone: (907) 224-5261
Fax: (907) 224-3392

UNIVERSITY OF ALASKA FAIRBANKS

School of Fisheries and Ocean Sciences
Box 730, Seward, Alaska 99664

TO : Risk Management
FROM : Tom Smith, Acting Asst. Director for Marine & Coastal Operations
DATE : 22 April 1992
RE : Chemical Hygiene Plan

Enclosed is a copy of the chemical hygiene plan for Seward Marine Center, the R/V ALPHA HELIX and Kasitsna Bay Laboratory. All three locations are under my direction for maintenance. The plan is being distributed to each site with this letter. Each site will post the plan in each laboratory at the site.

cc: Facilities Manager, Kasitsna Bay Laboratory
Marine Technician, ALPHA HELIX
Dave Nebert
Joan Osterkamp

Chemical Hygiene Plan
for
Seward Marine Center, R/V ALPHA HELIX
and
Kasitsna Bay

1. OBJECTIVE: To publish laboratory safety procedures, to implement the State of Alaska's "Right to Know" provision and to establish an effective hazardous chemical management system for laboratories at Kasitsna Bay, Seward Marine Center, and aboard the R/V ALPHA HELIX.

2. TRAINING:

A. The Marine Superintendent at Seward Marine Center will provide annual training in the provisions of the "Right to Know" act and laboratory safety for all regular employees. Training will consist of what hazards can be encountered, location and use of material safety data sheets (MSDS), location of safety and cleanup equipment, evacuation routes, and hazard recognition.

B. Principal Investigators are responsible for informing shipboard personnel and/or laboratory technicians of the type hazards being used in their laboratory and/or experiments, the clean up procedures for each chemical in the laboratory, the proper safety precautions and protective devices for each chemical and for supplying to the facility manager or marine technician, if aboard the ALPHA HELIX, a MSDS for each chemical.

3. INVENTORIES:

A. Seward Marine Center

Since long term chemical storage is provided in this facility, an annual inventory will be conducted by the Marine Superintendent. He will spot check the inventory against the station MSDS file to insure MSDS are held for chemicals. A copy of the inventory will be placed in the MSDS file and an inventory of the chemicals stored in each laboratory or hazardous material container will be posted in each of these area.

B. Kasitsna Bay Laboratory

This site has no long term hazardous material storage capability. All chemicals will be removed by the principal investigator upon completion of the project. The principal investigator is also responsible for supplying a MSDS for all chemicals that he/she introduces into the laboratory. The Facility Manager will insure MSDS are provided for all chemicals and insure all chemicals are removed upon project completion.

C. R/V ALPHA HELIX

All chemicals introduced on a cruise will be removed by the cruise's Chief Scientist upon cruise completion unless permission to do otherwise is received prior to cruise commencement from the Marine Superintendent. The Chief Scientist will also provide a MSDS to the vessel's Marine Technician for each chemical brought aboard the ship on a cruise. The marine technician will insure all MSDS are received prior to cruise departure and that all chemicals are removed from the vessel upon cruise completion. The chief scientist will advise all personnel of the chemicals to be used during the cruise and the hazard inherent to each chemical during the pre-cruise meeting.

4. PROJECT ADVANCE APPROVAL WORKSHEET:

Each principal investigator who use Seward Marine Center or Kasitsna Bay Labs will complete the Project Advance Approval Form contained in Appendix A. The completed form will be provided to the facility manager and a copy posted at the laboratory entrance. The marine technician will post this form for each ALPHA HELIX cruise based on information provided in the cruise plans.

5. CHEMICAL HYGIENE PLAN (CHP) CHECKLIST:

The facility manager of Kasitsna Bay and the Seward Marine Center's marine superintendent will complete and post the CHP Checklist (See Appendix B) at each location under their control where hazardous chemicals are stored.

6. MATERIAL SAFETY DATA SHEETS (MSDS):

MSDS will be filed centrally as follows;

a. Seward Marine Center. The central file will be maintained in the mail room.

b. Kasitsna Bay. The central file will be maintained in the facility manager's office.

c. R/V ALPHA HELIX. The central file will be maintained by the marine technician in their stateroom.

7. CHEMICAL LABELING:

All unlabeled working stock containers of chemicals that will not be immediately emptied shall be labeled with 1) the full noun name or chemical symbols of the chemical, 2) the date prepared, and 3) the principal investigator initials. All labeling will be done in ink on a glued label that is affixed to the container. The need to properly label cannot be overly stressed. In the event of a spill, an unlabeled container can present serious cleanup problems.

APPENDIX A

PROJECT ADVANCED APPROVAL WORKSHEET

PROJECT ADVANCE APPROVAL WORKSHEET

The following project involves work of an unusual nature and/or specific hazardous materials of significant risk.

Project Description: _____

_____

_____

_____

_____

Person Performing Work: _____ Telephone: _____

Work Area for Project: _____

Anticipated Duration of Project: _____

SPECIFIC HAZARDS

Hazardous Materials	Specific Risks	Special Protective Measures

APPROVALS

The above project has been reviewed and discussed to ensure safety of all personnel associated with the laboratory. In addition, the below named Technician has been informed of all of the requirements of the University's Chemical Hygiene Plan (see attached checklist).

Technician: _____ Date: _____

Laboratory Supervisor/
Safety Coordinator: _____ Date: _____

APPENDIX B

CHEMICAL HYGENE PLAN (CHP)

CHECKLIST

CHP CHECKLIST

I. Safety Equipment Location and Use:

a. Showers _____
b. Eye wash _____
c. Fire extinguishers _____
d. First-aid kit _____
e. Spill-clean-up kit _____
f. Fire alarm _____
g. Other (specify) _____

II. Important Names and Phone Numbers:

a. Emergency 1-911
b. Laboratory Supervisor _____
c. Laboratory Safety Coordinator _____
d. Other _____

III. Location of General Laboratory Rules and SOPs:

a. Spill Response _____
b. Ventilation _____
c. Other _____

IV. Description of Hazardous Materials To Be Used:

a. PEL's _____
b. Monitoring techniques _____
c. Decontamination procedures _____
d. Disposal procedures _____
e. Symptoms of exposure _____
   i. acute _____
   ii. chronic _____
f. Proper apparel and protective equipment _____
g. Spill-clean-up procedure _____
h. Designated work areas _____
i. Storage areas _____
j. Location of additional information including MSDS _____
k. Restricted areas or operations _____

V. Physical Hazards:

a. _____
b. _____

VI. Information Regarding Medical Examinations:

In the event that an employee of UAF 1) becomes exposed to high levels of hazardous substances, 2) may have been exposed to hazardous chemicals due to an accident (spill, explosion, etc.), or 3) is showing signs or symptoms of exposure, the employee may receive a medical examination along with follow-up examinations if warranted without cost or loss of pay. It is the employee's responsibility to obtain prior approval for these examinations through UAF Risk Management.

APPENDIX C

SITE RADIOACTIVE USER SUPERVISORS

RADIOACTIVE USER SUPERVISORS

SITE	SUPERVISOR
Seward Marine Center	Chris Cooper-Sheehan
R/V ALPHA HELIX	Steve Hartz

CITY OF SEWARD EMERGENCY PREPAREDNESS PLAN

CITY OF SEWARD FIRE DEPARTMENT
EMERGENCY PREPAREDNESS

CITY OF SEWARD, ALASKA

EMERGENCY PREPAREDNESS PLAN

BASIC PLAN

AUTHORITY

CITY: CODE OF ORDINANCES, CITY OF SEWARD, ORDINANCE NO. 7-1 and 7-3.

STATE: ALASKA COMPLIED LAWS ANNOTATED CHAPTER 20, TITLE 26

FEDERAL: PUBLIC LAW 920 - FEDERAL CIVIL DEFENSE ACT OF 1950
PUBLIC LAW 9-288 - DISASTER RELIEF ACT OF 1974

I. **MISSION**

To provide maximum protection for life and property and to repair and recover from injury and damage caused by natural or manmade disaster, or from nuclear attack, affecting the city of Seward.

II. **SITUATION**

A. Natural Disaster.

The City of Seward has experienced and remains susceptible to earthquakes and accompanying tsunami and severe tidal action. During the winter months, severe winds are common. They are an ever present threat of structural damage to buildings and could contribute to other types of disaster. Mid-winter deep snow could hamper access to disaster areas. Failure of the electric power generating facility would be destructive to the city's water and sewage systems during periods of freezing temperatures.

B. Nuclear Attack.

Enemies have the capability of launching an attack with sufficient nuclear weapons to strike a high proportion of U.S Military installations and centers of industry, population and government. At this time it is unlikely the Seward area would be subject to the direct effects of a nuclear detonation. However, as a minimum, the city may experience various degrees of radio-active fallout.

C. Hazardous Material Accidents.

The expansion of the port of Seward has increased the potential for serious hazardous material accidents. Chemicals, fuels, and explosives are shipped through Seward by marine, rail and highway transports. Limited egress increases the life safety hazard.

III. GOVERNMENTAL ORGANIZATION

If used effectively, the city has capabilities which would provide a measure of protection for its citizens in the event of a nuclear attack, natural disaster, or hazmat accident. Because of its relative isolation from major support centers and the travel times involved, the city must be capable of reacting effectively without outside assistance during the critical hours following a natural disaster. Reinforcement of local emergency operations by state an federal agencies will require several hours of lead time. Under conditions of nuclear attack, normal systems of distribution, communications and production may be disrupted for periods ranging from days to months, or be non-existent. Therefore, survival in the Seward area would depend on local self-sufficiency.

1. City Government.

The municipal government is the council-manager government. The City manager executes the ordinances and administers the city government. The City manager is the Emergency Preparedness Director, and is responsible for coordinating all emergency response activities.

2. Borough Government.

The Kenai Peninsula borough, Office of Emergency Management, is charged with the responsibility of coordinating the disaster response activities of Borough, State, Federal and independent agencies which do not have mutual support agreements with the City. Therefore, in a disaster of such severity and magnitude as to exceed local capabilities, requests for outside assistance will be directed to the Borough Office of Emergency Management.

3. State Government.

The Director, Alaska Division for Emergency Services, is charged with the responsibility of coordinating the disaster response activities of state, federal and independent agencies which do not have mutual support agreements with the city. Therefore, in a disaster of such severity and magnitude as to exceed local and borough capabilities, requests for outside assistance will be directed to the Alaska Division of Emergency Services (ADES). Normally ADES will provide field representatives at the scene of a disaster to coordinate the response activities of local state agencies. To assist in achieving local emergency readiness, the ADES will advise, guide and assist the city government in the development of an emergency operational capability. Assistance may include aid in the administration of local preparedness programs, drafting the emergency plans, shelter development and radiological monitoring, emergency operating center and warning system development, acquisition of state and federal surplus property and individual and system training.

4. Federal Government.

Federal agencies respond to local requests for emergency assistance through ADES. In a disaster of great severity and magnitude, a "major disaster" declaration may be issued by the President of the United States which will permit extensive federal assistance to the area under the authority of Public Law 93-288 as coordinated by the Federal Assistance Administration (FDAA). Under lesser emergencies, federal assistance may be available by presidential declaration of emergency. In either case, coordination between local government and the federal agencies will be effected through ADES.

CITY OF SEWARD FIRE DEPARTMENT
EMERGENCY PREPAREDNESS PLAN

EVACUATION PLAN

In time of emergency or potential emergency, there may be a need to evacuate the populace. Since Seward EOC has the responsibility to notify outside agencies, the local area has been divided into six zones.

ZONE 1: the area from Van Buren Street-south to the city limits

ZONE 2: the area from Van Buren Street-north to Jupiter St. (Forest Acres)

ZONE 3: the area from Jupiter St.-north to the city limits (airport area)

ZONE 4: the area from 4th of July canyon-north to the city limits

ZONE 5: the area incorporated in the Bear Creek Fire Service District

ZONE 6: the area from Lowell Point - north to city limits

ADVANCE WARNING

If sufficient advance warning is given, the Emergency Operations Manager may require a primary evacuation of low lying areas in each zone.

Primary evacuation points for each zone are as follows:

Zone 1: AVTEC Student center-4th Avenue

Zone 2: Seward Schools-Swetmann Avenue

Zone 3: Seward Schools-Swetmann Avenue

Zone 4: Seward Schools

Zone 5: As per AST & BCVFD directives

Zone 6: AVTEC Student Center-4th Avenue

CITY OF SEWARD FIRE DEPARTMENT
EMERGENCY PREPAREDNESS PLAN

Secondary evacuation (100' or higher) points for each zone:

Zone 1: Seward General Hospital/Wesleyan Nursing Home

Zone 2: Seward Schools

Zone 3: Seward Schools

Zone 4: Seward Schools

Zone 5: As per AST & BCVFD directives

Zone 6: Seward General Hospital/Wesleyan Nursing Home

MINIMUM WARNING

Should a severe earthquake occur in the water areas in the vicinity of Seward, it is possible that it could generate a tsunami which would hit the community before the Tsunami Warning Center could determine the location and intensity of the disturbance. It is highly unlikely that an earthquake of the intensity required to generate a tsunami occurring near Seward would not be felt by the residents. The public should therefore be informed that, if a severe quake is felt which continues for thirty seconds or longer, THE SHOULD IMMEDIATELY PROCEED TO A SAFE AREA WITHOUT WAITING FOR OFFICIAL NOTIFICATION.

CITY OF SEWARD FIRE DEPARTMENT
EMERGENCY PREPAREDNESS PLAN

EARTHQUAKE ACTION CHECK LIST

_____ Activate EOC

_____ Instigate tsunami watch

_____ Order all fire and medical apparatus out of stations

_____ Implement priority responses

- _____ Fires with trapped victims
- _____ Fires with probability of rapid spread
- _____ Trapped victims
- _____ Medical aid, severe cases
- _____ Large fires, no spread potential
- _____ Major petroleum and gas leaks
- _____ Medical aid, minor
- _____ General assistance

_____ Maintain strict security, looting control

_____ Damage analysis

- _____ Electrical
- _____ Water systems
- _____ Streets
- _____ Evacuation centers
- _____ Hospitals
- _____ Communications systems

_____ Notify state EOC of damage estimates and causalities

_____ Establish temporary morgue if required

_____ Conduct damage survey of public buildings

_____ Establish public registration stations

CITY OF SEWARD FIRE DEPARTMENT
EMERGENCY PREPAREDNESS PLAN

EARTHQUAKE ACTION CHECK LIST (continued)

_____ Arrange for victim housing and feeding

_____ Establish safe water supply

_____ Establish sanitation facilities

_____ Request civic, private, state, federal assistance as required

_____ Broadcast public information bulletins if station operable

- _____ Housing locations
- _____ Food center locations
- _____ Sanitation facilities
- _____ Potable water
- _____ Aid station locations
- _____ Emergency communications systems

REPORTS TO STATE AND FEDERAL AGENCIES should include:

1. Type of disaster
2. Time disaster occurred or threatens to occur
3. Actions already taken
4. Areas and number of people involved
5. Estimate of number of people injured or killed
6. Extent of damage to public and private property
7. Estimated cost of existing disaster response
8. Manpower, equipment, supplies committed
9. Type and amount of disaster assistance required

CITY OF SEWARD FIRE DEPARTMENT
EMERGENCY PREPAREDNESS PLAN

TSUNAMI--ACTION CHECK LIST

ADVANCE WARNING-1 HOUR OR GREATER

_____ EOC operation commenced

_____ City departments and medical facilities alerted

_____ Troopers and Bear Creek Volunteer Fire Department alerted

_____ Public radio station alert broadcasts initiated

_____ Evacuation centers notified

_____ Block-by-block evacuation of lower areas

_____ Essential equipment moved to safe area

_____ Private resources alerted to move equipment to safe areas

_____ Food services alerted and put on standby

_____ Watch established for approach warning

_____ Siren activated 20 minutes prior to ETA

_____ Emergency response crews placed for full coverage of city

_____ Evacuation confirmed and low area access sealed off

_____ Establish public registration stations

_____ Follow procedures set forth in earthquake action checklist

ADVANCE WARNING-30 MINUTES OR LESS

_____ Siren alert

_____ EOC activated

_____ Traffic control established at major intersections

_____ Fire departments and medical crews dispatched to safe area

_____ Public information broadcasts initiated

_____ Shelters notified

_____ Private resources notified if time permits

LIST OF POTENTIAL CHEMICALS USED AT THE PROPOSED PROJECT

(+)-Amethopterin (Methotrexate).(MTX) 25 mg Sigma
Location: / / / / / /S-Li / / / / / /
Caution: Extremely toxic. Avoid contact with skin and eyes. Do not breath dust.

(Ethylenedinitrilo)-tetraacetic Acid Disodium Salt 1 lb Mallinckrodt
C10H14O8N2Na2.2H2O Location: / / / / /Y-Li / / / / / / /

(Ethylenedinitrilo)-tetraacetic Acid Tetra Sodium.. 500 g Matheson, Coleman & Bell
Na4C10H14N2O8.H2O Location: / / / / /Y-Li / / / / / / /

(Ethylenedinitrilo)-tetraacetic Acid 99% 500 g Matheson, Coleman & Bell
Location: / / / / /Y-Li / / / / / / /

1,2-Cyclohexanediaminetetraacetic Acid 5 lb. K&K Laboratories
Location: / / / / /Y-Li / / / / / / /

1,2-Naphthoquinone-4-sulfonic Acid Sodium Salt 25 g Eastman Kodak Co.
1-O:C10H5-2-:O-4-SO3-Na Location: / / / / /Y-Li / / / / / / /

1- Fluoro-2,4-dinitrobenzene 2x100+25g Eastman Kodak Co. J.T. Baker
FC6H3(NO2)2 Location: / / / / /Y-Li / / / / / / /
Harmful if absorbed through skin. Harmful if inhaled. Harmful if swallowed. Do not get in eyes, on skin, on clothing. Avoid breathin
dust. Poison. Call a physician, if swallowed, if conscious induce vomiting by giving a tablespoonful of salt in
a glass of warm water. Repeat until vomit fluid is clear.

1-Amino-2-Naphthol-4-Sulfonic Acid 98% 100 g Eastman Kodak Company
NH2C10H5(OH)SO3H Location: / / / / /Y-Li / / / / / / /
Causes irritation. Avoid contact with eyes, skin, clothing.

1-Butanol (Butyl alcohol) 4 l+ 8 pt J.T. Baker (Henrichs)
CH3(CH2)2CH2OH Location: / /Sit-2 / / / / / / / / / /
Keep in tightly closed container in a cool area. Liquid causes eye burns. Keep away from heat and open flame. Avoid contact with eye
s. Avoid prolonged breathing of vapor. Use with adequate ventilation. Avoid prolonged or repeated contact with skin.
In case of contact with eyes, immediately flush with plenty of water for at least 15 minutes and get medical attention.

1-Hexanol, purified 2-8 pt. J.T. Baker
CH3(CH2)5OH Location: / /Sit-2 / / / / / / / / / /
Keep in well closed containers. Liquid may cause eye injury. Avoid contact with eyes. In case of contact with eyes, immediately flus
h with plenty of water for at least 15 minutes; get medical attention.

1-Propanol (Normal) 1gal.4x1pt Fisher, (PSP)
C3H7OH Location: / /Sit-2 / / / / / / / / / /
Flammable. Flash Point 59 deg.F. Keep away from heat and open flame. Keep container closed. Use with adequate ventilation. Avoid pro
longed breathing of vapor.

2,3,5,6-Tetramethylphenol 10 g K & K Laboratories, Inc.
Location: / / / / /Y-Li / / / / / / /

,6-Trimethylphenol 25 g Aldrich Chemical Co.
(CH3)3C6H2OH Location: / / / / /Y-Li / / / / / / /
Skin irritant.

2,4-Diaminophenol Dihydrochloride 100 g Matheson, Coleman & Bell
Location: / / / / /Y-Li / / / / / / /

2,4-Dinitrophenol 100 g Eastman Kodak Co. Indicator pH 2.9 - 4.0

[illegible]	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/

Poison. Handle with care.

2,6-Di-Tert-Butylphenol			100 g	K&K Laboratories, Inc.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/

2,6-Dichlorophenol			100 g	Aldrich Chemical Co.									
Cl2C6H3OH	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/

Skin irritant!

2,6-Dimethoxy Phynol			10 g	K&K Laboratories									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/

2,6-Dimethylphenol			500 g	Aldrich Chemical Co.									
(CH3)2C6H3OH	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/

Skin irritant.

2-4 Dinitrofenilidrazone			1 g	Carlo Erba									
	Location:	/	/	/	/	/	/	/	/S-Ins	/	/	/	/

2-Amino-2-(hydroxymethyl)-1,3-propanediol			100 g	J.T. Baker									
(HOCH2)3CNH2	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/

Melting point 170-172 deg C.

2-Mercaptoethanol (2 Hydroxyethylmercaptan),Type I			100 ml	Sigma									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/

Danger: Poison. May be fatal if absorbed through skin or inhaled. Harmful if swallowed. Stench. Combustible. Do not get in eyes, on skin, on clothing. Do not breath vapor. Keep container closed. Use only with adequate ventilation.
[illegible] thoroughly after handling. In case of exposure, obtain medical assistance immediately.

2-Phenoxyethanol, tech. grade			250 g	J.T.Baker									
C6H5OCH2CH2OH	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/

Avoid contact with skin and eyes.

2-Propanol, reagent grade			5 gal	VWR Scientific (Jan)									
CH3CHOHCH3	Location:	/	/Sit-2	/	/	/	/	/	/	/	/	/	/

Warning! Flammable. Keep away from heat, sparks, and open flame. Keep container closed. Use with adequate ventilation.

2-Thiouracil (4-Hydroxy-2-thiopyrimidine)			100 g	Sigma									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/

3',3"-Dibromothymolsulfonephthalein			10 g	Eastman Kodak Co.									
C6H4SO2OC(C6H-2-CH3-5-CH(CH...	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/

3',3''-Bis[(N,N-Bis(Carboxymethyl)AminoMethyl)Thy			5g	City Chemical Corp.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/

3,3',5-Triiodo-L-Thyronine			1 g	Sigma									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/

3,3'-Diaminobenzidine (Tetrahydrochloride)			5+25 g	Sigma									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/

Possible carcinogen. Minimize contact. Use gloves and mask.

[illegible]-Dimethoxybenzidine			100 g	Eastman Kodak Co.									
CH3O(NH2)C6H3C6H3(NH2)OCH3	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/

Toxic. Avoid breathing dust and contact with skin or clothing.

3,3',5,5'-Tetramethylbenzidine(dihydrochloride)			3x5 g	Sigma									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/

3,4,5-Trimethylphenol			25 g	Aldrich Chemical Co.									

(CH3)3C6H2OH Location: / / / / /Y-L1 / / / / / / /

The chemical, physical and toxicological properties of this product have not been fully investigated. Its handling or use may be hazardous.

3-Aminobenzoic Acid Ethyl Ester 2x100 g Sigma
Location: / / / / / / /S-L2 / / / / /

3-Methyl-1-phenyl-2-pyrazolin-5-one 500 g J.T. Baker
C6H5NN:C(CH3)CH2CO Location: / / / / /Y-L1 / / / / / / /

4,5-Dihydroxy-2,7-Naphthalene-Disulfonic Acid 25 g City Chemical Corp.
Location: / / / / /Y-L1 / / / / / / /

4-Chloro-7-nitrobenzo-2-oxa-1,3-diazole 5 g Eastman Kodak Co.
Location: / / / / /Y-L1 / / / / / / /

4-Guanidinobenzoic Acid, Hydrochloride, crystal. 0.250 g Sigma
Location: / / / / / /S-L1 / / / / / /

6-n-Propyl-2-Thiouracil (2-Thio-4-hydroxy-6-n-...) 4x1 kg Sigma
Location: / / / / / / /S-L2 / / / / /

Caution: Possible carcinogen. Minimize contact. Use gloves and mask. Wash thoroughly after handling.

8-Amino-1-naphthol-5-sulfonic Acid, tech grade 100 g Eastman Kodak Co.
NH2C10H5(OH)SO3H Location: / / / / / /S-L1 / / / / / /

8-Anilino-1-Naphthalene-Sulfonic Acid 5g Sigma
Location: / / / / / / /S-L2 / / / / /

8-Hydroxyquinoline, powder 1 lb. Mallinckrodt
HOC9H6N Location: / / / / /Y-L1 / / / / / / /

8-Quinolinol(8-hydroxyquinoline), powder 1 oz. J.T. Baker
HOC6H3N:CHCH:CH Location: / / / / /Y-L1 / / / / / / /

---

a-Lactose 500 g East Man Chemical Co.
C12H22O11.H2O Location: / / / / /Y-L1 / / / / / / /

Acetaldehyde 100 g J.T. Baker
CH3CHO Location: / / / / / /S-L1 / / / / / /

Danger! Extremely flammable. May form explosive peroxides under air pressure. Causes irritation. Keep away from heat, sparks, flame. Keep in tightly closed container. Avoid breathing vapor. Avoid contact with eyes, skin, clothing.
Use with adequate ventilation. Wash thoroughly after handling. In case of fire, use water spray, alcohol foam, dry chemical, CO2. Flush spill area with water spray. First Aid: Call a physician. In case of contact.
immediately flush eyes with plenty of water for at least 15 minutes. Flush skin with water. Flash point -38 deg. F.

Acetaldehyde 100g+250g Baker, Kodak
CH3CHO Location: / / / / / / /S-L2 / / / / /

Danger! Extremely flammable. May form explosive peroxides under air pressure. Causes irritation. Keep away from heat, sparks, flame. Keep in tightly closed container. Avoid breathing vapor. Avoid contact with eyes, skin, clothing.
Use with adequate ventilation. Wash thoroughly after handling. In case of fire, use water spray, alcohol foam, dry chemical, CO2. Flush spill area with water spray.
Call a physician. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Flush skin with water.
Flash point -38 deg F.

Acetanilide 2g Carlo Erba
Location: / / / / / / / /S-Ins / / / /

Acetic Acid, Glacial 4x2.5 l
CH3COOH Location: / / / / / /S-L1 / / / / / /

Alcohol, anhydrous, reagent 2x4 l J.T. Baker
Location: / / / / /S-L1 / / / / / /

Contents: Specially Denatured Alcohol Formula 3-A (200 proof): Ethyl Alcohol - 95 parts by volume. Isopropyl Alcohol (2-Propanol) - 5 parts by volume. Flash point 55 deg. F.
Poison. Danger! Flammable. Vapor harmful. May be fatal or cause blindness if swallowed. Cannot be made nonpoisonous. Keep away from heat, sparks, flame. Keep in tightly closed container. Avoid breathing vapor. Avoid contact with eyes, skin, clothing. Use with adequate ventilation. Wash thoroughly after handling. In case of fire use water spray, alcohol foam, dry chemical, carbon dioxide. Flush spill area with water spray. Antidote: Call a physician. If swallowed, if conscious, immediately induce vomiting. Give 2 tablespoonfuls of baking soda in water. Cover eyes to exclude light. If inhaled, move patient to fresh air. If not breathing give artificial respiration. Keep patient warm and quiet. Give strong tea or coffee.

Alcohol, Dehydrated, (absolute) 200 proof, 99.5% 8 oz. no label, U.S.P. reagent grade
Location: / /Sit-2 / / / / / / / / /

Alcohol, Denatured, (Ethyl Alcohol) Anhydrous 5 gal VWR Scientific
CH3CH2OH Location: / / / / / / /S-L2 / / / / /

Alcohol, Reagent 3x1 gal. Scientific Products
Ethyl, Methyl, Isopropyl Mix Location: / / / / / / /S-L2 / / / / /
Caution. Poison. Contains Methyl Alcohol. Not for internal or external use. Danger! May be fatal or cause blindness if swallowed. Vapor harmful. Flammable. Do not breath vapor. Keep away from heat, sparks and open flame. Keep container closed.
Use with adequate ventilation. Wash thoroughly after handling. Cannot be made nonpoisonous. Antidote: If swallowed, induce vomiting until fluid is clear. Vomiting should be induced by inserting finger down the throat or drinking lukewarm salty or soapy water. Call a physician immediately.

Alcohol, reagent, contains Methyl Alcohol 2x8 pt Matheson, Coleman & Bell
Location: / /Sit-2 / / / / / / / / /

Alginic Acid 250 g J.T. Baker
Location: / / / / /Y-L1 / / / / / /

Alizarin Red S 100g+10g Allied Chemical
Location: / / / / /Y-L1 / / / / / /

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alpha-Naphthol, purified flake (1-naphthol) 1 lb. J.T. Baker
C10H7OH Location: / / / / /Y-L1 / / / / / /

Aluminum Ammonium Sulfate (Alum Ammonium), crystal 500g+300g EM Scientific, no label
Al(NH4)(SO4)2.12H2O Location: / / / / / /S-L1 / / / / /

Aluminum Ammonium Sulfate (Alum Ammonium), crystal 3x1 lb Fisher
Al(NH4)(SO4)2.12H2O Location: / / / / /Y-L1 / / / / / /

Aluminum Chloride, crystal 4x1 lb J.T. Baker
AlCl3.6H2O Location: / / / / /Y-L1 / / / / / /

Aluminum Metal Wire 1 lb. Mallinckrodt
Al Location: / / / / /Y-L1 / / / / / /

Aluminum Nitrate, crystals 1 lb Mallinckrodt
Al(NO3)3.9H2O Location: / / / / /Y-L1 / / / / / /

Aluminum Potassium Sulfate, crystal 3x1 lb J.T. Baker
AlK(SO4)2.12H2O Location: / / / / /Y-L1 / / / / / /

Ammonia Solution, strong 27% 500ml Mallinckrodt
NH3 Location: / / / / / / /S-L2 / / / / /
Poison. Liquid causes burns. Vapor extremely irritating. Store in tight container, at a temperature below 25 deg. C. Vent carefully before opening, especially if warm. Avoid prolonged breathing of vapor.
Avoid accidental contact with eyes, skin, clothing. In case of accidental contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes get medical attention. Call a physician.
Antidote: Do not use emetics. If conscious give water with large amounts of diluted vinegar, lemon or orange juice. Follow with milk or white of eggs beaten

Ammonia, Crystal Clean, non-detergent — 5-1 qt. — Pacific Brand
Location: / / / / / / / / / / /Y-SR /

Harmful if swallowed. Irritant. Caution. Do not mix with chlorine type bleaches or other household chemicals. Avoid contact with eye
s or clothing or prolonged contact with skin. First Aid: External: Flood with water then wash with vinegar.
Internal: Give diluted vinegar or juice of citrus fruit freely. Follow with vegetable oil. Call physician immediately. Eyes: Wash th
oroughly with water, preferably warm. Get prompt medical attention.

Ammonium Acetate (crystals) — 2x1 lb — Mallinckrodt
NH4C2H3O2 Location: / / / / /Y-L1 / / / / / / /

Ammonium Acetate, crystalline, grade I — 500 g — Sigma Chemical Co.
Location: / / / / /Y-L1 / / / / / / /
Store at 0 - 5 deg. C.

Ammonium Carbonate, Extra pure — 1 kg — Merck
Location: / / / / / / /S-L2 / / / / /

Ammonium Chloride — 500 g — Wako Pure Chemical Industries
NH4Cl Location: / / / / /Y-L1 / / / / / / /

Ammonium Chloride (granular) — 3x1 lb+5lb — Mallinckrodt; J.T. Baker
NH4Cl Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. Wash thoroughly after handling.
If swallowed, induce vomiting and call a physician.

Ammonium Formate (Formic Acid) — 100g+1 lb — Fisher, Sigma
NH4COOH Location: / / / / /Y-L1 / / / / / / /

Ammonium Hydroxide — 6x6lb+1 qt — J.T. Baker, DuPont, Great West Chem Co.
NH4OH Location: / / / /Sit-4 / / / / / / / /
Liquid causes burns. Vapor extremely irritating. Avoid breathing vapor. Avoid contact with skin, eyes, or clothing. In case of conta
ct immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes get medical attention.
Poison. Call a physician. Antidote: External: Flood with water then wash with vinegar. If in eyes wash with saturated boric acid sol
ution or flood with water. Internal: Give water with large amount of vinegar, lemon or orange juice.
Follow with milk or whites of eggs beaten with water. Apply artificial respiration if not breathing. Keep patient warm and quiet.

Ammonium Iodide, granular — 1/4 lb. — Mallinckrodt
NH4I Location: / / / / /Y-L1 / / / / / / /

Ammonium Molybdate, crystal — 2x1 lb — J.T. Baker
(ammonium heptamolybdate 4...) Location: / / / / /Y-L1 / / / / / / /

Ammonium Nickel Sulfate — 5 g — no label
(NH4)2SO4.NiSO4.6H2O Location: / / / / / / /S-L2 / / / / /
Toxic.

Ammonium Nitrate, granular — 2x1 lb — J.T. Baker
NH4NO3 Location: / / / / /Y-L1 / / / / / / /

Ammonium Oxylate, crystal — 1lb+.25 lb — Mallinckrodt; J.T. Baker
(NH4)2C2O4.H2O Location: / / / / /Y-L1 / / / / / / /
May be fatal if swallowed. Avoid breathing dust. Wash thoroughly after handling. Poison. Call a physician. Antidote: Give 30g (1 oz)
calcium lactate
in a glass of water, or a glass of lime water. If these are not available give large quantities of milk. Then give a tablespoonful o
f salt in a glass of warm water and repeat until vomit fluid is clear. Give milk or white of egg beaten with water.
Keep patient warm and quiet.

Ammonium Persulfate, crystal — 1 lb. — J.T. Baker
(NH4)2S2O8 Location: / / / / / / /S-L2 / / / / /
Warning! Harmful if swallowed. Contact with combustible material may cause fire or explosion. Store separately from and avoid contac
t with combustible material. Keep in well closed container away from heat.
Avoid contact with skin, eyes, and clothing. If swallowed, call a physician at once.

Ammonium Sulfamate — 1 kg — Sigma

Ammonium Sulfate, granular — 2x1 lb. — Mallinckrodt: J.T. Baker
(NH4)2SO4 — Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. Wash thoroughly after handling. If swallowed induce vomiting and call a physician.

Ammonium Sulfate, granular (pyridine free) — 2x1 lb — Mallinckrodt
(NH4)2SO4 — Location: / / / / /Y-L1 / / / / / / /

Ammonium Sulfate, ultra pure — 2x1 kg — Schwarz/Mann
(NH4)2SO4 — Location: / / / / /Y-L1 / / / / / / /

Ammonium Sulfide Solution — 1 l — E M Science
(NH4)2S — Location: / / / / / / /S-L2 / / / / /
Danger! Flammable. Harmful if inhaled, swallowed or absorbed through skin. Emits toxic fumes when heated or in contact with acids. Irritating to skin, eyes and mucus membranes. Keep away from heat, sparks and flame. Use with adequate ventilation.
Open only in hood. Do not breath vapor. Do not take internally. Do not get in eyes, on skin or on clothing. Do not store near acids.
Do not flush into sewer, which may contain acids. Wash thoroughly after handling. First Aid: Call a physician.
If inhaled: Move patient to fresh air. Use artificial respiration if necessary. If contacted: Remove contaminated clothing at once.
Immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.

Ammonium Thiocyanate, crystal — 1/4 lb. — J.T. Baker
NH4SCN — Location: / / / / /Y-L1 / / / / / / /

Amylose - Iodine Indicator — 3x5 g — Mallinckrodt
Location: / / / / /Y-L1 / / / / / / /

Anhydrone (Magnesium perchlorate, anhydrous) — 1 lb — J.T. Baker
Mg(ClO4)2 — Location: / / / / /Y-L1 / / / / / / /
Contact with combustible material may cause fire. All clothing contaminated with perchlorate is Dangerously Flammable. Remove clothing and wash thoroughly with water. Spillage may cause fire with combustible material. Do not get on floor.
Sweep up and remove immediately. When not in use keep tightly closed in original container. Store separately from flammable material. Keep away from fire.

Aniline — 1 pt. — J.T. Baker
C6H5NH2 — Location: / / / / /Y-L1 / / / / / / /
Danger! Hazardous liquid and vapor. Rapidly absorbed through skin. Do not get in eyes, on skin, and on clothing. Avoid breathing vapor. Use only with adequate ventilation. In case of contact immediately remove all contaminated clothing,
including shoes, and flush skin or eyes with plenty of water for at least 15 minutes; get medical attention. Wash clothing before re-use. Poison. Call a physician. Antidote: If conscious induce vomiting by giving a tablespoonful of salt in a glass
of warm water and repeat until vomit fluid is clear. Apply artificial respiration if not breathing. Keep patient warm and quiet.

Aniline Blue (Acid Blue 22) — 35 g — Sigma
Location: / / / / / /S-L1 / / / / / /
Avoid contact with skin or eyes. Wash thoroughly after handling. Do not breath dust. Store below 30 deg C.

Aniline Blue (Acid Blue 22) — 25+12 g — Fisher: no label
Location: / / / / /Y-L1 / / / / / / /
Avoid contact with skin or eyes. Wash thoroughly after handling. Do not breath dust. Store below 30 deg. C.

Aniline Blue (Water Soluble) — 25 g — Allied Chemical
Location: / / / / /Y-L1 / / / / / / /

Anthracene Navy Blue SWR (Mordant Blue 32) — 20 g — Matheson, Coleman & Bell
Location: / / / / /Y-L1 / / / / / / /

Anthrone — 25 g — J.T. Baker
C6H4COC6H4CH2 — Location: / / / / /Y-L1 / / / / / / /

.-Aractis Hydrogen Lactic — 1 vial — Sigma
Location: / / / / / / /S-L2 / / / / /

Anti-mouse IgG 2x2 ml Sigma
Location: / / / / / / /S-L2 / / / / /

Anti-S 100 (Developed in Rabbit) 0.2 ml Sigma
Location: / / / / / / /S-L2 / / / / /

Antimony and Potassium Tartrate 1 lb Matheson, Coleman & Bell
Location: / / / / /Y-L1 / / / / / / /
Do not take internally. Do not breath dust.

Antimony Potassium Tartrate 100g K&K Laboratories
Location: / / / / /Y-L1 / / / / / / /

Antimony Trichloride, crystals 1/4 lb. Mallinckrodt
SbCl3 Location: / / / / /Y-L1 / / / / / / /
Danger! Causes severe burns. Vapor hazardous. Do not get in eyes, on skin, on clothing. Do not breath vapor. Keep container closed. In case of contact, immediately remove all contaminated clothing and flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention. Wash clothing before re-use. Poison. Antidote: Give a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Then two tablespoonfuls of Epsom salt or milk of magnesia in water and force fluids. Have patient lie down and keep warm. Call a physician.

Arsenic Trioxide (Arsenous Acid), powder 2x1 lb+4oz J.T. Baker: Mallinckrodt: Fisher
As2O3 Location: / / / / /Y-L1 / / / / / / /
Danger! May be fatal if swallowed. Avoid breathing dust or spray mist. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Call a physician. Antidote: If conscious, give a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Then give two tablespoonfuls of Epsom salt or milk of magnesia in water and force fluids. Have patient lie down and keep warm.

Ascarite granules 100 g Carlo Erba: C N Analyzer
Location: / / / / / / / /S-Ins / / / /
Corrosive. Causes severe burns. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable gloved and eye/face protection.

Ascarite, 20 to 30 mesh 1 lb. Arthur H. Thomas Co.
Location: / / / / /Y-L1 / / / / / / /
Corrosive - burns skin, eyes, clothing. In the event of contact with skin or clothing, immediately flush with plenty of water for at least 15 minutes and then wash with vinegar or citrus fruit juices. For the eyes, flush with water or saturated boric acid solution for at least 15 minutes and then get medical attention.

Ascorbic Acid (L). (Vitamin C). Powder 100 g Fisher
C6H8O6 Location: / / / / / / /S-L2 / / / / /

Ascorbic Acid (L). (vitamine C). powder 100g+750g J.T. Baker: Aldrich Chemical Co.: Fisher
C6H8O6 Location: / / / / /Y-L1 / /S-L2 / / / / /

Ascorbic Acid, sodium 100 g Calbiochem
Location: / / / / / / /S-L2 / / / / /

Atomlight 200 ml New England Nuclear, DuPont
Location: / / / / / / /S-L2 / / / / /
High sample capacity scintillation solution for aqueous samples. Combustible liquid. Flash point 113 deg. F. 45 deg. C. Keep away from heat, sparks and open flame. In case of fire use carbon dioxide, dry chemical or foam. Store in a cool place.
Caution! Vapor harmful. Combustible. Harmful if swallowed. Avoid inhalation of vapor. Use with adequate ventilation. Do not pipet by mouth. Do not get in eyes, on skin or on clothing. Keep container closed. Wash thoroughly after handling.
First Aid: Eyes - In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Skin - In case of contact flush skin with plenty of water. Remove contaminated clothing. Wash skin with soap and water. Call a physician. If inhaled - remove to fresh air. Call a physician. If swallowed - Call a physician. Do NOT induce vomiting.

Azaserine (O-Diazo-Acetyl-L-Serine) 10 mg Sigma
Location: / / / / / /S-L1 / / / / / /
Caution: Possible carcinogen. Avoid contact with skin. Do not breath dust.

Azocarmine G (Acid Red 101) 10 g Sigma
Location: / / / / /Y-L1 / / / / / / /
Avoid contact with skin. Avoid breathing dust.

Azobilin			25 g	Allied Chemical									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Azure A			2x10g	Sigma									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Avoid contact with skin. Do not breath dust.													
Azure B			5 g	no label									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Azure C			10 g	Allied Chemical									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
b-Guanidinopropionic Acid (3-Guanidinopropionic..)			1 g	Sigma									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Bacto Agar			4x1 lb.	Difco Lab.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Bacto Algae Culture Agar			1/4 lb.	Difco Lab.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Bacto Beef Extract			1 lb.	Difco Lab.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Bacto Casamino Acids			1 lb.	Difco Lab.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Bacto Casamins Acids, Vitamin Free			1 lb.	Difco Lab.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Bacto Erythrosin			10 g	Difco									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Bacto Fluid Thioglycollate Medium, dehydrated			2x1/4 lb.	Difco lab.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Bacto Malt Extract			1/4 lb.	Difco Lab.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Bacto Nutrient Broth, dehydrated			2x1/4 lb.	Difco Lab.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Bacto-Agar			1 lb.	Difco									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Bacto-Brom Cresol Purple			5 g	Difco									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Bacto-Brom Thymol Blue			5 g	Difco									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Bacto-Cresol Red			5 g	Difco									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
-to-Crystal Violet			25 g	Difco Lab.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Bacto-Dextrose			2x500 g	Difco Lab.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Bacto-Lactose			500 g	Difco									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/

Bacto-Peptone 1 lb Difco Lab.
Location: / / / / / / /S-L2 / / / / /

Bacto-Peptone 2x1/4lb Difco Lab.
Location: / / / / /Y-L1 / / / / / / /

Barbital-Sodium Barbital Mixture 4x25 g Buchler Inst., Inc. For paper electrophoresis.
Buffer salt, Type I pH 8.6 Location: / / / / /Y-L1 / / / / / / /

Barium Chloride (granular) 1 lb. Mallinckrodt
BaCl2 2H2O Location: / / / / /Y-L1 / / / / / / /
May be fatal if swallowed. Do not take internally. Avoid breathing dust. Wash thoroughly after handling. Poison.
Call a physician. Antidote: If swallowed, if conscious, induce vomiting by giving two tablespoons of Epsom Salts or sodium sulfate in a glass of warm water and repeat until vomit fluid is clear. Follow with milk or whites of eggs beaten/water.

Barium Hydroxide, crystal 1/4 lb Mallinckrodt
Ba(OH)2+8H2O Location: / / / / /Y-L1 / / / / / / /
Poison. May be fatal if swallowed. Do not take internally. Avoid inhalation of dust. Wash thoroughly after handling. Call a physicia
n. Antidote: If conscious induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat
until vomit fluid is clear. Give milk or whites of eggs beaten with water. Keep patient warm and quiet.

Barium Hydroxide, crystal 1 lb Baker
Ba(OH)2+8H2O Location: / / / / / /S-L1 / / / / / /
Poison. May be fatal if swallowed. Do not take internally. Avoid inhalation of dust. Wash thoroughly after handling.
Call a physician. Antidote: If conscious induce vomiting by giving a teaspoonful of salt in a glass of warm water and repeat until v
omit fluid is clear. Give milk or whites of eggs beaten with water.
Keep patient warm and quiet.

Barium Nitrate, crystals 1/4 lb. Mallinckrodt
NO3)2 Location: / / / / / /S-L1 / / / / / /
Contact with other material may cause fire. Keep container closed and away from other material and heat. Avoid contact with skin and
eyes. Sweep up and carefully remove spilled material. Poison. Antidote: Give 2 tablespoonfuls of Epsom salt
in a glass of warm water and repeat until vomit fluid is clear. Follow with milk or whites of eggs beaten with water. Call a physici
an.

Basic Fuchsin 5 g no label
Location: / / / / / /S-L1 / / / / / /

Basic Fuchsin 2x25g Allied Chemical: Stain.
Location: / / / / /Y-L1 / / / / / / /

Benzalkonium Chloride, 80% 1 kg Paltz & Bauer, Inc.
Location: / / / / /Y-L1 / / / / / / /
Poison. Avoid breathing vapors. Use with adequate ventilation.

Benzene Merck (Benzol), Thiophene free 1 gal. Merck
C6H6 Location: / / /Sit-3 / / / / / / / / /
Danger! Extremely flammable. Vapor harmful. Keep away from heat, sparks and open flame. Keep container closed. Use with adequate ven
tilation. Avoid prolonged or repeated breathing of vapor, or contact with skin. Poison. Antidote: Call a physician
at once. Inhalation - move patient to fresh air. If breathing has stopped give artificial respiration and give oxygen. Keep patient
warm (but not hot). Internal - induce vomiting with plenty of warm water containing 1 tablespoonful of salt to the
glass. Do not give anything by mouth to an unconscious person. Eyes - flush freely with water for 15 minutes. External - remove cont
aminated clothing and wash affected areas with abundant soap and water.

Benzenesulfonyl Chloride, 99+% 500 g Aldrich Chem. Co.
Location: / / / / /Y-L1 / / / / / / /
Corrosive.

Benzidine Dihydrochloride 100 mg Sigma
Location: / / / / / / /S-L2 / / / / /
Cancer suspecr agent

C6H5COOH	Location:	/	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Betadine Solution			1 gal.		Purdue Frederick Co.									
	Location:	/	/	/	/	/	/	/	/	/S-Wet	/	/	/	/
Biorad Protein Assay			450 ml		Bio-rad									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/	/
Biotin, crystalline			3 g		Nutritional Biochemicals Corp.									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/	/
Blocking reagent, concentrated			1 ml		Biomeda Corp.									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/	/
Boilerzers			1/4 lb.		Fisher. Inert granules for taming boiling action.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/	/
Boiling Chips, micro porous chemically inert carbon	Location:	/	100 g	/	Todd Scientific Co.	/Y-L1	/	/	/	/	/	/	/	/
Borax (Sodium Tetraborate) Na2B4O7.10H2O	Location:	/	1 kg	/	Sigma	/	/	/S-L2	/	/	/	/	/	/
Borax Carmine			25 g		Matheson, Coleman & Bell									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/	/
Boric Acid (granular) H3BO3	Location:	/	2 x 1 lb.	/	Mallinckrodt	/Y-L1	/	/	/	/	/	/	/	/
Harmful if swallowed. Absorption through skin harmful. Avoid contact with skin or eyes. swallowed, induce vomiting and call a physician. In case of contact, flush with plenty of water; for eyes, get medical attention														
Boric Acid, crystal H3BO3	Location:	/	1 lb+5 lb	/	J.T. Baker	/Y-L1	/	/	/	/	/	/	/	/
Bouin's Fixative			500 ml		no label									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/	/
Brodie'sche Losung Typ TF 11 A-Th			2x500 ml		B. Braun Melsungen. For Gilson-Warburg									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/	/
Bromophenol Blue			5 g		J.T. Baker									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/	/
Bromothymol Blue, Sodium Salt			5 g		J.T. Baker									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/	/
Butyl Alcohol, normal (1-Butanol) CH3CH2CH2CH2OH	Location:	/	2x5 gal	/	Mallinckrodt, Baker; Goering ACONA	/Sit-2	/	/	/	/	/	/	/	/
Cadmium (shavings) Cd	Location:	/	2 x 2 oz	/	/	/Y-L1	/	/	/	/	/	/	/	/
Cadmium Chloride ···12.2 1/2 H2O	Location:	/	1 lb+1/4lb	/	Mallinckrodt, Fisher	/Y-L1	/	/	/	/	/	/	/	/
aful if swallowed.														
Cadmium Filings 42-80 mesh			1/4 lb		no label									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/	/
Cadmium Metal (sticks) Cd	Location:	/	1 lb.	/	Fisher	/Y-L1	/	/	/	/	/	/	/	/

Calcein			5 g	G. Frederick Smith Chem. Co.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Calcium Acetate			100 gr	no label									
Ca(CH3COO)2.2H2O	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Calcium Carbide			1 lb	no label									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Calcium Carbonate, powder			1 lb	Baker									
CaCO3	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/
Calcium Carbonate, powder			7x1 lb	Allied Chemical: J.T.Baker:									
CaCO3	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Keep in well closed container.													
Calcium Chloride Dihydrate			500 g	Sigma									
CaCl2.2H2O	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/
Calcium Chloride Dihydrate			2x1 lb	Mallinckrodt									
CaCl2.2H2O	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Keep tightly closed.													
Calcium Chloride, 10%			4-10 ml vl	Invenex									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Calcium Chloride, anhydrous granular, 4 mesh			5 lb.	J.T. Baker									
CaCl2	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Calcium Chloride, anhydrous porous, 4-12 mesh			1 lb.	for dessicators & drying tubes. Continental Chem.									
CaCl2	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Calcium Chloride, anhydrous, 8 mesh			1/4 lb.	Mallinckrodt									
CaCl2	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Calcium Chloride, anhydrous, granular 8 mesh			5 lb	Matheson, Coleman & Bell									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Calcium Hypochlorite, technical (Chloride of Lime)			1 lb	Fisher									
(Bleaching powder)	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Strong oxidant. Contact with combustible material may cause fire. Store separately (away) from and avoid contact with combustible ma terials. Keep container closed and away from heat. Avoid contact with skin, eyes, and clothing.													
Carbon - Activated Carbon, no label			2 liters										
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Carbon - Longlife Activated Filter Carbon			17 oz	Longlife, Aquarium filters.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Carmine (Alum Lake) (Natural Red 4)			5 g	Sigma									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Use care! Do not breath dust. Do not get in eyes, on skin, on clothing. Do not take internally. Wash thoroughly after handling.													
Carmine Alum, siccum			25 g	Roboz Sergical Inst. Co.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Casein Hydrolysate (Enzymatic) from milk			250 g	Sigma									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/

Location: / / / / /Y-L1 / / / / / / /

Celite 545 4x11b+100g Fisher. Analytical filter aid.
Location: / / / / /Y-L1 / / / / / / /

Cesium Chloride CP 2 g Sargent
Location: / / / / /Y-L1 / / / / / / /

Cesium Chloride. 98% 5 g Matheson. Coleman & Bell
CsCl Location: / / / / /Y-L1 / / / / / / /

Chloral Hydrate 250 g Matheson. Coleman & Bell
Location: / / / / /Y-L1 / / / / / / /
May be fatal if swallowed. May cause skin irritation. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Protec t from light.

Chloramine T 1 kg K&K Laboratories
Location: / / / / /Y-L1 / / / / / / /

Chloramphenical. crystalline (Chloromycetin) 5 g Sigma
Location: / / / / / /S-L1 / / / / / /

Chloroacetic Acid (Monochloroacetic Acid) 500 g Sigma
Location: / / / / / / /S-L2 / / / / / /

Chloroform. N.F. 10x1 pt Baker
CHCl3 Location: / / / / / / /S-L2 / / / / / /
Poison. Danger! Harmful if inhaled or swallowed. Causes irritation. Avoid breathing vapor. Avoid ciontact with eyes, skin. clothing.
ep in tightly closed container. Use with adequate ventilation. Wash thoroughly after handling. Call a physician.
.. inhaled remove to fresh air. If not breathing give artificial respiration. If breathing is difficult give oxygen. If swallowed. i f conscious. immediately induce vomiting. In case of contact immediately flush eyes with plenty of water for at
least 15 minutes. Call a physician. Flush skin with plenty of water. Reported as causing cancer in laboratory animals. Store in cool place, prefreably not above 30 deg C (86 deg F).

Chloroform. N.F. 6x1pt+1l+ J.T. Baker; Fisher; Mallinckrodt: no label
CHCl3 Location: / / /Sit-3 / / / / / / / / /
Poison. Danger! Harmful if inhaled or swallowed. Causes irritation. Avoid breathing vapor. Avoid contact with eyes. skin. clothing.
Keep in tightly closed container. Use with adequate ventilation. Wash thoroughly after handling. Call a physician.
If inhaled. remove to fresh air. If not breathing, give artificial respiration.If breathing is difficult, give oxygen. If swallowed.
if conscious. immediately induce vomiting. In case of contact. immediately flush eyes with plenty of water for at
least 15 minutes. Call a physician. Flush skin with water. Reported as causing cancer in laboratory animals. Store in a cool place.
preferably not above 30 deg.C (86 deg. F).

Chloroform. N.F. 1 pt Baker
CHCl3 Location: / / / / / /S-L1 / / / / / / /
Poison. Danger! Harmful if inhaled or swallowed. Causes irritation. Avoid breathing vapor. Avoid contact with eyes. skin. clothing.
Keep in tightly closed container. Use with adequate ventilation. Wash thoroughly after handling. Call a physician.
If inhaled remove to fresh air. If not breathing give artificial respiration.If breathing is difficult, give oxygen. If swallowed. i
f conscious. immediately induce vomiting. In case of contact. immediately flush eyes with plenty of water for at
least 15 minutes. Call a physician. Flush skin with water. Reported as causing cancer in laboratory animals. Store in cool place. or
eferably not above 30 deg C (86 deg F).

Choline Chloride 500 g Eastman Organic Chemicals
(CH3)3NClCH2CH2OH Location: / / / / / /S-L1 / / / / / / /

Chromerge 11x25 cc Manostat Corp. For cleaning labware.
Chromic Acid solution Location: / / / / /Y-L1 / / / / / / /

Chromic Acid 1 bottle
Location: / / / /Sit-4 / / / / / / / /

Location: / / / / /S-Ins / / /

Chromium Chloride 1/4 lb Mallinckrodt
CrCl3.6H2O Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed.

Chromium Oxide 100 g Conroy Scientific; C N Analyzer
Location: / / / / / / / /S-Ins / / / /

Chromium Potassium Sulfate, crystal 500 g + Baker, no label
CrK(SO4)2.12H2O Location: / / / / / / /S-L2 / / / / /

Chromium Potassium Sulfate, crystal 1 lb. J.T. Baker
CrK(SO4)2.12H2O Location: / / / / /Y-L1 / / / / / / /

Chromium Trioxide, crystal 1/4 lb. J.T. Baker
CrO3 Location: / / / / /Y-L1 / / / / / / /
Danger! Contact with combustible material may cause fire. May cause burns or external ulcers. Keep container closed. Avoid contact w
ith skin and eyes. Avoid breathing dust or mist from solutions.
In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes get medical attention. Was
h clothing before re-use. Use fresh clothing daily. Take hot shower after work using plenty of soap.

Cinnamon Oil (oil cassia, synthetic) 2x1 fl oz Stanly Drug Prod.
Location: / / / / /Y-L1 / / / / / / /

Citric Acid (Trisodium Dihydrate) 500 g Sigma
Location: / / / / / / /S-L2 / / / / /

Citric Acid, anhydrous powder 1 lb. J.T. Baker
6H5O7 Location: / / / / /Y-L1 / / / / / / /

Citric Acid, monohydrate crystal 1 lb Baker
HOC(COOH)(CH2COOH)2.H2O Location: / / / / / / /S-L2 / / / / /

Citric Acid, monohydrate crystal 4x1 lb J.T. Baker
HOC(COOH)(CH2COOH)2.H2O Location: / / / / /Y-L1 / / / / / / /

Clorox Bleach (Sodium Hypochlorite) 1 gal Clorox
Location: / / / / / / / / /S-Wet / / /
Hazards to humans and domestic animals. Causes substantial but temporary eye injury. Do not get in eyes or on clothing. Harmful if s
wallowed. May irritate skin.
Strong oxidizing agent, do not use or mix with other household chemicals such as toilet bowl cleaners, rust removers, vinegar, acid
or ammonia containing products. To do so will release hazardous gasses.
Wash thoroughly with soap and water after handling. If in eyes: remove contact lenses; rinse with plenty of water. If swallowed: dri
nk a large quantity of milk or water; get prompt medical attention; avoid alcohol.
If contact with skin: remove contaminated clothing and wash skin.

Cobalamin Concentrate N.F.(3000 mg vit B12 per g) 5 g Nutritional Biochemicals corp.
Location: / / / / / /S-L1 / / / / / /

Cobalt Chloride, 6-Hydrate, crystal 125 g J.T. Baker
CoCl2.6H2O Location: / / / / / /S-L1 / / / / / /
Warning! Harmful if swallowed or inhaled.

Cobalt Chloride, crystal 1/4 lb. J.T. Baker
Cl2.6H2O Location: / / / / / /S-L1 / / / / / /

Cobalt Sulfate, crystals 1 lb. Mallinckrodt
CoSO4.7H2O Location: / / / / /Y-L1 / / / / / / /

Colbalt Chloride 125g Sigma
CoCl2.6H2O Location: / / / / / / /S-L2 / / / / /

Colchicine — 1 g — Sigma
Location: / / / / / / /S-L2 / / / / /

Congo Red — 5 g — no label
Location: / / / / / /S-L1 / / / / / /

Copper Gauze — 1/4 lb — no label
Location: / / / / /Y-L1 / / / / / / /

Copper Sulfate, technical crystals (Blue Stone) — 1/4 lb — Robinson Laboratories, Inc.
Location: / / / / /Y-L1 / / / / / / /
Danger. Poison. Harmful if swallowed. Call a physician. If conscious induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Give milk or whites of eggs beaten with water.
Keep patient warm and quiet. Avoid vapor from metalllic mercury.

Coverbond — 16 oz — Harleco
Picolyte / Toluene Location: / / / / /Y-L1 / / / / / / /
Danger! Harmful or fatal if swallowed. Vapor harmful. Flammabel. Do not breath vapor. Keep container closed. Use with adequate ventilation. Keep away from heat, sparks, and open flame. Wash thoroughly after handling.
If swallowed, do NOT induce vomiting. Call a physician immediately. Store at controlled room temperature (15 - 30 deg. C).

Creosote (Beechwood) — 1 lb. — Matheson, Coleman & Bell
Location: / / / / /Y-L1 / / / / / / /
May cause skin irritation. Avoid prolonged or repeated contact with skin. Avoid prolonged or repeated breathing of vapor.

Cresyl Violet Acetate — 10 g — E M Science
Location: / / / / / / /S-L2 / / / / /
Use care! Do not breath dust. Do not get in eyes, on skin or on clothing. Do not take internally.

Crystal Mount — 2x30 ml — Biomeda
Location: / / / / / / /S-L2 / / / / /

Crystal Violet("Gentian" Violet) — 25 g — J.T. Baker
Location: / / / / /Y-L1 / / / / / / /
Extremely irritating to the eyes. May have delayed reaction. Do not get in eyes. Avoid contact with skin and clothing. Avoid breathing dust. Keep in well-closed container.

Crystalline Biotin — 3 g — Nutritional Biochemical Corp.
Location: / / / / / /S-L1 / / / / / /

Cupferron, flakes — 1/4 lb. — Mallinckrodt
C6H9N3O2 Location: / / / / /Y-L1 / / / / / / /

Cupric Acetate, crystal — 1/4 lb — J.T. Baker
Cu(C2H3O2)2.H2O Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. Do not take internally. Wash thoroughly after handling. Poison. Call a physician. Antidote: If conscious induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear.
Give milk or whites of eggs beaten with water. Keep patient warm and quiet.

Cupric Chloride, crystal — 1/4 lb — J.T. Baker
CuCl2.2H2O Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. Do not take internally. Wash thoroughly after handling. Poison. Call a physician. Antidote: If conscious induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear.
Give milk or whites of eggs beaten with water. Keep patient warm and quiet.

Cupric Sulfate, 5-Hydrate, fine crystal — 500 g — J.T. Baker
CuSO4.5H2O Location: / / / / / /S-L1 / / / / / /
Warning! Harmful if swallowed.

Cupric Sulfate, anhydrous, powder — 100 g — Fluka Chemie AG
CuSO4 Location: / / / / / / /S-L2 / / / / /

escious induce vomiting by giving a teaspoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Give milk or whites of eggs beaten with water. Keep patient warm and quiet.

Cupric Sulfate, anhydrous, powder — 3x1lb — J.T. Baker
CuSO4 — Location: / / / / /Y-L1 / / / / / / /
Danger! May be fatal if swallowed. Do not take internally. Wash thoroughly after handling. Poison. Call a physician. Antidote: If co
nscious induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fliud is
ear. Give milk or whites of eggs beaten with water. Keep patient warm and quiet.

Cupric Sulfate, crystal — 3x1 lb. — Fisher: Retort Pharmaceutical Co.
CuSO4.5H2O — Location: / / / / /Y-L1 / / / / / / /
Skin irritant. Avoid contact with skin, eyes or clothing. Wash well with water. For eyes, get medical attention. Poison. Antidote: C
all a physician at once! Lavage with large quantities of water, preferably containing 1 oz. milk of magnesia.
Give milk or white of eggs beaten with water as a demulcent. Give potassium ferrocyanide, 0.5g. in water.

Cupric Sulfate, fine crystals — 1 lb. — Mallinckrodt
CuSO4.5H2O — Location: / / / / / /S-L1 / / / / / /

Cuprin — 2x1 lb. — Perkin-Elmer
Location: / / / / / / / /S-Ins / / / /

Curcumin (crystalline) — 2x25 g — Eastman Kodak Co. Indicator pH 7.4-8.6, 10.2-11.8
(2-CH3OC6H3-1-OH-4-CH:CHCO)... Location: / / / / /Y-L1 / / / / / / /

Cyanocobalamin (Vitamin B12) — 500 mg — Sigma
Location: / / / / / /S-L1 / / / / / /

Cysteine Hydrochloride, mono, anhydrous — 10g — Tower Drug & Chem. Co.
Location: / / / / /Y-L1 / / / / / / /

Cytoseal 280 — 3x16 oz — VWR
Location: / / / / / / /S-L2 / / / / /

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d(+)-Mannose — 25 g — Sigma
Location: / / / / / / /S-L2 / / / / /

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d-Biotin (Vitamin H) — 500 mg — Sigma
Location: / / / / / /S-L1 / / / / / /

D-Glucose, anhydrous — 1 lb — Mallinckrodt
CH2OHCH(CHOH)3CHOHO — Location: / / / / / / /S-L2 / / / / /

D-Glucose, anhydrous — 3kg+6 lbs. — Eastman Kodak Co.: Mallinckrodt
CH2OHCH(CHOH)3CHOHO — Location: / / / / /Y-L1 / / / / / / /

D-Glucuronic Acid Lactone (Glucuronolactone) — 25 g — Sigma
Location: / / / / /Y-L1 / / / / / / /

D-Pantothanic Acid — 50g
Location: / / / / / /S-L1 / / / / / /

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d-Tartaric Acid, powder (L-Tartaric Acid) — 3x1 lb. — J.T. Baker
HOCO(CHOH)3COOH — Location: / / / / /Y-L1 / / / / / / /

Dekophane cement — 40 ml — Crystal Essence Corp.
Location: / / / / /Y-L1 / / / / / / /

Deoxyribonuclease I, Type I — 10 mg — Sigma
Location: / / / / / /S-L1 / / / / / /

Dextrose, anhydrous — 4x1 lb. — Allied Chemical: Matheson, Coleman & Bell
C6H12O6 — Location: / / / / /Y-L1 / / / / / / /

Di-Sodium Hydrogen Orthophosphate, anhydrous 100 g Mallinckrodt
Na2HPO4 Location: / / / / /Y-L1 / / / / / / /

Diaphane 50 ml General Biological Supply House Inc.
Location: / / / / /Y-L1 / / / / / / /

Diatomaceous Earth 1 lb. Schaar and Company
Location: / / / / /Y-L1 / / / / / / /

Dibutyltin oxide 2x100 g Aldrich Chemical Co.
[CH3(CH2)3]2Sn(=O) Location: / / / / / /S-L1 / / / / / /

Dihydrostreptomycin Sulfate 5 g Sigma
Location: / / / / / /S-L1 / / / / / /

Dimethyl Sulfoxide (DMSO) (Methyl Sulfoxide) 2x1l+500ml J.T. Baker; Sigma; Crown Zellerback Corp.
(CH3)2SO Location: / / / / /Y-L1 / / / / / / /
Warning! Harmful if absorbed through skin or inhaled. May cause eye damage. Causes irritation. Avoid contact with eyes, skin and clothing. Avoid breathing vapor. Keep in tightly closed container. Use with adequate ventilation. Wash thoroughly after handling. First Aid: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes, call a physician. If inhaled, remove to fresh air and, if necessary, give oxygen or apply artificial respiration. Call a physician.

Dimethylglyoxime, powder 1 oz. J.T. Baker
CH3C(:NOH)C(:NOH)CH3 Location: / / / / /Y-L1 / / / / / / /

Dioxane (stabalized) 1 pt. Mallinckrodt
C4H8O2 Location: / / / / /Y-L1 / / / / / / /
Flammable. Vapor harmful. Tends to form explosive peroxides especially when anhydrous. Keep away from heat, sparks and open flame, Keep container closed. Use only with adequate ventilation. Avoid prolonged or repeated contact with skin. Do not allow to evaporate to near dryness unless absence of peroxides has been shown. Addition of appropriate reducing agents will lessen peroxide formation. Store at room temperature above 53 deg.F.

Diphenylamine, free base, purified 10 g Sigma
Location: / / / / / / /S-L2 / / / / /
Harmful if absorbed through skin. Causes irritation.

Disodium (Ethylenedinitrolo) tetraacetate, 2 hydr. 2x1/4lb+1b J.T. Baker
C10H14O8N2Na2.2H2O Location: / / / / /Y-L1 / / / / / / /

Disodium Ethylenediaminetetraacetate, powder 3x1lb+1/4b Fisher; J.T. Baker; Mallinckrodt
C10H14O8N2Na2.2H2O Location: / / / / /Y-L1 / / / / / / /

Disodium Ethylenedinitrolotetraacetate, dihydrate 50 g J.T. Baker
Na2C10H14N2O8.2H2O Location: / / / / / /S-L1 / / / / / /

Disodium Phosphate, anhydrous powder 1 lb. Schaar and Company
Location: / / / / /Y-L1 / / / / / / /

Dithiothreitol 5 g Sigma
Location: / / / / / / /S-L2 / / / / /

DL-6,8-Thioctic Acid (DL-a-Lipoic Acid), Oxidized 500 mg Sigma
Location: / / / / / /S-L1 / / / / / /

DL-Alanine (DL-Aminopropionic Acid) 25 g Sigma
Location: / / / / / /S-L1 / / / / / /

DL-B-Phenylalanine 25 g Matheson, Coleman & Bell
Location: / / / / /Y-L1 / / / / / / /

DL-Citrulline 1 g Sigma
Location:

DL-Dithiothreitol — 10 g — Sigma
Location: / / / / / / /S-L2 / / / / /

DL-Methionine — 100 g — Matheson. Coleman & Bell
Location: / / / / /Y-L1 / / / / / / /

...O (Dimethyl Sulfoxide), Spectrophotometric or. — 1 qt+500ml — Crown Zellerbach Corp.. Baker
(CH3)2SO Location: / / / / / / /S-L2 / / / / /
Avoid prolonged contact with skin. contact with eyes, or breathing vapors of DMSO or DMSO aersol mists. Avoid contact with DMSO solu tions containing toxic materials since DMSO may penetrate the skin under certain conditions and may carry such materials into the body. If frozen, thaw completely by placing container in a warm water bath or room before withdrawing DMSO.

Dopamine BSA Conjugate — INCSTAR
Location: / / / / / / /S-L2 / / / / /

Dowex 50W-X8 spheres. 200-400 mesh — 1 lb — J.T. Baker
ionic form H+ Location: / / / / /Y-L1 / / / / / / /

Dowex-1 Chloride form — 100g — Sigma
Location: / / / / / / /S-L2 / / / / /

Drierite — 3x1lb+5lb — W.A.Hammond Drierite Co.
CaSO4. anhydrous Location: / / / / /Y-L1 / / / / / / /

Dye B-4 (Bromophenol Blue) — 2x1 g — Beckman
Location: / / / / /Y-L1 / / / / / / /

Dysprosium Chloride 99.9% — 2 g — A.D. Mackay, Inc.
Location: / / / / /Y-L1 / / / / / / /

EDTA, powder — 1 lb — Baker
(OCOCH2)2NCH2(CH2COOH)2 Location: / / / / /Y-L1 / / / / / / /

Edwal Anti-Stat Film Cleaner — 4 fl oz — Edwal Scientific Products Corp.
Location: / / / / / / / / / /S-DkR / /
Caution: Contains Chlorothene. Harmful if taken internally. Avoid prolonged breathing of fumes.

Edwal Blue Color Toner — 4 fl oz — Edwal Scientific Products Corp.
Location: / / / / / / / / / /S-DkR / /
Caution: Contains denatured alcohol. Harmful if swallowed.

Edwal Hypo-Chek — 22 ml — Edwal Scientific Products Corp.
Location: / / / / / / / / / /S-DkR / /

Ehrlich's Hematoxylin — 500 ml — no label
Location: / / / / / /S-L1 / / / / / /

Eosin B — 25 g — Hartman-Leddon Co.
Location: / / / / /Y-L1 / / / / / / /

Eosin Y — 3x25 g — J.T. Baker. Stain
Location: / / / / / /S-L1 / / / / / /

Eosin. Free Acid (tetrabromo fluorescene) — 25 g — J.T. Baker
C20H8Br4O5 Location: / / / / / /S-L1 / / / / / /

Eriochrome Black T — 25 g — Fisher
Location: / / / / /Y-L1 / / / / / / /

Location: / / / / / /S-L2 / / / / /

Ethyl Alcohol, completely denatured 4 l Mallinckrodt
Location: / / / / / /S-L1 / / / / / /

Composition: 100 parts 190 Ethyl Alcohol, 4 parts Methyl Isobutyl Ketone, 1 part Kerosene. Flammable liquid. Harmful if swallowed or inhaled. Causes eye irritation. Keep away from heat, sparks and open flame. Keep container closed. Avoid breathing vapor. Use with adequate ventilation. Avoid contact with eyes, skin, clothing. Wash thoroughly after handling. First Aid: If swallow, induce vomiting immediately by giving 2 glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. If inhaled remove to fresh air. If not breathing give artificial respiration. If breathing is difficult give oxygen. In case of contact immediately flush skin or eyes with plenty of water for at least 15 minutes. In all cases call a physician.

Ethyl Alcohol, completely denatured 3x4l Fisher
Location: / /Sit-2 / / / / / / / / / /

Composition: 100 parts 190 Ethyl Alcohol, 4 parts Methyl Isobutyl Ketone, 1 part kerosene. Flammable liquid. Harmful if swallowed or inhaled. Causes eye irritation. Keep away from heat, sparks, and open flame. Keep container closed. Avoid breathing vapor. Use with adequate ventilation. Avoid contact with eyes, skin, clothing. Wash thoroughly after handling. First Aid: If swallowed, induce vomiting immediately by giving 2 glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. In all cases call a physician.

Ethyl Alcohol, Dehydrated 200 Proof Punctilious 3x1gal Quantum Chemical Corp.
Location: / /Sit-2 / / / / / / / / / /

Ethyl Alcohol, Dehydrated 200 Proof Punctilious 2x1 gal Quantum Chemical Corp.
Location: / / / / / / /S-L2 / / / / /

Ethyl Carbamate 250 g J.T. Baker
NH2COOC2H5 Location: / / / / /Y-L1 / / / / / / /

Ethylene Carbonate 100 g no label except: Eastman, practical; distill!
Location: / / / / /Y-L1 / / / / / / /

Ethylene Carbonate, 98% (1,3-dioxolan-2-one) 88.1 g Aldrich Chemical Co.
Location: / / / / /Y-L1 / / / / / / /

Ethylene Dichloride, purified 1 qt J.T. Baker
ClCH2CH2Cl Location: / / / / /Y-L1 / / / / / / /

Flammable. Harmful if inhaled. Keep away from heat, sparks, and open flame. Avoid breathing vapor. Keep in well-closed container. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. If inhaled, move patient to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician. In case of fire, use water spray, foam, dry chemical or CO2. Flush spill area with water.

Ethylene Glycol 2x1qt J.T. Baker
HOCH2CH2OH Location: / / / / /Y-L1 / / / / / / /

Harmful if swallowed. Avoid breathing vapor. Wash thoroughly after handling. First Aid: If swallowed, if conscious, induce vomiting and call a physician.

Ethylenediamine Tetraacetic Acid, powder 1 lb. Allied Chemical
(HOOCCH2)2NCH2CH2N(CH2COOH)2 Location: / / / / / /S-L1 / / / / / /

Ethylenediaminetetraacetic Acid, anhydrous 100 g Sigma
Location: / / / / / / /S-L2 / / / / /

Ethylenedinitrolo-tetraacetic Acid, powder 5 x 1 lb
Location: / / / / /Y-L1 / / / / / / /

ETOH, 70% with water 1/2gal+4l no label
Location: / /Sit-2 / / / / / / / / / /

Location: / / / /Y-L1 / / / / / / /

Euparal Essence 100 ml ASCO

Location: / / / / / / /S-L2 / / / / /

Euparal Mountant 50 ml GBI Labs Limited

Location: / / / / /Y-L1 / / / / / / /

Euparal Mountant 50 ml ASCO

Location: / / / / / / /S-L2 / / / / /

Fast Blue Salt B (Azoic Diazo Component 48) 25 g Matheson. Coleman & Bell

Location: / / / / /Y-L1 / / / / / / /

Fast Green FCF 2 x 10 g Allied Chemical; Matheson.Coleman & Bell

Location: / / / / /Y-L1 / / / / / / /

Fast Stain B 4128 946 ml Harleco

Location: / / / / /Y-L1 / / / / / / /

Danger. May be fatal or cause blindness if swallowed. Do not pipet by mouth. Vapor harmful. Poison. Flammable. Causes eye irritation . Do not get in eyes, on skin or clothing. Use with adequate ventilation.
Keep away from heat, sparks, and open flame. Wash thoroughly after handling. Cannot be made nonpoisonous. If swallowed, call a physi cian immediately. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
Call a physician.

Ferric Ammonium Sulfate, crystal 1 + 1/4 lb J.T. Baker

$FeNH_4(SO_4)_2.12\ H_2O$ Location: / / / / /Y-L1 / / / / / / /

Ferric Chloride, 6-Hydrate, lump 1 lb. J.T. Baker

$FeCl_3.6H_2O$ Location: / / / / / /S-L1 / / / / / /

Warning! Causes irritation. Harmful if swallowed.

---

rric Chloride, lump 1 lb. Schaar and Co.

Location: / / / / /Y-L1 / / / / / / /

Ferric Phosphate Soluble, (Iron Phosphate Soluble) 5 lb. Mallinckrodt

Location: / / / / /Y-L1 / / / / / / /

Ferrous Sulfide (iron sulfide), tech. granular 1 lb. Scientific Supplies Co.

Location: / / / / /Y-L1 / / / / / / /

Finquel (Tricaine Methanesulfonate) (MS222) 3x100g Averst

Location: / / / / / /S-L1 / / / / / /

Finquel (Tricaine Methanesulfonate) (MS222) 1000 g

Location: / / / / / / /S-L2 / / / / /

Finquel (Tricaine Methansulfonate) (MS222) 100 g Averst

Location: / / / / / / / / /S-Wet / / /

Folic Acid, crystalline 2x5 g Nutritional Biochemicals Corp.

Location: / / / / / /S-L1 / / / / / /

Folinic Acid, Calcium Salt (N5-Formyltetrahydrop.. 25 mg Sigma

Location: / / / / / /S-L1 / / / / / /

Formaldehyde Solution 1 gal Mallinckrodt

$HCOH$ Location: / / / / / /S-L1 / / / / / /

Danger! Contains Methanol. May be fatal if swallowed or inhaled. Causes irritation of skin,eyes, nose and throat. May cause skin sen sitization. Avoid prolonged or repeated contact. Avoid prolonged breathing of vapor. Use with adequate ventilation.

For eyes get medical attention. Call a physician. Antidote: If swallowed give a teaspoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Give whites of eggs beaten with water, or give milk.

Formaldehyde Solution 2 gal+36 l Mallinckrodt, MCB Reagents
HCHO Location: / /Sit-2 / / / / / / / / / /
Danger! Contains Methanol. May be fatal if inhaled or swallowed. Causes irritation of skin,eyes, nose, throat. May cause skin sensit
tion. Avoid prolonged or repeated contact. Avoid prolonged breathing of vapor. Use with adequate ventilation.
...son. Can not be made nonpoisonous.
In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.
Call a physician. Antidote: If swallowed, give a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clea
r. Give milk or white of egg beaten with water.

Formaldehyde Solution, 37% 2x3.78 l VWR Scientific
HCOH + 10-15% Methanol Preserv Location: / / / / / / /S-L2 / / / / /
Danger! May be fatal or cause blindness if swallowed. Cannot be made nonpoisonous. Causes severe eye burns. Harmful if inhaled or ab
sorbed through skin. Vapor causes eye irritation. May cause allergic skin reaction. Combustible. Wash thoroughly
after handling. Do not get in eyes. Avoid breathing mist or vapor. Keep container closed. Use with adequate ventilation. Avoid prolo
nged or repeated contact with skin. Keep away from heat, sparks,and open flame. Poison.
Call a physician. If swallowed, if conscious, induce vomiting immediately by giving 2 glasses of warm water and touching the back of
the throat with finger or blunt object, or by giving 1 tablespoonful of salt in a glass of warm water. Repeat until
vomit fluid is clear. Give milk or egg whites beaten in water. In case of spill or leak flush area with water spray. Do not store be
low 13 deg C.

Formaldehyde Solution, 37% 5x19l+7gal Scientific Products; Fisher; VWR Scientific
HCOH + 10-15% Methanol preser. Location: / /Sit-2 / / / / / / / / / /
Danger! May be fatal or cause blindness if swallowed. Cannot be made nonpoisonous. Causes severe eye burns. Harmful if inhaled or ab
sorbed through skin. Vapor causes eye irritation. May cause allergic skin reaction. Combustible.
Wash thoroughly after handling. Do not get in eyes. Avoid breathing mist or vapor. Keep container closed. Use with adequate ventilat
ion. Avoid prolonged or repeated contact with skin. Keep away from heat, sparks and open flame. Poison.
Call a physician. If swallowed, if conscious, induce vomiting immediately by giving 2 glasses of warm water and touching the back of
the throat with
finger or blunt object, or by giving 1 tablespoon of salt in a glass of warm water. Repeat until vomit fluid is clear. Give milk or
;o whites beaten in water. In case of spill or leak flush area with water spray. Do not store below 13 deg. C.

Formaldehyde Solution, 37% 3.78 l+4 l VWR, Mallinckrodt
HCOH + 10-15% Methanol preserv Location: / / / / / / / / /S-Wet / / /
Danger! May be fatal or cause blindness if swallowed. Cannot be made nonpoisonous. Causes severe eye burns. Harmful if inhaled or ab
sorbed through skin. Vapor causes eye irritation. May cause allergic skin reaction. Combustible.
Wash thoroughly after handling. Do not get in eyes. Avoid breathing mist or vapor. Keep container closed. Use with adequate ventilat
ion. Avoid prolonged or repeated contact with skin. Keep away from sparks, heat and open flame. Poison.
Call a physician. If swallowed, if conscious, induce vomiting immediately by giving 2 glasses of warm water and touching the back of
the throat with finger or blunt object, or by giving 1 tablespoonful of salt in a glass of warm water.
Repeat until vomit fluid is clear. Give milk of egg whites beaten in water. In case of spill or leak flush area with water spray. Do
not store below 13 deg C.

Formic Acid 3x1pt Matheson, Coleman & Bell; J.T. Baker
HOCOOH Location: / / / /4-Pic / / / / / / / /
Causes burns. Avoid contact with skin and eyes. Avoid breathing vapor. In case of contact, immediately flush skin or eyes with plent
y of water for at least 15 minutes; for eyes, get medical attention. Poison. Call a physician.
Antidote: External: Flood with tap water, then water containing sodium bicarbonate. Internal: Do not give emetics. Give tap water, m
ilk or milk of magnesia. Give whites of eggs beaten with water.

Freez-It 8-14 oz. Chemtronics
Location: / / / / / / /S-L2 / / / / /

Friars' Balsam 50 ml R.D. Toopin & Sons PTy Ltd.
Location: / / / / /Y-L1 / / / / / / /

Fuchsin, Acid (Acid violet 19) 50 g Sigma
Location: / / / / / /S-L1 / / / / / /

Gallamin Blue 10 g Harleco
Location: / / / / /Y-L1 / / / / / / /

Gelatin, U.S.P., powder 500 gr Baker, no label
Location: /S-L2

Gelatin, U.S.P., powder			5+1lb	J.T. Baker									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Gentamicin Sulfate (Gentamycin Sulfate)			250 mg	Sigma									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Glass Wool			sm bottle	no label									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Glutaraldehyde Solution, 50% w/w			2x3 kg	Kodak, Ted Pella									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/
Liquid causes eye injury and skin irritation. Absorbtion through skin may be harmful. May be harmful if swallowed. Do not get in eye s or on skin. Do not take internally. If swallowed call a physician. In case of contact flush skin or eyes with plenty of water for at least 15 minutes. For eyes get medical attention. Keep refrigerate d or in a very cool place to retard polymerization.													
Glutaraldehyde Solution, 50% w/w			lot	Fisher									
	Location:	/	/Sit-2	/	/	/	/	/	/	/	/	/	/
Liquid causes eye injury and skin irritation. Absorbtion through skin may be harmful. May be harmful if swallowed. Do not get in eye s or on skin. Do not take internally. If swallowed, call a physician. In case of contact flush skin or eyes with plenty of water for at least 15 minutes. For eyes, get medical attention. Keep refrigerat ed or in a very cool place to retard polymerization.													
Glutaraldehyde, grade I			10 ml	Sigma									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/
Glutaric Dialdehyde			3 kg	Aldrich									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/
Glycerin (Glycerol) HOCH2CHOHCH2OH			2x500 ml	Baker									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Glycerin (Glycerol) HOCH2CHOHCH2OH			5 sm botl	J.T. Baker									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Glycerin Jelly			100 ml	General Biological Supply House									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Glycerin, synthetic, anhydrous HCOH			2x16 fl oz	Humco Laboratory. An emollient and demulcent.									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Glycine, ammonia free (Aminoacetic Acid)			250g	Matheson, Coleman & Bell									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Glycyl-Glycine, free base			10 g	Sigma									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Goat anti-rabbit immunoglobulin serum			2x2 ml	ATAB									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/
Gonadotropin			2x2000IU	Sigma									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/
Graphite			10 g	no label									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Guanidine HCl (Aminomethanamidine HCl), grade I			25 g	Sigma Chemical Co.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Guanidine Monohydrochloride HN2C(:NH)NH2.HCl			100 g	J.T. Baker									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/

Gum Acacia, powdered 1 lb S.B. Penick & Co.
Location: / / / / /Y-L1 / / / / / / /

Hematoxylin, certified stain 2x25g+3x10 J.T. Baker
C16H1406.nH20 Location: / / / / / /S-L1 / / / / / /

Hexamethylenamine, N.F. (Hexamethylene-tetramine) 3 lb Fisher: Eastman Kodak Co.
(CH2)6N4 Location: / / / / /Y-L1 / / / / / / /

Hexamethylenetetramine 5 kg Baker
(CH2)6N4 Location: / / / / / / /S-L2 / / / / /
Caution. May cause skin irritation. Avoid contact with skin. Storage: Keep in well closed container in a cool, dry location.

Hexamethylenetetramine 3kg J.T. Baker
(CH2)6N4 Location: / /Sit-2 / / / / / / / / / /
Caution. May cause skin irritation. Avoid contact with skin. Storage: Keep in well closed container in a cool, dry location.

Hexamethylenetetramine 500 g Baker
(CH2)6N4 Location: / / / / /Y-L1 / / / / / / /
Caution. May cause skin irritation. Avoid contact with skin. Storage: Keep in well closed container in a cool, dry location.

Hexamethylenetetramine 500 g Baker
(CH2)6N4 Location: / / / / / / / / /S-Wet / / /
Caution. May cause skin irritation. Avois contact with skin. Storage: Keep in well closed container in a cool, dry location.

Hexanes 3x20l+5.5l J.T. Baker
C6H14 Location: / / /Sit-3 / / / / / / / / /
nger! Extremely flammable. Keep away from heat, sparks and open flames. Keep container tightly closed. Avoid breathing vapor. Avoi
d contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling.
In case of fire use water spray, alcohol foam, dry chemical, or carbon dioxide. Flush spill area with water spray. Flash point -35 d
eg. F.

Histoclad, Adams 16 oz Clay Adams
Location: / / / / / / /S-L2 / / / / /

Hydrazine sulfate, crystal 1lb+1/4lb J.T. Baker
(NH2)2H2SO4 Location: / / / / /Y-L1 / / / / / / /
May cause irritation. Avoid contact with skin, eyes, and clothing. Avoid breathing dust. In case of contact, flush with plenty of wa
ter; for eyes, get medical attention.

Hydrchloric Acid 5x6 lb
HCl Location: / / / / / / /S-L2 / / / / /
Danger! Causes burns. May be fatal if swallowed. Do not get in eyes, on skin, on clothing. Do not breath vapor. Keep in tightly clos
ed container in a cool area. Loosen closure carefully. Wash thoroughly after handling.
Flush away spill by flooding with water applied quickly to entire spill. Corrosive material. Call a physician. In case of eye contac
t flush with water for at least 15 minutes. For skin contact flood with tap water then water containing sodium
bicarbonate. Internal: Do not give emetics.Give tap water, milk or milk of magnesia. Give egg whites beaten with water.

Hydrochloric Acid 20x6lb+ J.T. Baker; E.M. Science: Hallinckrodt
HCl Location: / / / /Sit-4 / / / / / / / /
Danger! Causes burns. May be fatal if swallowed. Do not get in eyes, on skin, on clothing. Do not breath vapor. Keep in tightly clos
ed container in a cool area. Loosen closure carefully. Wash thoroughly after handling.
Flush away spill by flooding with water applied quickly to entire spill. Corrosive material.
all a physician. In case of eye contact, flush with water for at least 15 minutes. For skin contact, flood with tap water then wate
r containing sodium bicarbonate. Internal: Do not give emetics. Give tap water, milk, or milk of magnesia.
Give whites of eggs beaten with water.

Hydrochloric Acid, analytical concentrate 1 unit J.T. Baker
HCl Location: / / / /Sit-4/ / / / / / / /

Hydrogen peroxide, 30% (Superoxol) 2x1 qt Mallinckrodt, J.T. Baker
H2O2 Location: / / / / / / / / /S-Wet / / /
Store in original vented container in a dry area. Keep out of sun and away from heat. Strong oxidizer. Causes irritation. May cause eye injury. Effects may be delayed. Loosen closure carefully to release pressure. Do not get in eyes - wear goggles.
Avoid contact with skin - wear neoprene, butyl rubber or vinyl gloves. Avoid contact with combustible materials. Drying of product o clothing or other combustible material may cause fire.
Avoid contamination from any source including metals dust and organic materials. Such contamination may cause rapid decomposition, g eneration of large quantities of oxygen gas, and high pressure. In case of contact, immediately flush eyes with
plenty of water for at least 15 minutes. Call a physician. Flush skin with water. Remove and wash contaminated clothing promptly and thoroughly. In case of fire, flood with water. In case of spill or leak, flush away by flooding with water quickly.

Hydroquinone, purified 500 g Schaar and Co.
Location: / / / / / / /S-L2 / / / / /

Hydroquinone, purified 500g Schaar and Co.
Location: / / / / /Y-L1 / / / / / / /

Imidazole 5 g Sigma
Location: / / / / / / /S-L2 / / / / /

Immersion Oil, Type A 1 fl. oz. Cargille: non-drying oil for microscopy.
Location: / / / / / / /S-L2 / / / / /

Immersion Oil, Type B 1+¼ oz. R.P. Cargille Labs., Inc. For microscopy.
Location: / / / / /Y-L1 / / / / / / /

Indole-3-Acetic Acid 10 g J.T. Baker
C6H5NHCH:CCH2COOH Location: / / / / /Y-L1 / / / / / / /

Inositol 10 g Difco
Location: / / / / / /S-L1 / / / / / /

Iodine, sublimed 500 g Baker
I Location: / / / / / /S-L1 / / / / / /
Hazardous solid. Do not take internally. Poison. Call a physician. Antidote: Give starch paste or mashed potatoes. If conscious indu ce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear.
Give milk or whites of eggs beated with water. Keep patient warm and quiet.

Iodine, Sublimed 1 lb J.T. Baker
I Location: / / / / /Y-L1 / / / / / / /
Hazardous solid. Do not take internally. Poison. Call a physician. Antidote: Give starch paste or mashed potatoes. If conscious indu ce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear.
Give milk or whites of eggs beaten with water. Keep pateint warm and quiet.

Iron(ic) Chloride 4 oz. Fisher
FeCl3.6H2O Location: / / / / /Y-L1 / / / / / / /

Isopropanol, 15-95% 10x1 gal no label
Location: / / / / / /S-L1 / / / / / /

Isopropanol, Tech grade 2x4 l Henrichs
Location: / /Sit-2 / / / / / / / / /

Isopropanol, tech grade 5 gal (Feder)
Location: / /Sit-2 / / / / / / / / /

Isopropyl Alcohol 7x5 gal + (Paul)
Location: / /Sit-2 / / / / / / / / /

Isopropyl Alcohol, anhydrous 4x55 gal (Norcross)
Location: / /Sit-2 / / / / / / / / /

Isopropyl Alcohol, anhydrous 99.7% minimum 3x1 gal VWR
Location: / / / / / / /S-L2 / / / / /

Kodak Activator S II 9.5 l+1 qt Eastman Kodak Co.
Location: / / / / / / / / / /S-DkR / /
ning! Causes eye burns. Causes skin irritation. Do not get in eyes. Avoid prolonged or repeated contact with skin. In case of con tact, immediately flush with plenty of water; for eyes get medical attention. (Contains Potassium Hydroxide)

Kodak D-19 Developer 1 lb 5 oz Kodak
Location: / / / / / / / / / /S-DkR / /

Kodak Dektol Developer 2x19.4 oz Kodak
Location: / / / / / / / / / /S-DkR / /

Kodak Developer D-76 2x14.6 oz Eastman Kodak Co.
Location: / / / / / / / / / /S-DkR / /

Kodak Film Cleaner 4 fl oz Eastman Kodak Co.
Location: / / / / / / / / / /S-DkR / /
Contains Heptane and 1,1,2trichloro-1,2,2trifluoroethane. Caution! Flammable mixture. Do not use near fire or flame. Danger. Harmful or fatal if swallowed. Use with adequate ventilation. Avoid prolonged or repeated contact with skin.
Do not take internally. Do not induce vomiting. Get medical attention.

Kodak Fixer 24 oz. Eastman Kodak Co.
Location: / / / / / / / / / /S-DkR / /

Jak Glutaraldehyde (50% in water) 2x500g Kodak
Location: / / / / / / / / / /S-DkR / /

Kodak Hypo Clearing Agent no label
Location: / / / / / / / / / /S-DkR / /

Kodak Hypo Clearing Agent 4x1.25gal Kodak
Location: / / / / / / / / / /S-DkR / /

Kodak Hypo-Test Solution 1 l Kodak
Location: / / / / / / / / / /S-DkR / /

Kodak Indicator Stop Bath 2x16 fl oz Eastman Kodak Co.
Location: / / / / / / / / / /S-DkR / /
Contains Acetic Acid. Danger. Poison. Causes severe burns. Harmful if swallowed. Do not get liquid or vapor in eyes, on skin, on clo thing. In case of contact, flush skin or eyes with plenty of water for at least 15 minutes.
If swallowed. DO NOT induce vomiting; give milk or water. Call a physician at once.

Kodak Microdol-X Developer 2x4.5 oz
Location: / / / / / / / / / /S-DkR / /

Kodak Photo-Flo 200 Solution 16+2x4 oz. Eastman Kodak Co.
Location: / / / / / / / / / /S-DkR / /

Kodak Print Flattening Solution 8 fl oz Eastman Kodak Co.
Location: / / / / / / / / / /S-DkR / /

Kodak Rapid Fixer 1 gal Kodak
Location: / / / / / / / / / /S-DkR / /

Kodak Rapid Fixer Test Solution 1 l Kodak
Location: / / / / / / / / / /S-DkR / /

Kodak Stabilizer Ektamatic 3 1a 1 gal Eastman Kodak Co.

Location: / / / / / / / / /S-BRR / /

Corrosive liquid. (Acetic Acid)

Kreb's Fluid 3 bottles no label

Location: / / / / /Y-L1 / / / / / / /

L(+)-Tartaric Acid (Dipotassium Salt) 100 g Sigma

Location: / / / / / / /S-L2 / / / / /

L-(+)-Arginine 25 g J.T. Baker

HN:C(NH2)NHCH2CH2CH2CH(NH2)... Location: / / / / /Y-L1 / / / / / / /

L-(+)-Histidine Monohydrochloride 25 g J.T. Baker

NHCH:NHCH:CCH2CH(NH2)COOH... Location: / / / / /Y-L1 / / / / / / /

L-Asparagine.H2O, crystalline 10 g Sigma

Location: / / / / / /S-L1 / / / / / /

L-Glutamic Acid (L-a-Aminoglutaric Acid) cryst. 100 g Sigma Chemical Co., Nut. Biochem.Corp.

Location: / / / / /Y-L1 / / / / / / /

Store with desiccant.

L-Glutamic Acid (L-a-Aminoglutaric Acid), crystal 100 g

Location: / / / / / /S-L1 / / / / / /

Store with dessicant.

L-Lysine 6x5 g Sigma

Location: / / / / / / /S-L2 / / / / /

L-Proline 5 g Matheson, Coleman & Bell

Location: / / / / /Y-L1 / / / / / / /

L-Tryptophan 5 g Sigma

Location: / / / / / / /S-L2 / / / / /

Lactic Acid 3x1 pt. J.T. Baker

CH3CHOHCOOH Location: / / / / /Y-L1 / / / / / / /

May cause burns. Avoid contact with skin, eyes and clothing. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes get medical attention. Poison. Call a physician.

Antidote: External: Flood with tap water, then water containing sodium bicarbonate. Internal: Give tap water, milk, or milk of magnesia. Give whites of eggs beaten with water.

Lanum, anhydrous (Lanolin anhydrous, Merck) 1 lb. Merck & Co.

Location: / / / / /Y-L1 / / / / / / /

Lead Chloride, crystalline powder 2x4 oz. Matheson, Coleman & Bell

PbCl2 Location: / / / / /Y-L1 / / / / / / /

May be absorbed through skin. Do not breath dust.

Lead Nitrate, crystal 500 g J.T. Baker

Pb(NO3)2 Location: / / / / /Y-L1 / / / / / / /

Poison. Danger! Strong oxidizer. Contact with other material may cause fire. May be fatal if inhaled or swallowed. Keep from contact with clothing and other combustible materials. Do not store near combustible materials.

Keep in tightly closed container in a cool, dry area. Do not breath dust or fumes. Avoid contact with eyes and skin. Use with adequate ventalitation. Remove and wash contaminated clothing promptly. Wash thoroughly after handling.

In case of fire, soak with water. In case of spill, sweep up and carefully remove. Flush spill area with water. Call a physician. If inhaled move patient to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. If swallowed, if conscious, immediately induce vomiting.

Lectin 4x5mg+25mg Sigma

Location: / / / / / / /S-L2 / / / / /

Light green or yellowish			100	Matheson, Coleman & Bell									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Lithium Carbonate, powder			1 lb	J.T. Baker									
LiCO3	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
ium Chloride, granular			500 g	J.T. Baker									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Lithium Chloride, powder			1/4 lb.	J.T. Baker									
LiCl	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Lithium Hydroxide, monohydrate			500 g	Sigma									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/
Danger. Causes burns. Avoid contact with eyes, skin and clothing.													
Liver Extract, powder, hog liver soluable fraction			1 g	Sigma									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Lugol's Solution			3 sm botls										
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Luxol Fast Blue MBSN			25 g	Morton Chemical Co.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
May cause skin irritation. May be harmful if swallowed. Avoid contact with skin or clothing. Avoid breathing vapor. Use with adequat e ventilation.													
Magnesium Acetate			2x1 lb.	Fisher									
Mg(C2H3O2)2.4H2O	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Magnesium Carbonate, Basic powder			1 lb.	Allied Chemical									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Magnesium Chloride, crystals			500 g	Fisher									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Magnesium Chloride, crystals			2x500 g	J.T. Baker									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Magnesium Chloride, purified			1 lb.	Baker									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/
Magnesium Chloride, technical grade			5 lb.	Allied Chemical									
MgCl2.6H2O	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Magnesium Disodium Ethylenediamine Tetraacetate			2x4 oz.	Fisher									
(Magnesium Disodium E.D.T.A.)	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Magnesium Metal turnings			2x1/4 lb.	J.T. Baker; Mallinckrodt									
Mg	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Magnesium Perchlorite, anhydrous granules			100 g	Carlo Erba: C N Analyzer									
Mg(ClO4)2	Location:	/	/	/	/	/	/	/	/S-Ins	/	/	/	/
Oxidizing. Harmful. Explosive when mixed with combustible material. Harmful if swallowed. Do not breath dust.													
Magnesium Standard, dry pack reagent			7-1ml+1-50	Hartman-Leddon Co.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Magnesium Sulfate			2 1/2 lbs.	Dow									
MgSO4	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Magnesium Sulfate, anhydrous powder			1 lb	Baker									
MgSO4	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/

...thoroughly after handling. If swallowed induce vomiting and call a physician.

Magnesium Sulfate, anhydrous, powder 2x1lb+5lbs Mallinckrodt
MgSO4 Location: / / / / /Y-L1 / / / / / / /
May be harmful if swallowed. Wash thoroughly after handling. If swallowed, induce vomiting and call a physician.

...esium Sulfate, crystal 1 lb Fisher
MgSO4.7H2O Location: / / / / / / /S-L2 / / / / /
May be harmful if swallowed. Wash thoroughly after handling. If swallowed induce vomiting and call a physician.

Magnesium Sulfate, crystal 2x5lb+4x1b Mallinckrodt; J.T. Baker; Fisher
MgSO4.7H2O Location: / / / / /Y-L1 / / / / / / /
May be harmful if swallowed. Wash thoroughly after handling. If swallowed, induce vomiting and call a physician.

Magnesium Nitrate 1 lb. Fisher
Mg(NO3)2.6H2O Location: / / / / /Y-L1 / / / / / / /

Malachite Green, control 25 g Difco
Location: / / / / /Y-L1 / / / / / / /

Maleic Acid Disodium Salt 2x100g+1kg Sigma
Location: / / / / / / /S-L2 / / / / /

Mallcosorb, 30-50 mesh 3 tubes Mallinckrodt. Indicating CO2 absorbent.
Location: / / / / /Y-L1 / / / / / / /

Manganese Chloride 2x1 lb Mallinckrodt
MnCl2.4H2O Location: / / / / /Y-L1 / / / / / / /

Manganous Chloride, 4-Hydrate crystal 4x1lb+2.5k J.T. Baker
MnCl2.4H2O Location: / / / / /Y-L1 / / / / / / /

Manganous Chloride, crystal 1 lb. Fisher
MnCl2.4H2O Location: / / / / / /S-L1 / / / / / /

Manganous Sulfate, monohydrate powder 2x5 lb J.T. Baker
MnSO4.H2O Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. Wash thoroughly after handling. If swallowed call a physician at once.

Manganus Chloride 125 g J.T. Baker
MnCl2.4H2O Location: / / / / / /S-L1 / / / / / /

Mannitol, powder 1 lb+250 g J.T. Baker; Matheson. Coleman & Bell
C6H14O6 Location: / / / / /Y-L1 / / / / / / /

Martius Yellow (Acid Yellow 24)(2,4-Dinitro-1-...) 10 g Allied Chemical
Location: / / / / /Y-L1 / / / / / / /
Avoid contact with skin. Do not breath dust.

Martius Yellow (Acid Yellow 24)(2,4-Dinitro-1...) 25 g Sigma
Location: / / / / / /S-L1 / / / / / /
Avoid contact with skin. Do not breath dust.

Melanin, synthetic 250 mg Sigma
Location: / / / / / /S-L1 / / / / / /

Mercuric Chloride, powder 100g+1/4lb Baker, Sigma
HgCl2 Location: / / / / / /S-L1 / / / / / /
Poison. Danger! May be fatal if swallowed. Avoid breathing vapor. Avoid contact with eyes. skin. clothing. Keep in tightly closed co
ntainer.Wash thoroughly after handling. Call a physician.
If swallowed. if conscious. immediately induce vomiting by giving a teaspoonful of salt in a glass of warm water and repeat until vo

Mercury sponges and Mercury indicator are recommended for spills of Mercuric Chloride.

Mercuric Chloride, powder 1 lb. Baker
HgCl2 Location: / / / / / / /S-L2 / / / / /
Poison. Danger! May be fatal if swallowed. Avoid breathing vapor. Avoid contact with eyes, skin, clothing. Keep in tightly closed co
ntainer. Wash throughly after handling. Call al physician.
If swallowed, if conscious, immediately induce vomiting by giving a teaspoonful of salt in a glass of warm water and repeat until vo
it fluid is clear. Give milk or whites of eggs beaten with water. Keep patient warm and quiet.
Mercury sponges and Mercury indicator are recommended for spills of Mercuric Chloride.

Mercuric Chloride, powder 2x1/4lb J.T. Baker
HgCl2 Location: / / / / /Y-L1 / / / / / / /
Poison. Danger! May be fatal if swallowed. Avoid breathing vapor. Avoid contact with eyes, skin, clothing. Keep in tightly closed co
ntainer. Wash thoroughly after handling. Call a physician.
If swallowed, if conscious, immediately induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until
vomit fluid is clear. Give milk or whites of eggs beaten with water. Keep patient warm and quiet.
Mercury sponges and Mercury indicator are recommended for spills of Mercuric Chloride.

Mercuric Iodide, red powder 2x1 lb. Mallinckrodt; J.T. Baker; Fisher
HgI2 Location: / / / / /Y-L1 / / / / / / /
Danger! May be fatal if swallowed. Do Not breath dust. Keep away from food or food products. Wash thoroughly before eating or smokin
g. Avoid contact with eyes or prolonged contact with skin. Take hot shower after work using plenty of soap.
Poison. Antidote: If conscious, induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fl
uid is clear. Give milk or whites of eggs beaten with water. Keep patient warm and quiet. Call a physician.

Mercuric Oxide Red, powder 1 oz. Mallinckrodt
HgO Location: / / / / /Y-L1 / / / / / / /
Harmful dust. Do not breath dust. Avoid contact with eyes or prolonged contact with skin. Keep away from feed or food products. Wash
thoroughly before eating or smoking. Poison. Call a physician. Antidote: Give milk or whites of eggs beaten with
water, then a tablespoonful of salt in a glass of warm water, and repeat until vomit fluid is clear. Repeat milk or whites of eggs b
eaten with water.

Mercuric Sulfate, powder 1 lb. J.T. Baker
HgSO4 Location: / / / / /Y-L1 / / / / / / /
Danger! Harmful dust. May be fatal if swallowed. Do not breath dust or vapor. Avoid contact with eyes or prolonged contact with skin
. Keep away from feed or food products. Wash thoroughly before eating or smoking. Use fresh clothes daily.
Take hot shower after work using plenty of soap. Poison. Call a physician. Antidote: If conscious induce vomiting by giving a tables
poonful of salt in a glass of warm water and repeat until vomit fluid is clear.
Give milk or whites of eggs beaten with water. Keep patient warm and quiet.

Mercurous Chloride, powder 1/4 lb. Mallinckrodt
HgCl Location: / / / / /Y-L1 / / / / / / /

Mercury (II) Oxide, red, 99% 100 g Aldrich Chemical Co.
Location: / / / / / /S-L1 / / / / / /
Severe poison! Light sensitive! Handle in hood!

Mercury, Waste sm btls no label
Location: / / / / /Y-L1 /S-L1 / / / / / /

Metanil Yellow Stain (Acid Yellow 36) 50 g Sigma; no label. For Mayer's mucicarmine.
Location: / / / / / /S-L1 / / / / / /
Avoid contact with skin. Do not breath dust.

Methanol 5gal+2 l Fisher; MCB Reagents (Mcdonald) (Henrichs)
CH3OH Location: / /Sit-2 / / / / / / / / /
Danger! Flammable. Poison. Harmful if inhaled. May be fatal or cause blindness if swallowed. Cannot be made nonpoisonous. Flash poin
t 50 deg. F. Wash thoroughly after handling. Avoid breathing vapor. Keep container closed.
Use with adequate ventilation. Keep away from heat, sparks, or open flame.

CH3OH Location: / /Sit-2 / / / / / / / / /

Danger. Flammable. Vapor harmful. May be fatal or cause blindness if swallowed. Cannot be made nonpoisonous. Keep away from heat, sparks, and open flame. Keep container closed. Avoid prolonged or repeated breathing of vapor.

Use only with adequate ventilation. Poison. Call a physician. If swallowed, give a tablespoon of salt in a glass of warm water. repeat until vomit fluid is clear. Give two teaspoonfuls of baking soda in glass of water.

Have patient lie down and keep warm. Cover eyes to exclude light. If splashed in eyes, immediately flush with water for at least 15 minutes.

Methanol (Methyl Alcohol), anhydrous 8 pts Mallinckrodt

CH3OH Location: / / / / / /S-L1 / / / / / /

Danger! Flammable. Vapor harmful. May be fatal or cause blindness if swallowed. Cannot be made nonpoisonous. Keep away from heat, sparks and open flame. Keep container closed. Avoid prolonged or repeated breathing of vapor.

Use with adequate ventilation. Poison. Call a physician. If swallowed, give a tablespoonful of salt in a glass of warm water. Repeat until vomit fluid is clear. Give two teaspoonfuls of baking soda in a glass of water.

Have patient lie down and keep warm. Cover eyes to exclude light. If splashed in eyes, immediately flush with water for at least 15 minutes.

Methimazole (1-Methylimidazole-2-thiol) 4x100 g Sigma

Location: / / / / / / /S-L2 / / / / /

Harmful if swallowed. Possible carcinogen.

Methyl Alcohol, anhydrous 2x4l Mallinckrodt

CH3OH Location: / / / / / / /S-L2 / / / / /

Methyl Cellulose (15 Centipoise) 1 lb. Fisher

Location: / / / / /Y-L1 / / / / / / /

Methyl Green (Ethylated Hexamethyl Pararosaniline) 10g Allied Chemical

Location: / / / / /Y-L1 / / / / / / /

Methyl Orange, powder 1oz+.5lb Mallinckrodt: no label

(CH3)2NC6H4N:NC6H4SO3Na Location: / / / / /Y-L1 / / / / / / /

Methyl Orange, powder 1 oz Mallinckrodt

(CH3)2NC6H4N:NC6H4SO3Na Location: / / / / / /S-L1 / / / / / /

Methyl Red 5 g+1 oz no label

Location: / / / / /Y-L1 / / / / / / /

Methyl Salicylate (Oil of Winteroreen), synthetic 1 pt J.T. Baker

Location: / / / / /Y-L1 / / / / / / /

Methylene Chloride (dichloromethane) 8pt+4l J.T. Baker

CH2Cl2 Location: / / /Sit-3 / / / / / / / / /

Harmful if inhaled. May cause irritation. Avoid breathing vapor.Avoid contact with eyes, skin or clothing. Keep container tightly closed. Use with adequate ventilation. Wash thoroughly after handling.

If inhaled, remove to fresh air. Give oxygen or apply artificial respiration if necessary. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes, call a physician.

Metolol no label

Location: / / / / /Y-L1 / / / / / / /

Mineral Oil 100 ml no label

Location: / / / / /Y-L1 / / / / / / /

Molecular Sieve 1/2 lb no label

Location: / / / / /Y-L1 / / / / / / /

Molecular Sieves 500 g Fisher

Location: / / / / / / /S-L2 / / / / /

Molybdenum Trioxide, powder 1/4 lb. Mallinckrodt
MoO3 Location: / / / / /Y-L1 / / / / / / /

Molybdic Acid, powder 1 lb. J.T. Baker
MoO3 Location: / / / / /Y-L1 / / / / / / /

Monochloracetic Acid, crystal 2x1 lb J.T. Baker
...2ClCOOH Location: / / / / /Y-L1 / / / / / / /
Danger! Causes severe burns. May be fatal if swallowed. Do not take internally. Do not get in eyes, on skin, on clothing. In case of contact, flush eyes with plenty of water for at least 15 minutes; get medical attention.
Wash skin with plenty of soap and water. Remove and wash clothing before re-use. Poison. Call a physician. Antidote: Internal: Give immediately large quantities of water, milk, lime water, chalk and water, or milk of magnesia; repeat frequently.
Avoid causing vomiting. Give stimulants and artificial respiration if necessary.

Monoclonal Anti-parvalbumin Clone PA-235 0.5 ml Sigma
Location: / / / / / / /S-L2 / / / / /

Morpholine (Tetrahydro-1,4-oxazine) 250 ml Sigma
Location: / / / / / / /S-L2 / / / / /

Multisol 5x4 l Isolab, Inc.
Location: / / /Sit-3 / / / / / / / / /
Flammable liquid. Contains petrolium naphtha. Flash point 110 deg. F. Multipurpose assay medium for liquis scintillation counting. Expiration Date: 1/87.

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myo-Inositol (i-Inositol, meso-Inositol) 100 g Sigma
Location: / / / / / /S-L1 / / / / / /

N-1-Naphthyl-ethylenidiamine Dihydrochloride 100+10 g Fisher; Matheson, Coleman & Bell
Location: / / / / /Y-L1 / / / / / / /

Naphtha-Petroleum UN-1255 4 l Cheek
Location: / / /Sit-3 / / / / / / / / /

Neomycin Sulfate 1 g Sigma
Location: / / / / / /S-L1 / / / / / /

Neopeptone 1 lb. Difco Lab.
Location: / / / / /Y-L1 / / / / / / /

Neutral Red (Toluylene Red) 2x10 g Baker, Allied Chem. & Dye
Location: / / / / / / /S-L2 / / / / /

Neutral Red (Toluylene Red) 10 g J.T. Baker; Allied
Location: / / / / /Y-L1 / / / / / / /

Neutral Red, aqueous 100 ml no label
Location: / / / / / /S-L1 / / / / / /

Nickel Ammonium Sulfate, 6 Hydrate crystal 2x500 g Fisher, J.T. Baker
$NiSO_4(NH_4)_2SO_4.6H_2O$ Location: / / / / / / /S-L2 / / / / /

Nickelous Chloride, crystal 2x1/4 lb. J.T. Baker
$NiCl_2.6H_2O$ Location: / / / / /Y-L1 / / / / / / /

Nicotinic Acid (Niacin) 100 g Nutritional Biochemicals Corp.
Location: / / / / / /S-L1 / / / / / /

Nigrosin 25 g+10 g Allied Chemical, Harleco
Location: / / / / /Y-L1 / / / / / / /

Location: / / / / /Y-L1 / / / / / / /

Ninhydrin (1,2,3-Triketohydrindene Hydrate),cryst. 5 g Sigma Chemical Co.
Location: / / / / /Y-L1 / / / / / / /

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l .c Acid 26x1pt+7lb J.T. Baker: no label
HnO3 Location: / / / /Sit-4 / / / / / / / /
Danger! Causes severe burns. Vapor extremely hazardous. May cause nitrous gas poisoning. Spillage may cause fire or liberate dangero
us gas. May be fatal if swallowed. Do not breath vapor. Do not get in eyes, on skin, on clothing.
Keep in tightly closed, light resistant container in a cool area. Loosen closure cautiously. In case of fire, soak with water. Flood
spill area with water spray. Poison. Call a physician.
First Aid: Internal: Give tap water, milk or milk of magnesia. Give whites of eggs beaten with water. External: In case of contact.
immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing
and shoes. Wash clothing before re-use. Corrosive material.

Nitric Acid 2x1 pt Baker
HNO3 Location: / / / / / / /S-L2 / / / / /
Danger! Causes severe burns. Vapor extremely hazardous. May cause nitrous gas poisoning. Spillage may cause fire or liberate dangero
us gas. May be fatal if swallowed. Do not breath vapor. Do not get in eyes, on skin, on clothing. Keep in tightly
closed. light resistant, container in a cool area. Loosen closure cautiously. In case of fire, soak with water. Flood spill area wit
h water spray. Poison. Call a physician.
First Aid: Internal: Give tap water, milk or milk of magnesia. Give whites of eggs beaten with water. External: In case of contact.
immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing
and shoes. Wash clothing before reuse. Corrosive material.

Nitrilotriacetic Acid, reagent grade 1/4 lb. LaMont Laboratories
Location: / / / / / /S-L1 / / / / / /

Nuchar-C190-N (Decolorizing carbon) 3-1 lb. Fisher Scientific
Location: / / / / /Y-L1 / / / / / / /

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uclear Fast Red 5 g Sigma
Location: / / / / / /S-L1 / / / / / /
Avoid contact with skin. Do not breath dust. Store below 30 deg. C.

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o-Aminophenol, 99% 500 g Aldrich Chem. Co.
H2NC6H4OH Location: / / / / /Y-L1 / / / / / / /

Oil of Cedar Wood 4 oz. General Biological Supply House
Location: / / / / /Y-L1 / / / / / / /

Oil, low pressure pump oil)7 gal. Scientific Supplies; Gast; VWR Scientific: other
Location: / / / / /Y-L1 / / / / / / /

Orange G (Acid Orange 10), practical grade 25 g Sigma
Location: / / / / / /S-L1 / / / / / /

Orange G (Acid Orange 10), practical grade 25g+sm Fisher
Location: / / / / /Y-L1 / / / / / / /
Avoid contact with skin. Do not breath dust.

Orcein, Natural 5 g Sigma
from lichens Location: / / / / / /S-L1 / / / / / /

Orcinol Monohydrate (5-Methyl Resorcinol) 10 g Sigma
extracted from lichens Location: / / / / /Y-L1 / / / / / / /

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otic Acid (6-carboxy-2,4-dihydroxypyrimidine) 10 g Sigma
Location: / / / / / /S-L1 / / / / / /

Ostron 100, liquid 250 g G-C Dental Ind. Corp.
Location: / / / / / / /S-L2 / / / / / /
Inflammable.

Ostron 100, powder 100 g G-C Dental Ind. Corp.
Location: / / / / / / /S-L2 / / / / /

Oxalic Acid, crystal 3x11b+1/4b Mallinckrodt: J.T. Baker
H2C2O4:2H2O Location: / / / / /Y-L1 / / / / / / / /
Harmful if swallowed. Causes skin irritation. Avoid breathing dust. Avoid contact with skin and eyes. Do not take internally. Keep a way from feed or food products.
In case of contact immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes get medical attention. Poison. Call a physician. Antidote: External: Flood with tap water, then water containing sodium bicarbonate.
Internal: Give tap water, milk, or milk of magnesia. Give whites of egg beaten with water.

Oxalic Acid, crystal 500 g Sigma
H2C2O4.2H2O Location: / / / / / / /S-L2 / / / / /
Harmful if swallowed. Causes skin irritation. Avoid breathing dust. Avoid contact with skin and eyes. Do not take internally. Keep a way from food or food products.
In case of contact immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes get medical attention. Poison. Call a physician. Antidote: External: Flood with tap water, then water containing sodium bicarbonate.
Internal: Give tap water, milk or milk of magnesia. Give whites of egg beaten with water.

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p-Aminobenzoic Acid 25 g Eastman Kodak Co.
Location: / / / / / /S-L1 / / / / / /

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p-Aminophenol, practical 250 g Eastman Kodak
NH2C6H4OH Location: / / / / /Y-L1 / / / / / / /

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p-Toluenesulfonic Acid 100 g Eastman Kodak Co.
CH3C6H4SO3H.H2O Location: / / / / /Y-L1 / / / / / / /

Iadium Chloride, dry, purified 1 g Fisher
Location: / / / / /Y-L1 / / / / / / /

Palmitic Acid, c.p. (Acid cetylic), crystals 80 g Fisher
C15H31.COOH Location: / / / / /Y-L1 / / / / / / /

PAP (Peroxidase anti-peroxidase Soluble Complex) 4x2ml+2x2m Sigma
Location: / / / / / / /S-L2 / / / / / /

Panoptic Stain "EA-36" 32 oz Harleco
Location: / / / / /Y-L1 / / / / / / / /
Danger! May be fatal or cause blindness if swallowed. Flammable. Vapor harmful. Poison. Do not get in eyes, on skin or clothing. Do not breath vapor. Keep container closed. Use with adequate ventilation.
Keep away from heat, sparks, and open flame. Wash thoroughly after handling. Cannot be made nonpoisonous. If swallowed, call a physician immediately.

Paraffin Wax 1 lb. Schaar Scientific Co.
Location: / / / / /Y-L1 / / / / / / /

Paraformaldehyde 2x5 kg Sigma
Location: / / / / / / /S-L2 / / / / /

Paraldehyde, stabalized (not sterilized) 30 ml J.T. Baker
C6H2O3 Location: / / / / /Y-L1 / / / / / / /
May be habit forming. Flammable. Harmful if inhaled. Keep away from heat, sparks, flame. Avoid breathing vapor. Avoid contact with skin, eyes, clothing. Keep in well-filled, tightly closed, light resistant container at a temperature not exceeding
Deg. C (77 deg.F). Product solidifies at 12 deg. C (54 deg. F). In case of fire, use water spray, alcohol foam, dry chemical, carbon dioxide. Flush spill area with water spray. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician. Note: Discard unused contents of container opened for more than 24 hours. Flash point 96 deg. F.

Pararosaniline Hydrchloride, biological stain 25 g Fisher
Location: / / / / /Y-L1 / / / / / / /

Parvalbumin 2x1 mg Sigma

Location: / / / / / / /S-L2 / / / / /

Penicillin-G (Benzylpenicillin) Potassium Salt 0.627 g Sigma

Location: / / / / / /S-L1 / / / / / /

Pentyl Acetate 500 ml Matheson, Coleman & Bell

$CH_3CO_2(CH_2)_4CH_3$ Location: / / / / /Y-L1 / / / / / / / /

Harmful if swallowed. Keep away from heat, sparks and open flame. Avoid prolonged or repeated breathing of vapor. Use only with adequate ventilation. Avoid prolonged or repeated contact with skin or eyes. If swallowed, call a physician.

Perchloric Acid, 60-62% 2x500 ml J.T. Baker

$HClO_4$ Location: / / / / / / /S-L2 / / / / / /

Poison. Danger! Strong oxidizer. Contact with other material may cause fire or explosion, especially when heated. Keep from contact with clothing and other combustible materials. Store in tightly closed container. Keep away from heat.
Do not get in eyes, on skin, on clothing. Avoid breathing vapor or mist. Use with adequate ventilation. Wash thoroughly after handling. In case of fire, flood with water. In case of spill, flood with water applied quickly to entire area.
Neutralize washings with lime or soda ash. First Aid: In case of contact immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before re-use.

Perchloric Acid, 70-72% 2x1 pt. J.T. Baker

$HClO_4$ Location: / / / / / / /S-L2 / / / / /

Periodic Acid 100 g Sigma

Location: / / / / / /S-L1 / / / / / /

Avoid contact with skin. Do not breath dust.

Periodic Acid, crystals 1 oz Matheson, Coleman & Bell

Location: / / / / /Y-L1 / / / / / / /

·ning! Strong oxidant! May cause burns. Avoid contact with skin, eyes, clothing. Do not take internally.

Permount 500ml Fisher

Location: / / / / /Y-L1 / / / / / / /

Vapor Harmful. Flash point 45 deg. F. Avoid breathing vapor. Keep away from heat, sparks and flame. Keep container closed. Use with adequate ventilation. Avoid prolonged or repeated contact with skin.
If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

Permount 4x500 ml Fisher

Location: / / / / / /S-L1 / / / / / /

Vapor harmful. Flash point 45 deg F. Avoid breathing vapor. Keep away from heat, sparks and flame. Keep container closed. Use with adequate ventilation. Avoid prolonged or repeated contact with skin.
If inhaled remove to fresh air. if not breathing give artificial respiration, preferably mouth to mouth. If breathing is difficult give oxygen. Call a physician.

Permount 2x500 ml Fisher

Location: / / / / / / /S-L2 / / / / / /

vapor harmful. Flash point 45 deg F. Avoid breathing vapor. Keep away from heat, sparks and flame. Keep container closed. Use with adequate ventilation. Avoid prolonged or repeated contact with skin.
If inhaled remove to fresh air. If not breathing give artificial respiration, preferably mouth to mouth. If breathing is difficult give oxygen. Call a physician.

Peroxidase 500000IU Boehringer Mannheim

Location: / / / / / / /S-L2 / / / / / /

·olatum, white 1 lb. Allied Chemical

Location: / / / / /Y-L1 / / / / / / / /

Petrolium Jelly, white hospital quality 1 lb. Plough Inc. First Aid dressing. Protective.

Location: / / / / /Y-L1 / / / / / / /

Phenethylamine 100 g Eastman Kodak Co.

Danger! Causes burns. Harmful if inhaled. Do not get in eyes, on skin, on clothing. Use only with adequate ventilation. Wash thoroughly after handling.

Phenol, loose crystals — 1lb+50g — Mallinckrodt
C6H5OH — Location: / / / / /Y-L1 / / / / / / /

Danger! Hazardous solid. Rapidly absorbed through skin. Causes severe burns. May be fatal if swallowed. Contains preservative which liberates spontaneously flammable Phosphine when distilled. Do not get in eyes, on skin, on clothing. Avoid breathing vapor. Do not take internally. Distill only under inert atmosphere. Store in a cool place and and not over 80 deg. F. In case of contact, immediately remove all contaminated clothing, including shoes, and flush eyes or skin with plenty of water for at least 15 minutes; for eyes, get medical attention. Wash clothing before re-use. Note: speed in removing phenol from patient is of utmost importance. Poison. Call a physician. Antidote: If swallowed, if conscious, force patient to drink copious amounts of fluids such as milk or water; then induce vomiting by tickling the back of the throat with finger or by giving an emetic such as 2 tablespoonfuls of table salt in a glass of warm water. Continue as needed.

Phenol, loose crystals — 1 lb. — Mallinckrodt
C6H5OH — Location: / / / / / /S-L1 / / / / / /

Danger! Hazardous solid. Rapidly absorbed through skin. Causes severe burns. May be fatal if swallowed. Contains preservative which liberates spontaneously flammable Phosphine when distilled. Do not get in eyes, on skin, on clothing. Avoid breathing vapor. Do not take internally. Distill only under inert atmosphere. Store in a cool place and not over 80 deg F. In case of contact immediately remove all contaminated clothing, including shoes, and flush eyes or skin with plenty of water for at least 15 minutes. For eyes get medical attention. Wash clothing before reuse. Note: speed in removing phenol from patient is of utmost importance. Poison. Call a physician. Antidote: If swallowed, if conscious, force patient to drink copious amounts of fluids such as milk or water; then induce vomiting by tickling the back of the throat with finger or by giving an emetic such as 2 tablespoonfuls of salt in a glass of water. Continue as needed.

Phenolphthalein, powder — 3x1/4lb+1b — J.Y. Baker; Fisher
C6H4COOC(C6H4-4-OH)2 — Location: / / / / /Y-L1 / / / / / / /

Phenylmethyl-Sulfonyl Fluoride — 2x5 g — Sigma
Location: / / / / / / /S-L2 / / / / /

Danger! Extremely toxic. Do not get in eyes, on skin or on clothing. Do not breath dust.

Phloroglucinol — 10 g — City Chemical Corp.
Location: / / / / /Y-L1 / / / / / / /

Phloxine B — 10 g — Allied Chemical
Location: / / / / /Y-L1 / / / / / / /

Phosphomolybdic Acid, crystal — 1/4 lb. — J.T. Baker
20MoO3.2H3PO4.48H2O — Location: / / / / /Y-L1 / / / / / / /

Phosphoric Acid — 3 bottles — J.T. Baker
H3PO4 — Location: / / / /Sit-4 / / / / / / / /

Danger! Causes skin irritation. May be fatal if swallowed.

Phosphoric Acid, Meta-, pellets — 3x1 lb. — Fisher
HPO3 — Location: / / / / /Y-L1 / / / / / / /

Causes skin irritation. Avoid contact with skin and eyes. In case of contact, flush skin or eyes with plenty of water; for eyes, get medical attention.

Phosphoric Acid, N.F. — 8 lb. — Baker
Location: / / / / / / /S-L2 / / / / /

Phosphorus Pentoxide, Powder — 2x1 lb — J.T. Baker
Location: / / / / /Y-L1 / / / / / / /

Phosphotungstic Acid, crystal — 1/4 lb. — J.T. Baker
P4O5.24WO3.nH2O — Location: / / / / /Y-L1 / / / / / / /

Phosphotungstic Acid, n-Hydrate — 1/4 lb — J.T. Baker
P2O5.24WO3.nH2O — Location: / / / / / /S-L1 / / / / / /

2-Mercaptoethanol Location: / / / / /Y-L1 / / / / / / /

Piccolyte Cement 200 ml General Biological Supply House
Location: / / / / /Y-L1 / / / / / / /
Extremely flammable. Harmful if swallowed.

Picric Acid, crystal 100 g J.T. Baker
4,6-(NO2)3C6H2OH Location: / / / /4-Pic / / / / / / /
Danger! Flammable solid. Keep away from heat, sparks and open flame. Keep container closed. Keep in a cool place. Keep wet. This material contains at least 10% water. If water evaporates below 10% Picric Acid becomes an explosive.
Avoid contact with metals. Use non-sparking tools. Avoid contact with skin, eyes, and clothing. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.
In case of spillage, flush with plenty of water. In case of fire, soak with water.

Picric Acid, saturated 1 l+2l no label
Location: / / / / / / /S-L2 / / / / /

Pictol(Para-methylaminophenol Sulfate), fine cryst 2x1/4 lb. Mallinckrodt
Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. May cause skin irritation. Wash thoroughly after handling. Avoid prolonged or repeated contact with skin. If swallowed, induce vomiting and call a physician.

Polyethylene Glycol 2x1kg Sigma
Location: / / / / /Y-L1 / / / / / / /

Polyethylene Glycol 500 g Sigma Chemical
Location: / / / / / / /S-L2 / / / / /

Polyethylene Glycol 1000 1 kg J.T. Baker
Location: / / / / /Y-L1 / / / / / / /
Melting point 39 - 40 deg. C.

Polyethylene Glycol 1540 1.5 kg J.T. Baker
Location: / / / / /Y-L1 / / / / / / /
melting point 43 - 45 deg. C.

Polyethylene Glycol 600 1 kg J.T. Baker
Location: / / / / /Y-L1 / / / / / / /
Melting point 20 - 25 deg. C.

Polymyxin B Sulfate 1 mill. Sigma
Location: / / / / / /S-L1 / / / / / /

Polyvinylpyrrolidone, PVP-40T, technical grade 1 kg Sigma Chemical Co.
Location: / / / / /Y-L1 / / / / / / /

Ponceau Xylidine 10 g Allied Chemical
Location: / / / / /Y-L1 / / / / / / /

Potassium Acetate 1 lb. Fisher
CH3COOK Location: / / / / /Y-L1 / / / / / / /

Potassium Bicarbonate 500 g Fisher Scientific Co.
KHCO3 Location: / / / / /Y-L1 / / / / / / /

Potassium Biniodate(Potassium Acid Iodate)purified 4x4 oz. Fisher Scientific Co.
Location: / / / / /Y-L1 / / / / / / /
Poison. Caution! May be harmful if swallowed. Wash thoroughly after handling. Do not take internally.

Potassium Bromide, crystal 2x1 lb. Mallinckrodt: J.T. Baker
KBr Location: / / / / /Y-L1 / / / / / / /

Potassium Carbonate, anhydrous granular 5 lb+500 g J.T. Baker
K2CO3 Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. Causes irritation. Avoid breathing dust. Avoid contact with eyes, skin, clothing. Keep in tightly closed container. Use with adequate ventilation. Wash thoroughly after handling.
If swallowed, if conscious, immediately induce vomiting and call a physician. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Flush skin with water.

Potassium Chloride, crystal 2x1lb+1/4b J.T. Baker
KCl Location: / / / / / /S-L1 / / / / / /

Potassium Chloride, crystal 1/4 lb. Industrial Distributors, Inc.
Location: / / / / / /S-L1 / / / / / /

Potassium Chloride, crystal 2x500 g Baker
KCl Location: / / / / / / /S-L2 / / / / /

Potassium Chloride, crystal 1b+1/4 lb Allied Chemical, J.T.Baker; Beckman
KCl Location: / / / / /Y-L1 / / / / / / /

Potassium Chloride, granular 1 lb Mallinckrodt
KCl Location: / / / / / /S-L1 / / / / / /

Potassium Chloride, granular 5lb+1 lb Mallinckrodt
KCl Location: / / / / /Y-L1 / / / / / / /

Potassium Chloride, primary standard 2x100 g+ Anachemia
KCl Location: / / / / /Y-L1 / / / / / / /

Potassium Chloroplatinate C.P. 3x10g The Coleman & Bell Co.
Location: / / / / /Y-L1 / / / / / / /

Potassium Chromate, crystal 3x1lb J.T. Baker
K2CrO4 Location: / / / / /Y-L1 / / / / / / /
Danger! Exceptional contact hazard. Causes irritation. Harmful if inhaled or swallowed. May cause rash or external ulcers. Avoid contact with eyes, skin and clothing. Avoid breathing dust or solution mist. Keep container tightly closed.
Wash thoroughly after handling. Use fresh clothing daily. Take hot shower after work using plenty of soap. Flush spill area with water spray. First Aid: Call a physician. In case of contact, immediately flush eyes with plenty of water for at least
15 minutes. Flush skin with water. Wash clothing before re-use. If inhaled, remove to fresh air and, if necessary, give oxygen or apply artificial respiration. If swallowed, if conscious, induce vomiting.
Reported as causing cancer in laboratory animals. Exercise due care.

Potassium Chromate, crystal 1lb+500g Baker
K2CrO4 Location: / / / / / / /S-L2 / / / / /
Danger! Exceptional contact hazard. Causes irritation. Harmful if inhaled or swallowed. May cause rash or external ulcers. Avoid contact with eyes, skin, or clothing. Avoid breathing dust or solution mist. Keep container tightly closed.
Wash thoroughly after handling. Use fresh clothing daily. Take hot shower after work using plenty of soap. Flush spill area with water spray. First aid: Call a physician. In case of contact immediately flush eyes with plenty of water for at least
15 minutes. Flush skin with water. Wash clothing before re-use. If inhaled remove to fresh air and, if necessary, give oxygen or apply artificial respiration. If swallowed, of conscious, induce vomiting.
Reported as causing cancer in laboratory animals. Exercise due care.

Potassium Chromate, purified, crystal 1 lb Mallinckrodt; J.T. Baker
rO4 Location: / / / / /Y-L1 / / / / / / /
Harmful dust. May cause rash or external ulcers. Keep container closed. Avoid contact with skin and eyes. Avoid breathing dust or solution spray. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes:
for eyes, get medical attention. Wash clothing before re-use. Use fresh clothing daily. Take hot shower after work using plenty of soap.

Potassium Dichromate, crystal 1lb+1/4b J.T. Baker; Mallinckrodt

Harmful dust. May cause rash or external ulcers. Keep container closed. Avoid breathing dust or solution spray. Avoid contact with s
kin or eyes. Do not take internally. In case of contact, immediately flush with plenty of water
for at least 15 minutes; for eyes, get medical attention. Remove and wash clothing before re-use. Use fresh clothing daily. Take hot
shower after work using plenty of soap.

Potassium Dichromate, crystal 3x1 lb Baker, Mallinckrodt
$K_2Cr_2O_7$ Location: / / / / / /S-L1 / / / / / /
Harmful dust. May cause rash or external ulcers. Keep container closed. Avoid contact with skin and eyes. Avoid breathing dush or so
lution spray. In case of contace immediately flush with plenty of water for at least 15 minutes. For eyes get
medical attention. Wash clothing before re-use. Use fresh clothing daily. Take hot shower after work using plenty of soap.

Potassium Dichromate, fine crystal 1 lb. Fisher
$K_2Cr_2O_7$ Location: / / / / / / /S-L2 / / / / /

Potassium Dichromate, tech grade 5 lbs Schaar Scientific Co.
Location: / / / / /Y-L1 / / / / / / /
Harmful dust. May cause rash or external ulcers. Keep container closed. Avoid contact with skin and eyes. Avoid breathing dust or so
lution spray. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes;
for eyes, get medical attention.

Potassium Ferricyanide, crystal 100 g Sigma
$K_3Fe(CN)_6$ Location: / / / / / / /S-L2 / / / / /
Harmful if swallowed. Wash thoroughly after handling. If swallowed, induce vomiting and call a physician.

Potassium Ferricyanide, crystal 4x1lb Mallinckrodt; J.T. Baker; Allied Chemical
$K_3Fe(CN)_6$ Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. Wash thoroughly after handling. If swallowed, induce vomiting and call a physician.

Potassium Ferrocyanide, crystal 2x1 lb. J.T. Baker
$K_4Fe(CN)_6.3H_2O$ Location: / / / / /Y-L1 / / / / / / /

Potassium Hydrogen Phthalate 2x100g Hartman Leddon Co. Standardized pH buffer salt.
$C_8H_5KO_4$ Location: / / / / /Y-L1 / / / / / / /

Potassium Hydroxide Standard Volumetric Solution 2 vials Anachemia Chemicals
Location: / / / / /Y-L1 / / / / / / /

Potassium Hydroxide, pellets 3x5lb+1lb J.T. Baker
KOH Location: / / / / /Y-L1 / / / / / / /
Poison. Danger! Causes severe burns. May be fatal if swallowed. Do not get in eyes, on skin, on clothing. Avoid breathing dust or mi
st. Keep in tightly closed container. When handling, wear goggles or face shield.
While making solutions, add slowly to surface of solution to avoid violent spattering. Wash thoroughly after handling. Call a physic
ian. In case of contact immediately flush eyes or skin with plenty of water for at least 15 minutes while removing
contaminated clothing and shoes. Wash clothing before re-use. If swallowed, if conscious, give water with large amounts of diluted v
inegar, lemon or orange juice. Follow with milk or whites of eggs beaten with water.
Apply artificial respiration if not breathing. Keep patient warm and quiet.

Potassium Hydroxide, pellets 1 lb B&A
KOH Location: / / / / / / /S-L2 / / / / /
Poison. Danger! Causes severs burns. May be fatal if swallowed. Do not get in eyes, on skin, on clothing, void breathing dust or mis
t. Keep in tightly closed container. When handling wear goggles or face shield.
While making solutions add slowly to surface of solution to avoid violent spattering. Wash thoroughly after handling. Call a physici
an. In case of contact immedaitely flush eyes or skin with plenty of water for at least 15 minutes while removing
contaminated clothing and shoes. Wash clothing before re-use. If swaallowed, if conscious, give water with large amounts of diluted
vinegar, lemon or orange juice. Follow with milk or whites of eggs beated with water.
Apply artificial respiration if not breathing. Keep patient warm and quiet.

Potassium Iodate, granular 4x1/4lb+1lb J.T. Baker; Mallinckrodt
KIO_3 Location: / / / / /Y-L1 / / / / / / /

Potassium Iodide, crystal 25 lb.+ J.T. Baker,
KI Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. Wash thoroughly after handling. If swallowed, call a physician.

Potassium Iodide, free flowing granular 5x500g Fisher, Mallinckrodt
KI Location: / / / / / /S-L1 / / / / / /
Harmful if swallowed. Wash thoroughly after handling. If swallowed induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit fluid is clear. Call a physician.

Potassium Iodide, free flowing granular 5x500g Mallinckrodt; Fisher; Sigma; J.T. Baker
KI Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. Wash thoroughly after handling. If swallowed, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit fluid is clear. Call a physician.

Potassium Nitrate 1 lb Mallinckrodt
KNO3 Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. Contact with other material may cause fire or explosion. Keep container closed and away from heat. Avoid contact with skin, eyes, or clothing.
If swallowed induce vomiting & call a physician.

Potassium Nitrate, anhydrous 500 g Sigma
Location: / / / / / / /S-L2 / / / / /

Potassium Nitrate, crystals 1 lb J.T. Baker
KNO3 Location: / / / / / / /S-L2 / / / / /
Harmful if swallowed. Contact with other material may cause fire or explosion. Store separately from and avoid contact with other materials. Keep container closed and away from heat. Avoid contact with skin, eyes and clothing.
If swallowed, induce vomiting and call a physician at once.

Potassium Nitrate, crystals 1 lb. Mallinckrodt
KNO3 Location: / / / / / /S-L1 / / / / / /
Warning! Harmful if swallowed. Contact with other material may cause fire or explosion.

Potassium Nitrite, crystal 3x1 lb. J.T. Baker
KNO2 Location: / / / / /Y-L1 / / / / / / /
Danger! May be fatal if swallowed. Contact with combustible material may cause fire or explosion. Store separately from and avoid contact with combustible material. Keep container closed and away from heat.
Avoid contact with skin, eyes, and clothing. Poison. Call a physician. Antidote: If conscious, induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear.
Apply artificial respiration if not breathing. Keep patient warm and quiet.

Potassium Perchlorate, crystal 1 lb. J.T. Baker
KClO4 Location: / / / / /Y-L1 / / / / / / /
Danger. Strong oxidant. Contact with combustible material may cause fire. All clothing contaminated with chlorates is dangerously flammable. Remove and wash thoroughly with water. Do not get on floor.
Spillage may cause fires with combustible material. Sweep up and remove immediately. When not in use keep tightly closed in original container. Keep away from fire. Store separately from flammable material.

Potassium Permanganate 10 g no label
Location: / / / / /Y-L1 / / / / / / /

Potassium Permanganate, crystal 2x1lb Mallinckrodt
KMnO4 Location: / / / / /Y-L1 / / / / / / /
Strong oxidant. Contact with combustible material may cause fire or explosion. Store away from acids, alkalies and combustible material. Keep container closed and away from heat. Avoid prolonged contact with skin.
In case of contact, remove and wash clothing immediately; for eyes, flush with plenty of water for at least 15 minutes; get medical attention. Flush spillage with plenty of water. Poison. Call a physician.
Antidote: If conscious induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Give milk or whites of eggs beated with water. Keep patient warm and quiet.

Potassium Permanganate, crystal 500 g Sigma
KMnO4 Location: / / / / / / /S-L2 / / / / /
Strong oxidant. Contact with other combustable material may cause fire or explosion. Store away from acids, alkalies and combustable material. Keep container closed and away from heat. Avoid prolonged contact with skin.
In case of contact remove and wash clothing immediately. For eyes flush with plenty of water for at least 15 minutes. Get medical attention. Flush spillage with plenty of water. Poison. Call a physician
Antidote: If conscious induce vomiting by giving a teaspoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Give milk or whited of eggs beaten with water. Keep patient warm and quiet.

K2S2O8 Location: / / / / /Y-L1 / / / / / / /
Oxidant. Do not take internally. Keep tightly closed when not in use.

Potassium Phosphate, Dibasic 1 lb Mallinckrodt
K2HPO4.3H2O Location: / / / / / / /S-L2 / / / / /

...assium Phosphate, dibasic anhydrous 1 lb Mallinckrodt
K2HPO4 Location: / / / / / /S-L1 / / / / / /

Potassium Phosphate, Dibasic Anhydrous 1 lb Fisher
K2HPO4 Location: / / / / /Y-L1 / / / / / / /

Potassium Phosphate, dibasic powder 2x1 lb. J.T. Baker
K2HPO4 Location: / / / / /Y-L1 / / / / / / /

Potassium Phosphate, Dibasic, crystals 2x1 lb. Mallinckrodt
K2HPO4.3H2O Location: / / / / /Y-L1 / / / / / / /

Potassium Phosphate, monobasic crystals 8x1lb. Mallinckrodt; J.T. Baker; Fisher
KH2PO4 Location: / / / / /Y-L1 / / / / / / /

Potassium Phosphate, monobasic crystals 3x1 lb Baker
KH2PO4 Location: / / / / / / /S-L2 / / / / /

Potassium Phosphate, Monobasic, anhydrous 500g Sigma
KH2PO4 Location: / / / / / / /S-L2 / / / / /

Potassium Sulfate, crystal 2x1 lb J.T. Baker
K2SO4 Location: / / / / /Y-L1 / / / / / / /

Potassium Thiocyanate, crystals 1 lb. Mallinckrodt
KS Location: / / / / / / /S-L2 / / / / /
Warning! Harmful if swallowed. Wash thoroughly after handling. If swallowed, induce vomiting and call a physician.

Prascodymium Chloride, 99.9% 2x10 g A.D. Mackay, Inc.
Location: / / / / /Y-L1 / / / / / / /

Praziquantel 25 g Sigma
Location: / / / / / / /S-L2 / / / / /

Propionic Acid 1 kg Matheson, Coleman & Bell
Assay 99% Location: / / / /Sit-4 / / / / / / / /
May cause burns. Avoid contact with skin, eyes or clothing. Avoid prolonged or repeated breathing of vapor.

Protargol-S, for staining 1 oz. Winthrop Laboratories
Location: / / / / /Y-L1 / / / / / / /

Proteose Peptone 2x1/4lb+1b Difco Lab.
Location: / / / / /Y-L1 / / / / / / /

Punctilious Ethyl Alcohol, 200 proof 3x1gal U.S. Industrial Chemicals Co.(Ebbesson)
Location: / /Sit-2 / / / / / / / / / /
Flammable. Causes eye irritation. Vapor may form explosive mixtures with air. Keep away from heat, sparks, open flame. Keep containe r closed. Use with adequate ventilation. Avoid contact with eyes. Avoid breathing vapor. Avoid contact with skin.
May cause bodily injury, asphyxiation and death. In case of contact with eyes, immediately flush with plenty of water for at least 1 5 minutes. Call a physician.

...uromycin Dihydrochloride, crystalline 10 mg Sigma
Location: / / / / / /S-L1 / / / / / /

Putrecine, Dihydrochloride, crystalline 1 g Sigma
Location: / / / / / /S-L1 / / / / / /
Caution: Avoid contact with skin. Do not breathe fumes.

Pyridine — 8ot — Mallinckrodt
CH(CHCH)2N — Location: / / /Sit-3 / / / / / / / / /
Flammable. Vapor harmful. Keep away from heat, sparks and open flame. Keep container closed. Use only with adequate ventilation. Avoid prolonged or repeated breathing of vapor. Avoid prolonged or repeated contact with skin.

:ridine — 100 ml — Sigma
CH(CHCH)2N — Location: / / / / / / /S-L2 / / / / /
Flammable. Vapor harmful. Keep away from heat, sparks, and open flame. Keep container closed. Use only with adequate ventilation. Avoid prolonged or repeated breathing of vapor. Avoid prolonged or repeated contact with skin.

Pyridoxamine di HCl — 250 mg — Sigma
Location: / / / / / /S-L1 / / / / / /

Pyridoxine Hydrochloride — 5 g — Nutritional Biochemical Corp.
Location: / / / / / /S-L1 / / / / / /

Pyronin Y — 5 g — Allied Chemical
Location: / / / / /Y-L1 / / / / / / /

Quartz Turninos — 50 g — Carlo Erba: C N Analyzer
SiO2 — Location: / / / / / / / /S-Ins / / / /

Quartz Wool — 15 g — Conroy Scientific; C N Analyzer
Location: / / / / / / / /S-Ins / / / /

Quartz, milky — 3x1 lb. — E.H. Sargent & Co.
Location: / / / / /Y-L1 / / / / / / /

Rabbit anti-FMRF-amide for histochemistry — INCSTAR
Location: / / / / / / /S-L2 / / / / /

...obit Anti-Goat immunoglobulin serum — 2 ml — ATAB
Location: / / / / / / /S-L2 / / / / /

Rabbit Anti-serotonin for histochemistry — 2 ml — INCSTAR
Location: / / / / / / /S-L2 / / / / /

Rabbit Anti-Somatostatin for histochemistry — 3xsm bot] — INC
Location: / / / / / / /S-L2 / / / / /

Reduction Copper — 225 g — Conroy Scientific; C.N Analyzer
Location: / / / / / / / /S-Ins / / / /

Rexyn 300, analytical grade — 1 lb. — Fisher. Mixture of cation & anion exchangers.
Location: / / / / /Y-L1 / / / / / / /

Rhodamine B — 100 g — Allied Chemical. Biological stain.
Location: / / / / /Y-L1 / / / / / / /

Rhodizonic Acid Potassium Salt — 1 g — Eastman Kodak Co.
O:CC:OCOK:COKC:OC:O — Location: / / / / /Y-L1 / / / / / / /

Riboflavin (Vitamin B 2) — 5 g — Sigma
Location: / / / / / /S-L1 / / / / / /

Ribonuclease-A, protease free, type x-A — 2x0.48 ml — Sigma
Location: / / / / / /S-L1 / / / / / /

Rose Bengal — 3x25 g — Allied Chemical; J.T. Baker: Stain
C20H3Cl4I4Na2O5 — Location: / / / / /Y-L1 / / / / / / /

Rostschutzol Nr. 406 — 25 ml — R.Juno
Location: / / / / /Y-L1 / / / / / / /

S-100 A Protein 2x1 mg Sigma
Location: / / / / / / /S-L2 / / / / /

S-100 B Protein 2x1 mg Sigma
Location: / / / / / / /S-L2 / / / / /

Safranin O 10 g Harleco
Location: / / / / /Y-L1 / / / / / / /

Salicyclic Acid Merck. fine crystals 1/2 lb Merck (in plastic bottle)
C7H6O3 Location: / / / / / /S-L1 / / / / / /

Salicylic Acid. sodium salt 250 g J.T. Baker
2-HOC6H4COONa Location: / / / / /Y-L1 / / / / / / /

Salt. sea 5 lb. E.H. Sargent & Co.
Location: / / / / /Y-L1 / / / / / / /

Saponin, purified, powder 1/4 lb. J.T. Baker
Location: / / / / /Y-L1 / / / / / / /

Scintiverse 1 l no label
Location: / / / / / / /S-L2 / / / / /

Scintiverse 2x8pt+ no label
Location: / / /Sit-3 / / / / / / / / /

Scintiverse E 6x4 l Fisher (Universal LSC Coctail)
Location: / / /Sit-3 / / / / / / / / /

Scintiverse I 2x4 l Fisher
Location: / / /Sit-3 / / / / / / / / /

Scintiverse II 2x4 l Fisher
Location: / / /Sit-3 / / / / / / / / /

Sephadex Beads 50 g Sigma; for gel filtration.
Location: / / / / / / /S-L2 / / / / /

Sigma 7-9 Biochemical Buffer 2x1 kg Sigma
Location: / / / / / / /S-L2 / / / / /

Silica Gel Dessicant Packets 1 can of50 no label
Location: / / / / /Y-L1 / / / / / / /

Silicic Acid. 100 mesh powder 1 lb. Mallinckrodt
SiO2.xH2O Location: / / / / / /S-L1 / / / / / /

Silver Chloride, powder 3x1/4 lb. Baker
AgCl Location: / / / / /Y-L1 / / / / / / /

Silver Nitrate. 99+ % 25 g Aldrich
AgNO3 Location: / / / / / / /S-L2 / / / / /
Highly toxic! Corrosive! Strong oxidant! Light Sensitive!

Silver Nitrate. crystals 2x1lb+2x4z Mallinckrodt. Goldsmith Bro.
AgNO3 Location: / / / / / / /S-L2 / / / / /
Danger! May cause burns. May be fatal if swallowed. Avoid contact with skin and eyes. In case of contact flush skin or eyes with ple nty of water for at least 15 minutes; for eyes get medical attention. Poison. Call a physician.
Antidote: If conscious. give a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Have patient li e down and keep warm. Give milkor whites of eggs beaten with water. Give strong tea or coffee.

Silver Nitrate, Crystals 1lb J.T. Baker
AgNO3 Location: / / / / /Y-L1 / / / / / / /
Danger! May cause burns. May be fatal if swallowed. Avoid contact with skin and eyes. In case of contact flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention. Poison. Call a physician.
Antidote: If conscious, give a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Have patient lie down and keep warm. Give milk or whites of eggs beaten with water. Give strong tea or coffee.

Silver Nitrate, Standard Volumetric Solution for 1 l Anachemia Chemicals Ltd.
to prepare 0.2820 Normal Location: / / / / /Y-L1 / / / / / / /

Silver Sulfate 4 oz. Fisher
Ag2SO4 Location: / / / / /Y-L1 / / / / / / /
Do not get in eyes or on skin. Harmful if swallowed.

Silver Wool 10 g Conroy Scientific; C N Analyzer
Location: / / / / / / / /S-Ins / / / /

Sodium Acetate, anhydrous powder 500g+1lb+ J.T. Baker
CH3COONa Location: / / / / / / /S-L2 / / / / /

Sodium Acetate, fused crystal 1 lb. J.T. Baker
NaC2H3O2.3H2O Location: / / / / /Y-L1 / / / / / / /

Sodium Acetate, trihydrate, crystal 1 kg Sigma
NaC2H3O2.3H2O Location: / / / / /Y-L1 / / / / / / /

Sodium Arsenite, powder 2x1 lb J.T. Baker
NaAsO2 Location: / / / / /Y-L1 / / / / / / /
Danger! May be fatal if swallowed. Avoid contact with clothing. Do not breath dust or spray mist. In case of contact, wash thoroughly. Poison. Call a physician. Antidote: If conscious induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Give milk or whites of eggs beaten with water. Keep patient warm and quiet.

Sodium Azide, practical 100 g Matheson, Coleman & Bell
NaN3 Location: / / / / / / /S-L2 / / / / /
Danger. Poisonous solid. Forms explosive compounds. Contact with acid liberates poisonous gas. Do not breath dust. Do not contact with gold, silver, mercury, copper, or lead. Poison. If swallowed induce vomiting. Treat for shock. Call physician.

Sodium Azide, practical 100 g Matheson, Coleman & Bell
NaN3 Location: / / / / /Y-L1 / / / / / / /
Danger. Poisonous solid. Forms explosive compounds. Contact with acid liberates poisonous gas. Do not breath dust. Do not contact with gold, silver, mercury, copper, or lead. Poison. If swallowed: induce vomiting. Treat for shock. Call physician.

Sodium Barbitol (Sodium Diethylbarbiturate), pure 1/4 lb. Fisher
NaC8H11N2O3 Location: / / / / /Y-L1 / / / / / / /
Warning! Barbituric Acid derivative. May be habit forming. Federal law prohibits dispensing without perscription.

Sodium Bicarbonate, powder 500 g Baker
NaHCO3 Location: / / / / / / /S-L2 / / / / /

Sodium Bicarbonate, powder 2x5lb J.T. Baker:Mallinckrodt
NaHCO3 Location: / / / / /Y-L1 / / / / / / /

Sodium Bisauthate, powder 1/4 lb. J.T. Baker
NaBiO3 Location: / / / / /Y-L1 / / / / / / /

Sodium Bisulfate (Sodium Hydrogen Sulfite) 500 g Sigma
Location: / / / / / / /S-L2 / / / / /

Sodium Bisulfite (Sodium Hydrogen Sulfite) 1 lb Baker
Location: / / / / /Y-L1 / / / / / / /

Sodium Borate, decahydrate crystal 1 lb Baker
Na2B4O7.10H2O Location: / / / / / / /S-L2 / / / / /

Sodium Borate, decahydrate crystal

Sodium Borate, powder — 500g+2x1lb Mallinckrodt; Industrial Dist., Inc.
Na2B4O7.10H2O — Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed.

Sodium Borohydride — 600 g+1 lb Sigma
Location: / / / / / / / /S-Ins / / / /

Sodium Bromide, crystal — 1/4 lb. J.T. Baker
NaBr — Location: / / / / /Y-L1 / / / / / / /
Warning! Harmful if swallowed. Wash thoroughly after handling. If swallowed induce vomiting and call a physician at once.

Sodium Cacodylate — 4x100 g Ted Pella, Inc.
Location: / / / / / / /S-L2 / / / / /

Sodium Carbonate, anhydrous — 1lb+5lb Fisher, Baker
Na2CO3 — Location: / / / / / /S-L1 / / / / / /
Harmful if swallowed. May cause skin irritation. Harmful if inhaled. Wash thoroughly after handling. If swallowed, call a physician.

Sodium Carbonate, anhydrous — 1lb+500g J.T. Baker,Fisher
Na2CO3 — Location: / / / / / /S-L2 / / / / / /
Harmful if swallowed. May cause skin irritation. Wash thoroughly after handling. If swallowed, induce vomiting and call a physician.

Sodium Caseinate, Difco (Nutrose) — 500 g Difco Lab.
Location: / / / / /Y-L1 / / / / / / /

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ium Chloride, crystals — 5 lb Baker
NaCl — Location: / / / / / / /S-L2 / / / / /

Sodium Chloride, crystals — 5lb+1 lb J.T. Baker
NaCl — Location: / / / / / /S-L1 / / / / / /

Sodium Chloride, crystals — 6x5lb+1lb+ Mallinckrodt; J.T. Baker; VWR; Matheson etc.
NaCl — Location: / / / / /Y-L1 / / / / / / /

Sodium Chloride, primary standard — 100 g Anachemia Chemical Specialties
NaCl — Location: / / / / / /S-L1 / / / / / /

Sodium Citrate, Dihydrate, crystal — 500g+2x5lb J.T. Baker
C6H5Na3O7.2H2O — Location: / / / / /Y-L1 / / / / / / /

Sodium Cobaltinitrate Trueg, powder — 1/4 lb. Mallinckrodt
Na3Co(NO2)6 — Location: / / / / /Y-L1 / / / / / / /
Poison. Antidote: Give a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Give two tablespoonfu ls of Epsom salt in water and force fluids. Have patient lie down and keep warm. Give strong tea or coffee.
Call a physician.

Sodium Dichromate, crystals — 1 lb. Mallinckrodt
Na2Cr2O7.2H2O — Location: / / / / /Y-L1 / / / / / / /
Harmful dust. May cause rash or external ulcers. Keep container closed. Avoid contact with skin and eyes. Avoid breathing dust or so lution spray.
In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention. Wa h clothing before re-use.

Sodium Dichromate, fine crystal — 2x1 lb. Allied Chemical
Na2Cr2O7.2H2O — Location: / / / / /Y-L1 / / / / / / /
Harmful dust. May cause rash or external ulcers. Keep container closed. Avoid contact with skin and eyes. Avoid breathing dust or so lution spray. Use fresh clothing daily.
Poison.
In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes get medical attention. Wa

If swallowed. if conscious. give magnesia, chalk or whiting suspended in water. follow with an emetic (a tablespoon of mustard in a glass of warm water). Then give olive oil or mucilaginous drinks. Call a physician.

Sodium Dichromate, granular (Bichromate) 2x5lb+2 lb Mallinckrodt
Na2Cr07.2H20 Location: / / / / /Y-L1 / / / / / / /
Warning! Harmful dust. May cause rash or external ulcers. Keep container closed. Avoid contact with skin or eyes. Avoid breathing du or solution spray. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 min.
For eyes, get medical attention. Wash clothing before re-use. Use fresh clothing daily. Take hot shower after work using plenty of s oap.

Sodium Diethyldithiocarbamate, powder 1 lb+100g J.T. Baker, Fisher
(C2H5)2NCS2Na.3H20 Location: / / / / /Y-L1 / / / / / / /

Sodium Dihydrogen Orthophosphate(Sodium Phosphate) 500 g Ajax Chemicals
NaH2P04.2H20 Location: / / / / /Y-L1 / / / / / / /

Sodium Dithionite,purified,(Sodium Hydrosulfite) 5 lb Baker
Na3S204 Location: / / / / /Y-L1 / / / / / / /
Caution! May ignite if allowed to become damp. Keep container tightly closed. Use only dry, clean utinsils in handling. Store in a c ool place.
In case of fire smother with soda ash, dry sand, or carbon dioxide. NEVER USE WATER.

Sodium Glycerophosphate 100 g Nutritional Biochemicals Corp.
Location: / / / / / /S-L1 / / / / / /

Sodium Hexametaphosphate 1 kg+bag J.T. Baker, no label
(NaP03)6 Location: / / / / /Y-L1 / / / / / / /

Sodium Hydroxide, pellets 5lb+1lb J.T. Baker, Mallinckrodt
NaOH Location: / / / / / / /S-L2 / / / / /
Poison. Danger! Causes severe burns. May be fatal if swallowed. Do not get in eyes, on skin, or clothing. Avoid breathing dust. Keep in tightly closed container. When handling, wear goggles or face shield. While making solutions add slowly to surface of solution to avoid violent spattering. Wash thoroughly after handling. In case of spill, flush area with water spray.
Call a physician. In case of contact immediately flush eyes or skin with plenty of water for at least 15 minutes while removing cont aminated clothing and shoes. Wash clothing before re-use.
If swallowed, do not induce vomiting. If conscious give large amount of water. Follow with diluted vinegar, fruit juice, or whites o f eggs beaten with water. Apply artificial respiration if not breathing. Keep patient warm and quiet.

Sodium Hydroxide, pellets 2x1lb+5lb+ Allied Chemical, Sigma, Mallinckrodt
NaOH Location: / / / / /Y-L1 / / / / / / /
Poison. Danger! Causes severe burns. May be fatal if swallowed. Do not get in eyes, on skin, or clothing. Avoid breathing dust. Keep in tightly closed container. When handling, wear goggles or face shield.
While making solutions, add slowly to surface of solution to avoid violent spattering. Wash thoroughly after handling. In case of sp ill, flush area with water spray.
Call a physician. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing con taminated clothing and shoes. Wash clothing before re-use.
If swallowed, do not induce vomiting; if conscious, give large amount of water. Follow with diluted vinegar, fruit juice, or whites of raw eggs beaten with water. Apply artificial respiration if not breathing. Keep patient warm and quiet.

Sodium Hydroxide, pellets, anhydrous 1 kg J.T. Baker, VWR Scientific, Sigma
NaOH Location: / / / / /Y-L1 / / / / / / /
Poison. Danger! Causes severe burns. May be fatal if swallowed. Do not get in eyes, on skin, on clothing. Avoid breathing dust. Keep tightly closed container. When handling, wear goggles or face shield.
While making solutions, add slowly to surface of solution to avoid violent spattering. Wash thoroughly after handling. In case of sp ill, flush area with water spray. Call a physician. In case of contact, immediately flush eyes or skin with plenty
of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. If swallowed, do not i nduce vomiting. If conscious, give large amount of water. Follow with diluted vinegar, fruit juice or whites of raw
eggs beaten with water. Apply artificial respiration if not breathing. Keep patient warm and quiet.

Sodium Iodate 98+% 100g Aldrich Chem

Sodium Iodate, powder — 2x1/4 lb. Matheson, Coleman & Bell; City Chemical Corp.
NaIO3 — Location: / / / / /Y-L1 / / / / / / /
Oxidant. Contact with other material may cause fire. Keep container closed and away from heat.

Sodium Iodide, granular — 2x1/4 lb. Mallinckrodt
I — Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. Wash thoroughly after handling.
If swallowed, induce vomiting and call a physician.

Sodium Lauryl Sulfate (Duponol), tech. grade — 2 oz. Sargent
NaC12H25SO4 — Location: / / / / /Y-L1 / / / / / / /

Sodium meta-Periodate — 1/4 lb. J.T. Baker
NaIO4 — Location: / / / / /Y-L1 / / / / / / /
Strong oxidant. Contact with other material may cause fire. Store separately from flammable material. Keep in tightly closed contain
er. Do not get on floor. Spillage may cause fire. Sweep up and remove immediately.

Sodium meta-Silicate, 9-Hydrate, crystal — 500 g J.T. Baker
Na2SiO3.9H2O — Location: / / / / / /S-L1 / / / / / /
Warning! Causes irritation.

Sodium meta-Silicate, crystal — 1 lb Baker
Na2SiO3.9H2O — Location: / / / / / /S-L1 / / / / / /
May burn skin and eyes. Harmful if swallowed. Avoid contact with skin, eyes and clothing. In case of contact, flush skin or eyes wit
h plenty of water for at least 15 minutes; for eyes get medical attention.
If swallowed give plenty of water and follow with olive oil. Call a physician.

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dium meta-Silicate, crystal — 1lb+1/4b J.T. Baker
Na2SiO3.9H2O — Location: / / / / /Y-L1 / / / / / / /
May burn skin and eyes. Harmful if swallowed. Avoid contact with skin, eyes and clothing. In case of contact, flush skin or eyes wit
h plenty of water for at least 15 minutes; for eyes, get medical attention.
If swallowed, give plenty of water and follow with olive oil. Call a physician.

Sodium Molybdate, powder — 1 lb J.T. Baker
Na2MoO4.2H2O — Location: / / / / /Y-L1 / / / / / / /

Sodium Molybdate, powder — 1/2 lb Baker
Na2MoO4.2H2O — Location: / / / / / /S-L1 / / / / / /

Sodium Nitrate, crystal — 500 g J.T. Baker
NaNO3 — Location: / / / / / /S-L1 / / / / / /
Danger! Strong oxidizer. Contact with other material may cause fire. Harmful if swallowed.

Sodium Nitrate, granular — 1 lb. Mallinckrodt
NaNO3 — Location: / / / / /Y-L1 / / / / / / /
Warning! Harmful if swallowed. Contact with fire or other material may cause fire or explosion. Store separately from and avoid cont
act with other materials. Keep container closed and away from heat. Avoid contact with skin, eyes and clothing.
If swallowed, induce vomiting and call a physician.

Sodium Nitrite, crystal — 2.5kg+1lb+ J.T. Baker
NaNO2 — Location: / / / / /Y-L1 / / / / / / /
Danger! Strong oxidizer. Contact with other material may cause fire. Harmful if swallowed. Keep from contact with clothing and other
combustible materials. Do not store near combustible materials.Keep in tightly closed container in a cool dry area.
oid breathing dust. Avoid contact with eyes and skin. Remove and wash contaminated clothing promptly. Wash thoroughly after handli
ng. In case of fire, soak with water. In case of spill, sweep up and carefully remove. Flush spill area with water.
If swallowed, if conscious, immediately induce vomiting and call a physician.
Use before 10/82

Sodium Nitrite, sticks — 1 lb J.T. Baker
NaNO2 — Location: / / / / /Y-L1 / / / / / / /
Poisonous if swallowed. Wash thoroughly after handling. Poison. Antidote: Give a tablespoonful of salt

Have patient lie down and keep warm. Give strong tea or coffee. Call a physician.

Sodium Nitro-ferricyanide (Sodium Nitroprusside) 2x500g+1lb J.T. Baker, Sigma, No label
Na2Fe(CN)5NO.2H2O Location: / / / / / / /S-L2 / / / / /
Harmful if swallowed. Emits toxic fumes when heated or in contact with acids. Wash thoroughly after handling. Keep container closed and away from heat. Do not store near and avoid contact with acids.

Sodium Nitro-ferricyanide (Sodium Nitroprusside) 125 g J.T. Baker
Na2Fe(CN)5NO.2H2O Location: / / / / / /S-L1 / / / / / /
Harmful if swallowed. Emits toxic fumes when heated or in contact with acids. Wash thoroughly after handling. Keep container closed and away from heat. Do not store near and avoid contact with acids.

Sodium Peroxide, 97% 500g Aldrich
Na2O2 Location: / / / / / / /S-L2 / / / / /
Strong Oxidizer! Corrosive! Reacts violently with water! Absorbs CO2 from air! Store under nitrogen!

Sodium persulfate 250 g Sigma
Location: / / / / / / /S-L2 / / / / /
Danger. Strong oxidizer. Contact with other material may cause fire. Causes irritation.

Sodium Phosphate Monobasic, granular 1 lb. Mallinckrodt
NaH2PO4.H2O Location: / / / / / /S-L1 / / / / / /

Sodium Phosphate, Dibasic Heptahydrate, granular 1 lb Mallinckrodt
Na2HPO4.7H2O Location: / / / / /Y-L1 / / / / / / /

Sodium Phosphate, Dibasic, anhydrous 500 g Sigma
Na2HPO4 Location: / / / / / / /S-L2 / / / / /

Sodium Phosphate, dibasic, anhydrous 2x1/4 lb. Merck
Na2HPO4 Location: / / / / / /S-L1 / / / / / /

Sodium Phosphate, Dibasic, anhydrous 1 lb Fisher Scientific: J.T. Baker
Na2HPO4 Location: / / / / /Y-L1 / / / / / / /

Sodium Phosphate, dibasic, anhydrous, powder 1 lb J.T. Baker
Na2HPO4 Location: / / / / / /S-L1 / / / / / /

Sodium Phosphate, Monobasic, granular 1 lb. Mallinckrodt
NaH2PO4.H2O Location: / / / / /Y-L1 / / / / / / /

Sodium Phosphate, monobasic, monohydrate crystal 2x1lb J.T. Baker
NaH2PO4.H2O Location: / / / / /Y-L1 / / / / / / /

Sodium Phosphate, monobasic, monohydrate crystal 500 g Sigma
NaH2PO4.H2O Location: / / / / / / /S-L2 / / / / /

Sodium Potassium Tartrate, crystal 1 lb Fisher
NaKC4H4O6.4H2O Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed.

Sodium Salicylate 500 g+1 lb E M Science; Fisher
C6H4(OH)COONa Location: / / / / / /S-L1 / / / / / /

Sodium Silicofluoride 100g K & K Lab., Inc.
Location: / / / / /Y-L1 / / / / / / /

Sodium Sulfate, anhydrous, granular 3x1 lb Fisher
Na2SO4 Location: / / / / /Y-L1 / / / / / / /

Sodium Sulfate, anhydrous, granular 1 lb Mallinckrodt
Na2SO4 Location: / / / / / /S-L1 / / / / / /

Sodium Sulfide 9-Hydrate, crystal 500 g J.T. Baker
Na2S.9H2O Location: / / / / / / /S-L2 / / / / /
Warning! Flammable solid. Causes irritation. Harmful if swallowed. Contact with acid liberates poisonous gas. Keep away from heat, s
parks, flame. Avoid contact with eyes, skin, clothing. Keep in tightly closed container.
Wash thoroughly after handling. In case of fire, soak with water. In case of spill, sweep up and remove. Flush spill area with water
First Aid: Call a physician. If swallowed, if conscious, immediately induce vomiting.
... case of contact immediately flush eyes with plenty of water for at least 15 minutes. Flush skin with water. Storage: Product must
be refrigerated at 2 - 8 deg. C (36 - 46 deg. F).

Sodium Sulfite, anhydrous powder 2lb+1lb Schaar and Co., J.T. Baker
Na2SO3 Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. Wash thoroughly after handling. Keep in well-closed container in a cool place. If swallowed, if conscious, ind
uce vomiting. Repeat until vomit fluid is clear. Call a physician.

Sodium Tartrate, granular 1 lb Fisher
Na2C4H4O6.2H2O Location: / / / / / / /S-L2 / / / / /

Sodium Tartrate, granular 5lb Mallinckrodt
Na2C4H4O6.2H2O Location: / / / / /Y-L1 / / / / / / /

Sodium Thiocyanate, crystal 2x1kg+1 lb Sigma; J.T. Baker
NaSCN Location: / / / / / / /S-L2 / / / / /
Warning! Harmful if swallowed. Avoid contact with eyes, skin, clothing. Wash thoroughly after handling. If swallowed, induce vomitin
g and call a physician. Avoid breathing dust.

Sodium Thiosulfate (Sodium Hyposulfite), granular 1 lb. Merck & Co.
Na2S2O3.5H2O Location: / / / / /Y-L1 / / / / / / /

Sodium Thiosulfate, anhydrous powder 4x1 lb. Mallinckrodt, J.T. Baker
Na2S2O3 Location: / / / / /Y-L1 / / / / / / /

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ium Thiosulfate, crystal 1 lb Mallinckrodt
Na2S2O3.5H2O Location: / / / / / / /S-L2 / / / / /
Harmful if swallowed. Wash thoroughly after handling. If swallowed, induce vomiting and call a physician at once.

Sodium Thiosulfate, crystal 8x1lb+2.5k J.T. Baker; Fisher; Mallinckrodt; Allied
Na2S2O3.5H2O Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. Wash thoroughly after handling. If swallowed, induce vomiting and call a physician at once.

Sodium Tungstate, powder 500g+1lb J.T. Baker; Aldrich
NaWO4.2H2O Location: / / / / / / /S-L2 / / / / /

Sodium Acetate, granular 3x1 lb Mallinckrodt
NaC2H3O2.3H2O Location: / / / / /Y-L1 / / / / / / /

Sodiun Phosphate, monobasic, anhydrous 1 kg Sigma
NaH2PO4 Location: / / / / / / /S-L2 / / / / /

Sodiun Silicate, meta, crystal 2x1 lb Baker, Allied
Location: / / / / /Y-L1 / / / / / / /

Sodiun Sulfate, anhydrous powder 1 lb Baker
Location: / / / / / /S-L1 / / / / / /

Soluble Starch 1 lb Fisher
Location: / / / / /Y-L1 / / / / / / /

Somatostatin 0.5 mg Sigma
Location: / / / / / / /S-L2 / / / / /

SPAONS 2 bottles

SPRONS: 4.5-Dihydroxy-3-(p-sulfophenylazo)-2.7-... 25+10 g Eastman Kodak Co.. K&K Labs.
NaO3S2C6H4N:NC10H3(OH)2(SO3... Location: / / / / /Y-L1 / / / / / / /

Spezialol Nr. 404 fur Schlittenbahnen 25 ml R. Juno
Location: / / / / /Y-L1 / / / / / / /

Spezialol Nr.405 25 ml R. Juno. Fur Triebtiele.
Location: / / / / /Y-L1 / / / / / / /

Stannic Chloride, lumps 1/4 lb. Mallinckrodt
SnCl4.5H2O Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed.

Stannous Chloride, Dihydrate crystal 2x1lb J.T. Baker
SnCl2.2H2O Location: / / / / /Y-L1 / / / / / / /
Causes burns. Do not get in eyes, on skin. on clothing. Avoid breathing dust. Keep in tightly closed container in a cool place. Use with adequate ventilation. Wash thoroughly after handling. In case of contact. immediately flush eyes or skin with plenty of water for at least 15 minutes. Call a physician.

Stearic Acid (Octodecanoic Acid) 100 g Matheson. Coleman & Bell
Location: / / / / /Y-L1 / / / / / / /

Strontium Carbonate. powder 1 lb Mallinckrodt
SrCO3 Location: / / / / /Y-L1 / / / / / / /

Strontium Chloride, granular 1 lb Mallinckrodt
SrCl2.6H2O Location: / / / / /Y-L1 / / / / / / /

Substance P 1 mg Sigma
Location: / / / / / / /S-L2 / / / / /

Sucrose (Saccharose), crystals 5 kg Sigma
C12H22O11 Location: / / / / / / /S-L2 / / / / /

Sucrose (Saccharose), crystals 5x1lb+1kg Eastman Kodak Co.; Mallinckrodt; Fisher; others
C12H22O11 Location: / / / / /Y-L1 / / / / / / /

Sudan Black B 10g+5g Allied Chemical. For use in fat staining.
Location: / / / / /Y-L1 / / / / / / /

Sulfamic Acid, practical grade 4 kg J.T. Baker
NH2SO3H Location: / / / / /Y-L1 / / / / / / /
Warning! Causes irritation. Do not get in eyes. Avoid contact with skin and clothing. Avoid breathing dust. In case of contact. immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Flush skin with water.

Sulfanilamide 500g+100g Eastman Kodak Co.; unmarked bottle
4-NH2C6H4SO2NH2 Location: / / / / /Y-L1 / / / / / / /

Sulfanilic Acid, powder 1 lb. Mallinckrodt
NH2C6H4SO3H.H2O Location: / / / / / / /S-L2 / / / / /

Sulfur, washed 4 oz. Rexall Drug company, laxative.
Location: / / / / /Y-L1 / / / / / / /

Sulfuric Acid 2x9lb+1pt VWR Scientific
H2SO4 Location: / / / / / / /S-L2 / / / / /
Danger! Causes severe burns. May be fatal if swallowed. Do not get in eyes, on skin. or on clothing. Do not add water to contents while in a container because of violent reaction. Poison. Call a physician.
Antidote: External: Flood with tap water then water containing sodium bicarbonate. For eyes: in case of contact immediately flush with water for at least 15 minutes. Get medical attention. Internal: Do not give emetics.
Give tap water. milk or milk of magnesia. Give whites of eggs beaten with water.

Sulfuric Acid 32x91b+13x E M Science; J.T. Baker; Fisher
H2SO4 Location: / / / /Sit-4 / / / / / / / /
Danger! Causes severe burns. May be fatal if swallowed. Do not get in eyes, on skin or on clothing. Do not add water to contents whi
le in a container because of violent reaction. Poison. Call a physician.
Antidote: External: Flood with tap water then water containing sodium bicarbonate. For eyes: In case of contact immediately flush wi
... water for at least 15 minutes. Get medical attention. Internal: Do not give emetics.
...e tap water, milk or milk of magnesia. Give whites of eggs beaten with water.

T3-HRP Conjugate Immunotech Corp.
Location: / / / / / / /S-L2 / / / / /

Tannic Acid, powder, tech. grade 1/4 lb. Schaar and Company
Location: / / / / /Y-L1 / / / / / / /

Tannic Acid (Tannin) 100 g Sigma Chemical Co.
Location: / / / / /Y-L1 / / / / / / /

Tannic Acid, purified fluffy (powder) 1/4 lb. Mallinckrodt
Location: / / / / / / /S-L2 / / / / /

Tartaric Acid, granular 2x1 lb Mallinckrodt
H2C4H4O6 Location: / / / / /Y-L1 / / / / / / /
Warning! Harmful if swallowed. Wash thoroughly after handling. If swallowed, induce vomiting and call a physician.

Terpineol 4 oz. General Biological Supply House, Inc.
Location: / / / / /Y-L1 / / / / / / /

Terramycin Egg Formula 4 oz Pfizer
Location: / / / / / / /S-L2 / / / / /

Tetrabromoethane (Acetylene Tetrabromide), purif. 2x1 pt Fisher
...2.CHBr2 Location: / / / / /Y-L1 / / / / / / /
Fatal if taken internally. May cause severe burns. Avoid contact with eyes, skin, clothing. Will liberate poisonous vapor upon conta
ct with moisture. Keep tightly closed, away from heat, open fire, damp areas. Antidote: External -
Wash skin or eyes with plenty of water (at least 15 minutes); for eyes get physician. Internal - give emetic (warm salt water; musta
rd and water), until vomit fluid is clear. Give plenty of water. Give stimulant as ammonia, oxygen, artificial
respiration if necessary. Keep patient quiet and warm, not hot. Call physician.

Tetracycline, crystalline 5 g Sigma
Location: / / / / / /S-L1 / / / / / /

Thallic Nitrate 25 g Eastman Kodak Co.
Tl(NO3)3 Location: / / / / /Y-L1 / / / / / / /
Poison. May be fatal if swallowed. Wash thoroughly after handling.

THAM (tris(Hydroxymethyl)Aminomethane) 500 g Fisher, Primary standard.
C4H11NO3 Location: / / / / /Y-L1 / / / / / / /

Thiamine Hydrochloride (Vitamin B1) (Aneurine) 25g Eastman Kodak Co.
Location: / / / / /Y-L1 / / / / / / /

Thiamine Hydrochloride (Vitamin B1) (Aneurine) 5g+100g Sigma
Location: / / / / / /S-L1 / / / / / /

...rin, powder 10 g J.T. Baker; Indicator.
Location: / / / / /Y-L1 / / / / / / /
Harmful if swallowed. Avoid contact with skin and clothing. Avoid breathing dust. Wash thoroughly after handling. Poison. Call a phy
sician. Antidote: If conscious, induce vomiting by giving a tablespoonful of salt in a glass of warm water and
repeat until vomit fluid is clear. Give milk or whites of eggs beaten with water. Keep patient warm and quiet.

Thymine (5 Methyl Uracil) 25 g Nutritional Biochemicals Corp.
Location: / / / / / /S-L1 / / / / / /

Thymol, crystal 2x250g+2xb Aldrich: J.T. Baker: no label
2-[(CH3)2CH]C6H3-5-(CH3)OH Location: / / / / /Y-L1 / / / / / / /
The chemical, physical and toxicological properties of this product have not been fully investigated. Its handling or use may be hazardous. Keep in tightly closed, light resistant containers.

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odene 2x1/4lb+1b Fisher. Indicator for iodimetry.
Location: / / / / /Y-L1 / / / / / / /

Tissue-Tek, O.T.C. Compound 3x4 fl oz Miles Laboatories, Inc.
Embedding Medium Location: / / / / / / /S-L2 / / / / /

Toluene 20l Mallinckrodt: VWR Scientific: no label
C6H5CH3 Location: / / / / / / /S-L2 / / / / /
Flammable liquid. Vapors may be harmful. Avoid breathing vapors. Keep container tightly closed. Use with adequate ventilation. Keep away from heat, sparks and open flame. If inhaled, remove to fresh air. Call a physician.
Photochemically reactive. Flash point 4.4 deg. C (40 deg. F).

Toluene (Toluol), purified 8pt J.T. Baker; Merck & Co.,Inc.
C6H5CH3 Location: / / /Sit-3 / / / / / / / /
Danger! Flammable. Vapor harmful. Harmful or fatal if swallowed. Keep away from heat, sparks, and open flame. Keep container closed. Use only with adequate ventilation. Avoid prolonged breathing of vapor.
Avoid prolonged or repeated contact with skin. Poison. Call a physician. Antidote: Move patient to fresh air if atmosphere is contaminated. Apply artificial respiration if not breathing. If swallowed, if conscious do not induce vomiting.
Call a physician immediately.

Toluidine Blue O 10 g Allied Chemical
Location: / / / / /Y-L1 / / / / / / /

Trichloroacetic Acid, crystals 3x1 lb Matheson, Coleman & Bell; Fisher
CCl3COOH Location: / / / / /Y-L1 / / / / / / /
Danger! Corrosive acid. Do not breath vapor. Poison. May be fatal if swallowed. Keep away from feed or food products. Avoid contact with skin and eyes. In case of contact, immediately flush with water. For eyes, get medical attention.
Antidote: Do not give baking soda or emetics. Do not induce vomiting. Give aluminum hydroxide gel or milk of magnesia. Follow with milk or white of eggs beaten with water. Call a physician.

Triethanolamine 1 pt. J.T. Baker
Location: / / / / /Y-L1 / / / / / / /
Causes eye injury and skin irritation. In case of contact immediately flush skin or eyes with plenty of water for at least 15 minutes, get medical attention. Remove and wash clothing before re-use.

Tris-Hydroxymethylaminomethane, standard reference 50 g G. Frederick Smith Chemical Co.
(CH2OH)3CNH2 Location: / / / / / /S-L1 / / / / / /

Triton X-100 (Alkylaryl Polyether Alcohol) sm botl no label
Location: / / / / /Y-L1 / / / / / / /
Avoid contact. Do not breath vapor.

Triton X-100 (Alkylaryl Polyether Alcohol) 2x500 ml + Baker, Sigma
Location: / / / / / / /S-L2 / / / / /

Trizma - 7.5, crystal 5 g Sigma
Location: / / / / / / /S-L2 / / / / /

Trizma Base [Tris (Hydroxymethyl) Aminomethane] 250 g Sigma
Location: / / / / / / /S-L2 / / / / /

Trizma Base [Tris (Hydroxymethyl) Aminomethane] 500g Sigma
Location: / / / / /Y-L1 / / / / / / /

Trizma-HCl [Tris(hydroxymethyl)aminomethane HCl] 100 g Sigma Chemical
anhydrous Location: / / / / /Y-L1 / / / / / / /
Store in a dry place. Desiccate if possible.

Trypan Blue C34H24N6O14S4(Na)4			25 g	Eastman Kodak Co.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Trypan Blue (Direct Blue 14)			10 g	Matheson, Coleman & Bell									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
..rypsin, from bovine pancreas, Type I			0.5 g	Sigma									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
Tunostic Acid, sodium salt			50 g	Sigma									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/
Tween 80 (Polysorbate 80)			250 ml	Atlas Chemical Industries									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
ULTREX, Ultrapure			500 ml	Baker									
	Location:	/	/	/	/Sit-4	/	/	/	/	/	/	/	/
Uranine Water Soluble, (Aniline Yellow), (Sodium Fluorescein)			500 g	Fisher									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Uranium Acetate (Uranyl) (UO2)(C2H3O2)2.2H2O Poison.	Location:	/	10 g	Fisher /	/	/Y-L1	/	/	/	/	/	/	/
Urea NH2CONH2			300g+1/4lb	Fisher Scientific; J.T. Baker									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Vanadium Chloride, dry			4 oz.	E.H. Sargent & Co.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
...ol A-1, anhydrous 200			3x55gal	Norcross									
	Location:	/	/Sit-2	/	/	/	/	/	/	/	/	/	/
Flammable.													
Vitamin B 12 (Cyanocobalamin)			5 g	Sigma									
	Location:	/	/	/	/	/	/S-L1	/	/	/	/	/	/
White Oil, Paraffin oil-Mineral oil			1 pt	SSC									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Wizard Charcoal lighting fluid			1 qt + 1pt	Wizard									
	Location:	/	/	/	/	/	/	/S-L2	/	/	/	/	/
Woeller's Solution			4l+1l	Henrichs, SMH									
	Location:	/	/	/Sit-3	/	/	/	/	/	/	/	/	/
Wright Rapid Stain			470 ml	MCB Reagents									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Danger! Contains methanol. Flammable. Harmful if inhaled. May be fatal or cause blindness if swallowed. Cannot be made nonpoisonous. Keep away from heat, sparks and open flame. Keep container closed. Avoid breathing vapor. Use with adequate ventilation. Wash thoroughly after handling. Poison. If swallowed, drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger or blunt object. Do not induce vomiting or give anything by mouth to an unconscious person. If inhaled, move patient to fresh air. Use artificial respiration if necessary. Call a physician.													
Wright's Stain			5 g	Matheson, Coleman & Bell									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Xylene Cyanole FF, technical			100 g	Eastman Kodak Co.									
	Location:	/	/	/	/	/Y-L1	/	/	/	/	/	/	/
Xylenes			3x20l	VWR									

Flammable. Harmful if inhaled or swallowed. Causes irritation. Keep away from heat, sparks, flame. Keep in tightly closed container. Avoid contact with eyes, skin, clothing. Use with adequate ventilation. Wash thoroughly after handling.
In case of fire, use water spray, alcohol foam, dry chemical, carbon dioxide. Flush spill area with water spray. If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.
Call a physician. If swallowed, do not induce vomiting; if conscious cautiously give warm water, then mineral oil followed by hot coffee or strong tea. Call a physician.
In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes, call a physician. Flash point 75 deg. F.

Xylenes, free from water and acid — 4l — Mallinckrodt
C6H4(CH3)2 — Location: / / / / / /S-L1 / / / / / /

Flammable liquid. May be harmful if swallowed or inhaled. Causes irritation. Avoid breathing vapors. Avoid contact with eyes, skin, clothing. Wash thoroughly after handling. Keep container tightly closed. Use with adequate ventilation.
Keep away from heat, sparks and open flame. If swallowed, get medical attention immediately. Vomiting may occur spontaneously, but do not induce. Call a physician. If inhaled, remove to fresh air. If not breathing, give artificial respiration.
If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Photochemically reactive. Flash point 29 deg. C (84 deg. F).

Yeast Extract, Bacteriological — 2x1lb — Fisher Scientific; Difco
Location: / / / / /Y-L1 / / / / / / /

Yeast Extract, Bacteriological — 1 lb — Difco
Location: / / / / / / /S-L2 / / / / /

Zinc Acetate, Dihydrate, crystal — 1 lb. — J.T. Baker
(CH3COO)2Zn.2H2O — Location: / / / / /Y-L1 / / / / / / /

Harmful if swallowed. Causes irritation. Avoid contact with eyes, skin, clothing. Avoid breathing dust. Keep container tightly closed. Wash thoroughly after handling.
If swallowed, if conscious, induce vomiting and call a physician at once. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes, call a physician.

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c Chloride, broken lump — 1 lb. — J.T. Baker
...l2 — Location: / / / / / /S-L1 / / / / / /

Warning! May cause skin irritation. Poison.

Zinc Chloride, dry granular — 1 lb. — Fisher
ZnCl2 — Location: / / / / /Y-L1 / / / / / / /

Poison. May cause skin irritation. Avoid prolonged or repeated contact with skin. Harmful if swallowed. Wash thoroughly after handling. Antidote: Give emetic (warm salt water) to induce vomiting. Repeat until vomit fluid is clear.
Then give milk of magnesia or milk, or beaten egg whites. Call physician.

Zinc Sulfate, 7-Hydrate, crystal — 1/4 lb. — J.T. Baker
Location: / / / / / /S-L1 / / / / / /

Warning! Causes irritation. Harmful if swallowed.

Zinc Sulfate, granular — 1 lb. — Mallinckrodt
ZnSO4.7H2O — Location: / / / / / /S-L1 / / / / / /

Warning! Harmful if swallowed. Poison.

APPENDIX H

DISTRIBUTION LIST

Proposed IMS Infrastructure Improvement Project
Distribution List for
Final EIS and Executive Summary of Final EIS

Last Name	First Name	Organization
		ADEC, PRINCE WILLIAM SOUND DISTRICT OFFICE
		ADEC, SPILL PREVENTION PLANNING & MANAGEMENT
		AK DEPT. OF COMMERCE & ECON. DEV.
		AK PUBLIC LANDS INFORMATION CENTER
		AK STATE LIBRARY, GOVERNMENT PUBLICATIONS
		AK STATE LIBRARY, INFORMATION SERVICES
		AK WILDERNESS RECREATION & TOURISM
		AK. DEPT. OF NATURAL RESOURCES, DOPOR
		ALASKA CONSERVATION FOUNDATION
		ALASKA ENVIRONMENTAL ASSEMBLY
		ALASKA MUNICIPAL LEAGUE
		ALASKA OIL & GAS ASSOCIATION
		ALASKA OUTDOOR COUNCIL
		ALASKA RAPTOR REHABILITATION CENTER
		ALASKA SHELLFISH GROWERS ASSOCIATION
		ALASKA STATE CHAMBER OF COMMERCE
		ALASKA STATE LIBRARY
		ALASKA VISITORS ASSOCIATION
		ALASKA WILDLIFE ALLIANCE
		ALASKA WILDLIFE SOCIETY
		AMERICAN PETROLEUM INSTITUTE
		ANCHORAGE AUDUBON SOCIETY
		BIDARKI CORPORATION
		BIRD TLC
		BLM DISTRICT OFFICE
		BUREAU OF INDIAN AFFAIRS, FORESTRY
		BUREAU OF LAND MANAGEMENT, AK RESOURCE LIBRARY
		CHENEGA BAY SCHOOL LIBRARY
		CHUGIAK-EAGLE RIVER STAR
		CITIZEN'S ADV. COMM. ON FED AREAS
		COMMONWEALTH NORTH, INC.
		COOK INLET RCAC, DIRECTOR
		COPPER RIVER COUNTRY JOURNAL
		COPPER RIVER DELTA INSTITUTE
		COPPER RIVER/PWS ADVISORY COMMISSION
		CORDOVA AQUATIC MARKETING ASSOCIATION
		CORDOVA DISTRICT FISHERMEN
		CORDOVA OIL SPILL DISASTER RESPONSE OFFICE
		CORDOVA PUBLIC LIBRARY
		CORDOVA TIMES
		DEPARTMENT OF ENERGY
		ECOLOGY & ENVIRONMENT, INC.
		ELLAMAR PROPERTIES, INC.
		ENGLISH BAY CORPORATION
		FRIENDS OF CHUGACH STATE PARK
		FRIENDS OF THE ALASKA SEALIFE CENTER
		HOMER LEGISLATIVE INFORMATION OFFICE
		HOMER NEWS
		HOMER PUBLIC LIBRARY
		HOMER SOIL & WATER CONSERVATION DISTRICT
		JAKOLOF OTTER CENTER

Proposed IMS Infrastructure Improvement Project
Distribution List for
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Last Name	First Name	Organization
		KACHEMAK BAY CONSERVATION COUNCIL
		KACHEMAK BAY STATE PARK
		KAKM PUBLIC TV (7)
		KCHU - 770AM
		KCHU FM
		KCHU PUBLIC RADIO
		KENAI COMMUNITY LIBRARY
		KENAI FJORDS TOURS, INC.
		KENAI NATIONAL WILDLIFE REFUGE
		KGTL-AM/FM
		KIMO-ABC
		KLAN-AM
		KMXT-FM
		KODIAK CHAMBER OF COMMERCE
		KODIAK REDUCTION COMPANY
		KONIAG, INC. ATTN: JOHN MERRICK
		KSKA-FM
		KSRM-AM
		KTOO-FM/KTOO-TV
		KTUU-NBC
		KUAC-FM/TV
		KVAK-AM
		KVOK
		LAND OWNERS PWS
		LARSEN BAY TRIBAL COUNCIL
		LEGISLATIVE INFORMATION OFFICE FAIRBANKS
		LEGISLATIVE INFORMATION OFFICE JUNEAU
		LEGISLATIVE INFORMATION OFFICE KENAI
		LEGISLATIVE INFORMATION OFFICE KODIAK
		LEGISLATIVE INFORMATION OFFICE SEWARD
		LEGISLATIVE INFORMATION OFFICE VALDEZ
		LINDA HALL LIBRARY, DOCUMENTS DEPT.
		LITTLE TREASURES
		LOGGERS UNITED
		MARINE MAMMAL COMMISSION
		MIGRATORY BIRD MNGT-RAPTORS, USFWS
		MONTEREY BAY AQUARIUM LIBRARY
		MOOSE PASS PUBLIC LIBRARY
		MT. MARATHON NATIVE ASSOCIATION
		NATIONAL AUDUBON SOCIETY
		NATIONAL PARK SERVICE, CHF. COASTAL PROG.
		NATIONAL PARK SERVICE, CHIEF SCIENTIST
		NATIONAL PARKS & CONSERVATION ASSOC.
		NATIVES OF KODIAK, INC.
		NATL CONF OF STATE HIST PRES OFFICERS
		NATL TRUST FOR HIST PRES W. REGION
		NATL. TRUST FOR HISTORIC PRESERVATION
		NOAA HAZMAT
		NOAA-NMFS, OSDA&RO
		NORTH PACIFIC FISHERIES ASSOCIATION
		NORTH PACIFIC FISHERIES MGMT COUNCIL

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Last Name	First Name	Organization
		NORTH PENINSULA CHAMBER OF COMMERCE
		OFFICE OF ENVIRONMENTAL AFFAIRS
		OFFICE OF THE GOVERNOR
		OIL REFORM ALLIANCE
		OIL SPILL ECOLOGY & INFORMATION CENTER
		OUZINKIE TRIBAL COUNCIL
		PORT GRAHAM NATIVE CORPORATION
		PORT GRAHAM SCHOOL LIBRARY
		PORT LIONS SCHOOL LIBRARY
		PORT LIONS TRIBAL COUNCIL
		PRINCE WILLIAM SOUND AQUACULTURE
		PRINCE WILLIAM SOUND CONS ALLIANCE
		PWS SETNETTERS ASSOCIATION
		REED , HANKEN AND ASSOCIATES
		REGIONAL CITIZEN'S ADVISORY COUNCIL
		RURAL CAP
		SELDOVIA CHAMBER OF COMMERCE
		SELDOVIA PUBLIC LIBRARY
		SEWARD CHAMBER OF COMMERCE
		SEWARD COMMUNITY LIBRARY
		SEWARD MARINE CENTER
		SEWARD PHOENIX LOG
		SEWARD YACHT CLUB
		SIERRA CLUB LEGAL DEFENSE FUND
		SIERRA CLUB OF ALASKA
		SOLDOTNA PUBLIC LIBRARY
		SOUTHEAST ALASKA CONSERVATION COUNCIL
		TATITLEK COMMUNITY AND SCHOOL LIBRARY
		TATITLEK CORPORATION
		TATITLEK IRA COUNCIL
		TECHNICAL INFORMATION CENTER, DOE
		THE PRINT SHOP/SEWARD SECRETORIAL
		TRUSTEES FOR ALASKA
		TYONEK NATIVE CORPORATION
		TYONEK VILLAGE COUNCIL
		U. OF A., MARINE ADVISORY PROGRAM
		U.S. DEPARTMENT OF COMMERCE, NOAA
		U.S. DEPT. OF THE INTERIOR, NATURAL RESOURCE LIB.
		U.S. GOVERNMENT PRINTING OFFICE
		UNIVERSITY OF ALASKA, INST. OF ARCTIC BIOLOGY
		VALDEZ CONSORTIUM LIBRARY
		VALDEZ NATIVE ASSOCIATION
		VALDEZ PIONEER
		VALDEZ VANGUARD
		WILDERNESS SOCIETY, ALASKA REGIOAL DIRECTOR
		WILDLIFE MANAGEMENT INSTITUTE
SECRETARY		ADF&G KODIAK ADVISORY COMMITTEE
LIBRARY		ADF&G, HABITAT DIVISION
DIRECTOR		ADNR; DIVISION OF LAND & WATER MNGMT
COMMISSIONER		AK DEPARTMENT OF NATURAL RESOURCES

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Last Name	First Name	Organization
COMMISSIONER		AK DEPT OF COMMUNITY & REGIONAL AFFAIRS
DIRECTOR		AK DEPT OF COMMUNITY & REGIONAL AFFAIRS
COMMISSIONER		AK DEPT OF TRANS. & PUBLIC FACILITIES
DIRECTOR		ALASKA CENTER FOR THE ENVIRONMENT
DIRECTOR		ALASKA DIVISION OF TOURISM
STATE CO-CHAIRPERSON		ALASKA LAND USE COUNCIL
KODIAK ADVISORY COM. SEC.		ALSKA DEPART. OF FISH AND GAME
US FISH AND WILDLIFE SERVICE		ATTN: CHIEF, BRANCH OF DAMAGE ASSESSMENT
AREA DIRECTOR		BUREAU OF INDIAN AFFAIRS
DEPUTY COMMISSIONER		BUREAU OF INDIAN AFFAIRS
DIRECTOR		BUREAU OF LAND MANAGEMENT
STATE DIRECTOR		BUREAU OF LAND MANAGEMENT
USDA-FS INFO. CNTR.		CENTENNIAL HALL
LIBRARIAN		CHENEGA BAY COMMUNITY LIBRARY
USDA-FS, INFO OFFICE		CHUGACH NATIONAL FOREST
MAYOR		CITY OF CORDOVA
MAYOR		CITY OF HOMER
CITY MANAGER		CITY OF KENAI
MAYOR		CITY OF KENAI
MAYOR		CITY OF KODIAK
MAYOR		CITY OF LARSEN BAY
MAYOR		CITY OF OLD HARBOR
MAYOR		CITY OF SELDOVIA
CITY MANAGER		CITY OF SEWARD
MAYOR		CITY OF SOLDOTNA
CITY MANAGER		CITY OF WHITTIER
CHAIRMAN		COMMITTEE ON ENERGY & NATURAL RESOURCES
CHAIRMAN		COMMITTEE ON MERCHANT MARINE & FISHERIES
DIRECTOR		DEPT. OF COMMERCE/NOAA, ROOM 6117
DIRECTOR		DIRECTOR, AK FISH AND WILDLIFE RESEARCH CENTER
U. OF ALASKA FAIRBANKS		DOCUMENTS COLLECTION
EXECUTIVE DIRECTOR		ENVIRONMENTAL DEFENSE FUND
US DEPT OF JUSTICE		ENVIRONMENTAL LIBRARY
U.S. ARMY CORPS OF ENGINEERS		ENVIRONMENTAL RESOURCES
DEPUTY DIRECTOR		EPA - ALASKA TASK FORCE WH556F
ASSISTANT DIRECTOR		EPA ALASKA OPERATIONS - OFFICE
CHIEF ATTORNEY		EXXON COMPANY, USA, LAW DEPARTMENT
DIRECTOR		FISH AND WILDLIFE SERVICE
REGIONAL DIRECTOR		FISH AND WILDLIFE SERVICE
USDA-FOREST SERVICE		FOREST PRODUCTS LAB - STATION DIRECTOR
EXECUTIVE DIRECTOR		HOMER CHAMBER OF COMMERCE
DIRECTOR		INSTITUTE OF MARINE SCIENCE
EXECUTIVE DIRECTOR		KENAI CHAMBER OF COMMERCE
NEWS DIRECTOR		KTVA-CBS
UAF, INST. OF MARINE SCIENCE		MARINE CENTER LIBRARY
DIRECTOR		MINERALS MANAGEMENT SERVICE
US DEPT OF INTERIOR		MINERALS MANAGEMENT SERVICE LIBRARY
MAYOR		MUNICIPALITY OF ANCHORAGE
US DEPT OF AGRICULTURE		NATIONAL AGRICULTURE LIBRARY
DIRECTOR		NATIONAL BIOLOGICAL SURVEY
DIRECTOR		NATIONAL PARK SERVICE

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Last Name	First Name	Organization
NATIONAL PARK SERVICE		REGIONAL DIRECTOR
PRESIDENT		NATIVE VILLAGE OF EYAK
PRESIDENT		NINILCHIK TRADITIONAL COUNCIL
EXECUTIVE DIRECTOR		NORTH ALASKA ENVIRONMENTAL CENTER
CITIZENS' OVERSIGHT COUNCIL		OIL & OTHER HAZARDOUS SUBSTANCES
PRESIDENT		OLD HARBOR TRIBAL COUNCIL
NATL. OCEANOGRAPHIC DT. CTR.		OPDIN CCRO - NOAA NESDIS E OC24
PRESIDENT		OUZINKIE NATIVE CORPORATION
ASSISTANT DIRECTOR		PACIFIC NW FOREST & RANGE EXP. STATION
CHAIRMAN		PACIFIC SEABIRD GROUP
DIRECTOR		POLICY AND STRATEGIC PLANNING/EC
VILLAGE CHIEF		PORT GRAHAM VILLAGE COUNCIL
PRESIDENT		PRINCE WILLIAM SOUND COMMUNITY COLLEGE
USDA-FOREST SERVICE		PUBLIC AFFAIRS OFFICE
DIRECTOR		PWS CONSERVATION ALLIANCE
EXECUTIVE DIRECTOR		RESOURCE DEVELOPMENT COUNCIL
PRESIDENT		SALAMATOF NATIVE ASSOCIATION
PRESIDENT		SELDOVIA NATIVE ASSOCIATION, INC.
EXECUTIVE DIRECTOR		SIERRA CLUB
EXECUTIVE DIRECTOR		SOLDOTNA CHAMBER OF COMMERCE
CHAIRMAN		SUBCOMM. ON ENERGY & MINERAL RESOURCES
CHAIRMAN		SUBCOMMITTEE ON ENERGY & MINERAL RESOURCES
PRESIDENT		TATITLEK CORPORATION
PRESIDENT		U. OF A., DEPT OF WILDLIFE AND FISH
LIBRARY		U.S. DEPARTMENT OF THE INTERIOR
DIRECTOR		U.S. GEOLOGICAL SURVEY
REGIONAL DIRECTOR		U.S. FISH AND WILDLIFE SERVICE
DISTRICT RANGER		U.S.D.A. FOREST SERVICE
PLANNING STAFF OFFICER		U.S.D.A. FOREST SERVICE
DIRECTOR		UAF/MARINE INSTITUTE
PRESIDENT		UGANIK NATIVES
EXECUTIVE DIRECTOR		UNITED FISHERMAN OF ALASKA
ASSISTANT SCIENCE LIBRARIAN		UNIVERSITY OF MONTANA
MAYOR		VILLAGE OF CHIGNIK
LIBRARIAN		WHITTIER PUBLIC LIBRARY
LIBRARIAN		WILDLIFE LIBRARY
ABBOTT	RICHARD & EDITH	
ADAMS	DAVID W.	
ADAMS	JEFF	U.S. FISH & WILDLIFE SERVICE
ADAMSON	CHARLOTTE	MARINE WILDLIFE RESCUE TEAM, INC.
ADKINS	MARLA JEAN	
ADKINS	THE HONORABLE KEVIN	MAYOR OF PORT LIONS
AGNOT	THE HONORABLE MARVIN	MAYOR OF AKHIOK
AHLEFELD	C. L.	
AKIN	JEANIFER	
ALEXANDER	VERA	
ALVIN	EWING	ENVIRONMENTAL PROTECTION AGENCY
ANACKER/EXEC. DIR.	SANDY	VALDEZ CONVENTION & VISITORS BUREAU
ANAHONAK	PHILLIP G.	
ANDERSON	MARK E.	

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Last Name	First Name	Organization
ANDERSON	NANCY	WILLIAM H. SEWARD YACHT CLUB
ANDERSON	SHARON	SEWARD ASSOC. FOR ADV. MARINE SCI.
ANDREWS	RUPERT E.	
ANOHONOK	EPHIM	
ANOHONOK	PHILLIP	
APANAITIS	BARBARA E	
ARMANTROUT	ANDRE A.	
ARMSTRONG	JOHN	ENVIRONMENTAL PROTECTION AGENCY WD-139
ARNOLD	ROBERT	ENVIRONMENTAL SCIENCE & ENGINEERING
AYERS, EXEC. DIR.	JIM	EVOS TRUSTEE COUNCIL
BADER	HARRY	DIVISION OF RESOURCES MANAGEMENT
BAILEY	EDGAR	
BAILEY, CO-CHAIRMAN	OSCAR	COALITION FOR ALASKANS
BAKER	CAL	CORDOVA RANGER DISTRICT
BAKER	RAGNHILD M.	
BAKER	TORIE	CORDOVA DISTRICT FISHERMEN UNITED
BALBUS	MARCIA	
BALLACHEY	BRENDA	US FISH & WILDLIFE SERVICE
BALLOCK	JACK	
BALLOCK	JAMES J.	
BALOGH	LYNNE R.	
BALSIGER	JAMES W.	NOAA, NMFS AFSC
BARDARSON	LINNE & DOT	
BARKER	PATRICIA	CHENEGA BAY IRA COUNCIL
BARKLEY	JAMES	FOX ISLAND CHARTERS
BARNHART	JAMY	
BARRY, FISH. SUBCOMM.	DON	HOUSE MERCHANT MARINE & FISHERIES
BECHTOL	WILLIAN	ALASKA DEPARTMENT OF FISH & GAME
BECK	DAVE	
BECKER	KARL	
BELLOSO	JORGE M.	
BELT	GINA	US DEPARTMENT OF JUSTICE
BENCZE	ILONA V.	
BENEKE	PATRICIA	NATURAL RESOURCES SUBCOMMITTEE
BENNETT	MIKE	AK DEPT. OF NAT. RESOURCES, FLWM-SCRO
BENSON	POPPY	
BENTON	DAVID	ADF&G, HEADQUARTERS OFFICE
BENTON	KIMBERLY	
BENTSON	ALLAN & CHARLEEN	
BERG	CATHERINE	US FISH AND WILDLIFE SER. DIV. OF ENV. CONTAMINANTS
BERGMANN	ANTHONY J.	
BERGMANN	PAMELA	U.S. DEPARTMENT OF INTERIOR
BERKLUND	RHONDA	
BHARGAVA	RAJ	
BILLINGS	ATTENTION: MARIA	RASMUSON LIBRARY
BILLMAIER	LINDA	
BINDWOOD	A.	C/O BLUE
BINGMAN	KATHY	
BISHOP	MARY ANNE	COPPER RIVER DELTA INST. - US FOREST SVC
BLACK	MARK	
BLACKWELDER	ALMA	

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BLANCHARD	BRUCE	U.S. FISH AND WILDLIFE SERVICE
BLATCHFORD	KEN	MT. MARATHON NATIVE ASSOCIATION
BLENDEN	MICHAEL	DES LACS REFUGE
BOESCH	DONALD	CTR FOR ENVIRONMENTAL & MARINE STUDY
BOHI	HEIDI	ALASKA PUBLIC INTEREST RESEARCH GROUP
BOLGER	MIKE	DIVISON OF TOXICOLOGICAL REVIEW
BONDAREFF	JOAN M.	COMM. ON MERCHANT MARINE & FISHERIES
BONHAM	DOUG	ENTRANCO
BONSIGNORE	BARBARA	
BOOHER	SAM	
BOOTHE	CAMERON J.	
BOTHELO	BRUCE	ALASKA DEPT. OF LAW
BOWEN	SHIRLEY	
BOWLBY	ED	
BRADLEY	GENE	
BRANSON	MARGARET	
BRAUN	ALLEGRA	
BRESLIN JR.	THOMAS J.	
BREWER	KAREN & GENE	
BRIGHT, LIBRARIAN	BRENDA B.	UNIVERSITY OF NORTH CAROLINA
BRIGHTON, ESQ.	WILLIAM D.	ENV. & NAT. RES. DIV, DEPT. OF JUSTICE
BROCKMAN	LARRY	U.S. ENVIRON. PROTECTION AGENCY, REGION 10
BRODERSEN	MARK	AK DEPT OF ENVIRONMENTAL CONSERVATION
BRODIE	PAMELA	SIERRA CLUB
BRONSON	MICHAEL	
BROOKS	EILEEN	LGL ALASKA RESEARCH ASSOCIATION
BROUN	JAMES A	
BROWN	DONALD W.	NOAA/NMFS FISH SCIENCE CENTER
BROWN	EVELYN	
BROWN	MIKE	CHUGACH ALASKA CORPORATION
BRUCE	DAVID	ADEC-EVOS PROJECT
BRUN, LIBRARIAN	BETTY J.	SUSAN B. ENGLISH SCHOOL LIBRARY
BRUYERE	RON	
BUCZKOWSKE	CYNTHIA	
BURGH	COLLEEN	CH2M HILL
BURKE	JOHN	DIVISION OF SPORT FISH, ADF&G
BURN	DOUGLAS M.	USFWS, MARINE MAMMALS MGMT
BURNS	THE HONORABLE RICK	MAYOR OF OLD HARBOR
BURROWS	W.D.	USABRDL
BUTLER	THE HONORABLE BEN	MAYOR OF WHITTIER
BUTTON	CAROL J.	UAF/INSTITUTE OF ARCTIC BIOLOGY
BYRD	VERN	US FISH & WILDLIFE SERVICE
CAPRA	DOUGLAS R.	
CARLOUGH	VICTOR	
CARMICHAEL	JAMES	AFOGNAK NATIVE CORPORATION
CARPENTER, EXEC. DIR.	WAYNE D.	SEWARD CHAMBER OF COMMERCE
CARR	MARY	
CARR	TRIS	
CARROLL	ALRAY	COOK INLET SEINERS ASSOCIATION
CARRUBBA	LOUIS A	
CASTELLINA	ANNE D.	KENAI FJORDS NATIONAL PARK

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Last Name	First Name	Organization
CASTELLINI	MIKE	INSTITUTE OF MARINE SCIENCE
CAVALLERO	NICK	CDR, US ARMY, TEST AND EVAL. COMMAND,
CERRO	VIVIAN DEL	
CHAPLIN	KATHLEEN	
CHAPMAN	ED	PIONEER RESOURCE CORPORATION
CHASIS	SARAH	NATURAL RESOURCES DEFENSE COUNCIL
CHENIER	ROBERT	
CHICHENOFF	THE HONORABLE ZACK	MAYOR OF OUZINKIE
CHRISTENSEN	PAT	CHENEGA BAY VILLAGE LIBRARY
CHRISTENSEN	RANDY	
CHRISTOPHERSON	ALAN B, P.E.	PERATROVICH, NOTTINGHAM & DRAGE, INC.
CLARK	S.H.	
CLAYPOOL	ROBERTA	
CLAYTON	LINDA	
CLEMENS	KRISTI A	
CLINE	DAVE	NATIONAL AUDUBON SOCIETY
CLINE	MITCHELL B.	
CLOUD	JAMES L.	
COCHRAN	JAMES O.	ALASKA DEPARTMENT OF FISH & GAME
COHEN	MORRAY B.	
COLICCHIO	JOSEPH	
COLT	STEVE	UNIVERSITY OF ALASKA - ISER
COMITO	TERESA	
CONLEY	BILL	
CONNELLA	RICHARD	
CONNOR	DAVID	
COOK	BETTY	
COOTS	MICHAEL	
CORBIN	LINDA	
COUGHENOWER	D. DOUGLAS	UAF/MARINE ADVISORY PROGRAM
COUMBE	MIKE	KACHEMAK BAY CITIZENS' COALITION
COYLE	DAN	OUTSIDE MAGAZINE
CRANE	RANDALL L.	
CRANE	THE HONORABLE DAVE	MAYOR OF SEWARD
CRAVENS	JAY H.	COLLEGE OF NATURAL RESOURCES
CRONK	SARAH	
CRUMP	BILL	
CUTSHALL	MAX & DONNA	
CUTTER	JOHN	
DAINSBERB	ANDREW	
DAKROUB	DAVID	
DALHEIM	MARILYN	NMFS-NMML
DANZL	JENNE	
DARLING	PATRICIA	
DAVIDSON	CLIFF	
DAVIS	STEVEN	LGL ALASKA RESEARCH ASSOCIATES, INC.
DAVIS	SUSAN M.	ABB ENVIRONMENTAL SERVICES
DAWSON	BELLE	
DAWSON	KENT	KENT DAWSON COMPANY
DAWSON	RUTH	AFOGNAK NATIVE ASSOCIATION
DAY	PATRICK A	

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Last Name	First Name	Organization
DEARBORN	RON	SEAGRANT COLLEGE
DECOSTER	TIM	HOUSE AGRICULTURE COMMITTEE
DEDA	MARY M.	
DEGANGE	TONY	US FISH & WILDLIFE SERVICE
DEGUISE	BARBARA	
DEKIN	ALBERT	STATE UNIVERSITY OF NEW YORK
DELANEY	JODI	OIL AND HAZARDOUS AWARENESS
DELLASALA	DOMINIC	WORLD WILDLIFE FUND, US LAND & WILDLIFE
DEMOET	JULIA	EYAK VILLAGE COUNCIL
DENISON	JAME L. & LOU ANNA	
DERENOFF	MARGIE	KODIAK AREA NATIVE ASSOCIATION
DIAL	ROMAN	ENVIRONMENTAL SCI DEPT, AK PACIFIC UNIV
DIEHL	JAMES	KNIK CANOERS AND KAYAKERS
DIETRICH	CARL S	
DIVOKY	GEORGE	PACIFIC SEABIRD GROUP
DIXON	JERRY & DEBORAH	
DONE	CLARK B.	
DONITZ		
DONOHUE	MARKE	KODIAK AREA NATIVE ASSOCIATION
DOROFF	ANGIE	US FISH & WILDLIFE SERVICE
DOUDNA	DAVID	INSTITUTE OF MARINE SCIENCE - UAF
DRIESCHMAN	W. SCOTT	WILDLIFE CONCEPTS INTERNATIONAL
DRISKELL	BILL	
DRONKERT, SYSTEM DIRECTOR	GREGORY A.	ADOT/PF, ALASKA MARINE HIGHWAY SYSTEM
DUDIAK	NORMA	US FISH & WILD LIFE SERVICE
DUFFUS	KEN	
DUFFY	DAVID CAMERON	ENRI, UNIVERSITY OF ALASKA
DUFFY	JOHN	
DUGAN	JULIE	
DUNCAN	MADELINE LIA	
DUNCAN	P. BRUCE	US EPA REGION 10
DUNHAM	BEVERLY	
DUNHAM	MEGGIN M.	
DUNHAM	WILLARD E.	SEWARD ASSOC. FOR ADV. OF MARINE SCIENCE
DUROCHER	GREG	
DUSHKIND	WINIFRED J.	
ECKLUND	CINDY L	
EKSTROM	CHARLOTTE	
ELANDER	BILL	
ELESHANSKY	MIKE	
ELESHANSLAY	CHERYL	
ELESHANSLAY	GEORGE, DORENE & NUKE	
ELIASON	RICHARD	
ELLIS	BEN	KENAI RIVER SPORTFISHING, INC.
EMBRY	JUDITH E.	
EMMAL	DON	ENGLISH BAY CORPORATION
ENGLER	ROBERT	
EPPERSON	PAUL	KENAL BOROUGH SCHOOL
ERICKSON	NANCY	
ERLENMEYER-KIMLING	L.	COLLEGE OF PHYSICIANS & SURGEONS
ERNST	PETER O	

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ESSWEIN	DENISE	
EVANOFF	GAIL	CHENEGA CORPORATION
EVANS	L.J.	EVOS INFORMATION CENTER
EXLEY	LESLIE	BOGLE AND GATES
FARRELL	JOHN	US DEPARTMENT OF THE INTERIOR
FAUST	BEN	
FAUST	NINA	KACHEMAK BAY CONSERVATION SOCIETY
FEDER	HOWARD	INSTITUTE OF MARINE SCIENCE
FEILER	LINDA	
FIELD	JAY	NOAA/HAZMAT
FILES	WILL	
FILES, JR.	WILFRED C.	CENTER ALASKAN COASTAL STUDIES
FINGER	DOROTHY	
FISCHER	DONNA	CITY OF VALDEZ, CITY COUNCIL
FISHER	W. E.	
FITZMAURICE	PETER	
FLEARING	MALCOLM	
FLEMING	MALCOLM	SEWARD SR./JR. HIGH SCHOOL
FLEMMING	DAN	Z.J. LOUSSAC LIBRARY
FLYNN	NANCY	
FOLDAGER	FLIP S.	
FOLLOWS	DON	
FOSTER	ROBERT	HOUSE APPROPRIATIONS COMMITTEE
FOWLER	MARJORIE F	PWS RCAC
FOX	FAITH	
FRAKER	MARK A.	WILDLIFE BIOLOGIST
FRAMPTON	GEORGE	ASST SEC, FISH, WILDLIFE, & PARKS, USDOI
FRANKLIN	THOMAS M.	
FREEMAN	KEN	
FRENCH	JOHN	FISHERY INDUSTRIAL TECHNOLOGY CENTER
FRIES	CAROL	AK DEPARTMENT OF NATURAL RESOURCES
FRIESEMA,	PAUL	NORTHWESTERN U., CENTER FOR URBAN AFF. & PLAN.
FROST	KATHRYN	ALASKA DEPARTMENT OF FISH & GAME
FWISTINGER	NANCY	
GAGLIONE	VANESS	
GAGNON	SHARON	
GARBER	ARLENE	
GARROTT	ROBERT	DEPT WILDLIFE ECOLOGY, UNIV OF WISCONSIN
GATES	PAUL	U.S. DEPARTMENT OF THE INTERIOR
GAUNA	JOE	MUNICIPALITY OF ANCHORAGE
GEDDE	JOHN	
GEORGE	JEROME	ADOT/PF, CHIEF ENGINEER OPERATIONS
GERACI	JOSEPH R.	ONTARIO VETERINARY COLLEGE
GERTLER	PAUL	ALASKA LIAISON OFFICE\F.W.S.
GETTLESON	DAVID	CONTINENTAL SHELF ASSOCIATION
GIBBONS	DAVE	
GIBEAUT	JAMES C.	BUREAU OF ECONOMIC GEOLOGY, UNIV. TEXAS
GIESE	MARK M.	
GIESY	CHERYL	
GIGLER	ROBERT A.	
GILBERT	VERONICA	

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Last Name	First Name	Organization
GILBERTER	BILL	
GILL	JAMES D.	
GILMAN	DON	KENAI PENINSULA BOROUGH
GONZALEZ	XENIA	
GONZALVES	LISA	
GOODMAN	SHERRI W,	DEPT. OF DEFENSE
GOÓZMER	AL	
GORBICS	CAROL	U.S. FISH & WILDLIFE SERVICE
GORDIOFF	MARY	TATITLEK CORPORATION
GOUDREAU	STEPHEN J.	
GOULD	ROWAN	U.S. FISH AND WILDLIFE SERVICE
GRANT	DOUGLAS	
GREENOUGH	JOSEPH W.	NATIONAL MARINE FISHERIES SERVICE
GRIEGO	ELIZABETH	
GRISCO	MARY	NATIONAL PARKS & CONSERVATION ASSOC.
GRISWOLD	CAROL	
GRUNDY	RUTH	MARINE SCIENCE INSTITUTE, UTA
GUNTHER	ANDY	APPLIED MARINE SCIENCES
HALLER	JOHN	NATIONAL PARK SERVICE
HAMILTON	THOMAS D.	
HANSON	ERIC A.	
HARRIS	THE HONORABLE JOHN	CITY OF VALDEZ
HARRISON, VICE-CHAIR	CRAIG S.	PACIFIC SEABIRD GROUP
HART	MARY	DOWNTOWN MERCHANTS ASSOC.
HATCH	SCOTT	NATIONAL BIOLOGICAL SURVEY
HAWKER	CHET	
HEFFION	J.R.	
HEIDEMAN	EMMET F.	
HEONE	JOANNE	
HERMINGHAUS	TRISHA	
HETTICK	DAVID W	
HICKMAN	SUSAN	
HIGHSMITH	RAY	INSTITUTE OF MARINE SCIENCE
HILD	CARL M.	C/O RURAL CAP
HODGES	PENNY	CENTER FOR ALASKAN COASTAL STUDIES
HOFMAN, PH.D	ROBERT J.	MARINE MAMMAL COMMISSION
HOGAN	MONICA	OHIO ENVIRONMENTAL PROTECTION AGENCY
HOHL	LY	
HOLLAND-BARTELS	LESLIE	NBS ALASKA FISH & WILDLIFE RESEARCH CTR
HOLLIDAY	G.H.	HOLLIDAY ENVIRONMENTAL SERVICES, INC.
HOLSTEN	GARY	
HOOTEN	ANTHONY J	
HOPPY	BRIAN	SCIENCE ENGINEERS AND ASSOCIATES INC.
HORN	GARY L.	CALIFORNIA DEPARTMENT OF FISH & GAME
HORN	RENDA	
HOUGHTON	RICHARD C.	
HUBBARD, JR	LYLE T.	
HUEBNER	ANN	USDA - FOREST SERVICE, ALASKA AFFAIRS
HULL	DAN	PWS ECOSYSTEM ASSESSMENT PLAN. GROUP
HULM	BERNARD C.	
HULY	PENNY R	

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Last Name	First Name	Organization
HUNT, JR.	GEORGE	DEPT OF ECOLOGY & EVOLUTIONARY BIOLOGY
IMAMURA	EIJI	MARINE RESEARCH SPECIALISTS
IMRICH	STEVE	CAMBRIDGE SEVEN ASSOCIATES
IRONS	DAVID	
IRVINE	GAIL	
IRVING	ROBIN	
JABÉR	JOAN R.	
JACKSON	HAYES	
JAHER	DIANA	
JAMES	HARRIS	
JANZEN	GAYLE	
JENKIN	BOBBIE	
JERDAN	YVONNE G.	
JEWETT	STEPHEN C.	
JOHANNSEN	NEIL	DIVISION OF PARKS & OUTDOOR RECREATION
JOHNSON	CHRISTY	
JOHNSON	DEBORAH	CALIFORNIA DEPARTMENT OF FISH AND GAME
JOHNSON	DONALD K.	WILDERNESS CRUISES
JOHNSON	DWAYNE	
JOHNSON	ELIZABETH	
JOHNSON	LARRY	
JOHNSTON	DEBORAH	CALIFORNIA DEPARTMENT OF FISH AND GAME
JOINERS	CAROLE	
JONES	TYLER	SEWARD ASSOC. FOR ADV. MARINE SCI.
JORDAN	JAMES W.	
JORGENSEN	ERIC	SIERRA CLUB LEGAL DEFENSE
JOYCE	MIKE	ARCO ALASKA INC.
KALLANDER	JAMES	
KALUS	B.	
KANE	NORVAL M.	
KANG	HELEN	U.S. DEPARTMENT OF JUSTICE
KANSTEINER	MARK	
KARKHECK	ANN F.	
KASISCHKO	DEAN	
KATZ, SPECIAL COUNSEL	JOHN	
KEELER	LEO	U.S. DEPARTMENT OF AGRICULTURE
KEIL	MARIANNA	
KELLY	DAVE	KSWD RADIO
KELLY	PENNY	
KENEFICK	AMY	KTCA NEWTON'S APPLE
KENT	NANCY	
KENYON, EDITOR	PETER	ALASKA PUBLIC RADIO NETWORK
KERR	LESLIE	U.S. FISH & WILDLIFE SERVICE
KERWIN	CHARLENE	OIL SPILL LAW INFORMATION SERVICE
KIME	ADMIRAL WILLIAM J.	COMMANDANT (G-MPS-1)
KINCAID	SARAH & JACK	
KING	BRIAN	PWS SEINERS ASSOCIATION
KING	JAMES G.	
KIPLINGER	SUSAN	
KISH	DANIEL V.	U.S. HOUSE OF REPRESENTATIVES
KIZZIA	TOM	ANCHORAGE DAILY NEWS

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KLOPFANSTEIN	RON	
KLOSIEWSKI	STEVE	US FOREST SERVICE
KLUBNIKIN	KHERYN	NATIONAL PARK SERVICE
KNECHT	RICHARD A.	KODIAK AREA NATIVE ASSOCIATION
KOMISAR	JEROME B.	UNIVERSITY OF ALASKA STATEWIDE SYSTEM
KOMPKOFF	ANNETTE C.	
KOMPKOFF	KELLY	
KOMPKOFF	NANCI	
KOMPKOFF SR	DONALD	
KOMPKOFF, JR.	PAUL	
KOONTZ	MARY	
KOTHINGHAM	T OD	KENAI PENINSULA BOROUGH, SOLID WASTE DIV.
KOWALSKI	MARTIN N & DONNA	
KUEN	ROD	EVOS TRUSTEE COUNCIL
KUHNS	BARBARA	
KULETZ	KATHY	
KUMIN	LINDA	
KVASNIKOFF, PRESIDENT	VINCENT	ENGLISH BAY VILLAGE COUNCIL
KVASNIKOFF, PRESIDENT	VINCENT	NANWALEK TRADITIONAL COUNCIL
LABELLE, CHAIRMAN	JAMES	CHUGACH ALASKA CORPORATION
LAEMMLE	WAYNE H.	
LAING	KAREN	US FISH & WILDLIFE SERVICE
LAMBERSON	AL	
LANDEN	D.	
LANDENBURGER	DIXIE	
LANGLOIS	RUSSELL A	
LAPLANT	DAN	U.S.D.A. SOIL CONSERVATION SERVICE
LAUTENBERGER	CARL	U.S. EPA REGION 10
LAWLOR	JOE & PAT	
LAWN	DAN	
LEIRER	HERMAN E	
LENZEN	MARIANNE J.	
LEONE	JOANNE M	
LESLIE	KIRSTIE L.	
LEVENSALER	MARTHA	WILDLIFE FEDERATION OF ALASKA
LEVSHAKOFF	EDDIE	
LEVSHAKOFF	VINCENT	
LEWIS	MICHAEL A.	
LEWIS	RICHARD D. & K. JACK	
LICAUSI	JAMIE	
LICKIN	EMMANUEL	
LINDSEY	CAROL A.	
LINDSEY	DALE R.	
LINDSEY	JENNIFER	
LINK	RICHARD A.	
LISOWSKI	MARIA	USDA/DGC
LIVINSTON	TOM	LIVINGSTON SLONE, INC.
LOEFFLER	BOB	ALASKA DEPT. OF ENVIRONMENT CONSERVATION
LOGAN	DAN	U.S. FISH & WILDLIFE SERVICE
LOKKEN	BRIAN & MICHELLE	
LORZ	GERALD S	

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Last Name	First Name	Organization
LOWE	JENNIFER	TDA, iNC.,
LOWRY	LLOYD F.	WC, ALASKA DEPARTMENT OF FISH & GAME
LUCIER	CHARLES V.	
LUTTRELL	MARK	
LYLE	JOHN D.	
MACHELSON	PETE	PRINCE WILLIAM SOUND SCIENCE CENTER
MACMULLIN	SUSAN	ENVIRONMENTAL PROTECTION AGENCY
MACPHERSON	KIRSTI	QUINLAN PUBLISHING
MACSWAIN	JAMES A.	
MAGANACK	WALTER	PORT GRAHAM VILLAGE COUNCIL
MAJEROWICZ	EUGENE	
MARANDE	TED	
MARKER	C.S.	
MARTIN	GLENN & PATRICIA	
MARTIN	JOHN	U.S. FISH & WILDILFE SERVICE
MASICA	SUE	SENATE APPROPRIATIONS COMMITTEE
MATHIES	MARK	JONES AND STROKES
MATT	COLLEEN	ALASKA DEPT. OF FISH & GAME
MATTHEWS	DONNA	
MATZ	GEORGE	
MCBRIDE	BARBARA	
MCBRIDE	DIANE & SHANNON	KACHEMAK BAY WILDERNESS LODGE
MCBURNEY	MARY	CORDOVA DISTRICT FISHERMEN UNITED
MCCARCO	DAVE	AMERICAN WILDLANDS
MCCARTHY	DENNIS J.	U.S. COAST GUARD
MCCARTHY	MICHAEL P.	
MCCLELLAND	VINCENT	
MCCLURG	INGE	
MCCORKLE	VERN C.	
MCCRACKEN	JIM	
MCCUBBINS	LAWRENCE	
MCCUMBY	DONALD	
MCCUNE	GERALD	
MCDONALD	JUDY	
MCFADDEN	SHERRY A	
MCGUIRE	MATTHEW J.	
MCGURK	MICHAEL	TRITON ENVIRONMENTAL CONSULTANTS
MCKEAN	LAUREN	
MCLEAN	SEAN	
MCMULLEN	JOHN	PRINCE WILLIAM SOUND AQUACULTURE CORP.
MCMULLEN, CHIEF	ELENORE	VILLAGE OF PORT GRAHAM
MCROY	C.P.	INSTITUTE OF MARINE SCIENCE
MERRELL	TED	
METTLER	ED	
MILLER	PAM A.	THE WILDERNESS SOCIETY
MINER	TODD	ALASKA WILDERNESS STUDIES, UAA
MITCHELL	CHRIS K.	
MOESER, DEPUTY DIRECTOR	HAROLD	ADOT/PF, ALASKA MARINE HIGHWAY SYSTEM
MOFFATT	TIM	
MOIR	MATTHEW	
MONNETT	CHARLES	ENHYDR RESEARCH

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Last Name	First Name	Organization
MONTAGUE	JEROME	ALASKA DEPARTMENT OF FISH & GAME
MONTOYA	GARY	
MOOERS	CHRISTOPHER N.K.	UNIVERSITY OF MIAMI, RSMAS
MOORE	HEATHER	
MORGAN	SARAH	
MORRIS	BYRON	U.S. DEPARTMENT OF COMMERCE - NOAA
MORTENSON	DOROTHY	ALASKA DEPARTMENT OF NATURAL RESOURCES
MORTON	RICHARD M.	
MOUNT	DAY	OFFICE OF ENVIRONMENTAL PROTECTION
MULCAHY	DANIEL	BIOVET SERVICES
MUNVES	BARB	
MURAWSKY	NICI	
MURKOWSKI	THE HONORABLE FRANK	UNITED STATES SENATE
MURPHY	DIANE	
MURPHY	MARY PAT	STATE OF ALASKA, MEDIA SUPPORT CENTER
MURPHY	W.E.	
MUTTER	DOUGLAS L.	U.S. DEPARTMENT OF INTERIOR
MYKLAND	JAMES L	
NAIDU	A. SATHY	INST. MARINE SCIENCE
NALDER	ERIC	SEATTLE TIMES
NATURALE	C.	
NELSON	DEANE	
NELSON	ELAINE L	
NIEBRUGGE	RON & JANINE	
NOLL	BILL	SEA INTERNATIONAL
NORCROSS	BRENDA	INST MAR SCI, FISHERIES/OCEAN SCIENCES
NORTH	PHIL	U.S. ENVIRONMENTAL PROTECTION AGENCY
O'BRIEN	BRENDA	
O'BRIEN	ELLEN	
O'DONNELL	NANCY	
O'DOWD	DONALD	ARCTIC RESEARCH COMMISSION
O'LEARY	KAREN	
O'REILLY	VINCENT	CIRCAC
OLSON	CHARLES & JUDY	
OLSON	MICHAEL	
ORENDORFF	BEA	NATIONAL WILDLIFE REHABILITATION ASSOC.
OSBORNE	THOMAS	
OSKOLKOFF	D.L.	NINILCHIK TRADITIONAL COUNCIL
OWENS	KAREN	CALI. DEPT. OF FISH AND GAME
PACE	CHRIS	
PAGANO	FRANK	KONIAG, INC.
PAGANO	MICHAEL	LEISNOI, INC.
PAGANO	MILTON	ANTON-LARSEN, INC.
PAGANO	ROSANNE	ASSOCIATED PRESS
PAOLETTI	M.L.	
PARKER	LISA	REGIONAL CITZENS ADVISORY COUNCIL
PARKER	WALTER B.	PARKER AND ASSOCIATES INC.
PARSONS	CHRIS	WORD CRAFT
PASCAL	STACIE	MAXWELL SYSTEM SAFETY, LTD.
PATAPOFF	ANDREW J	
PATRAWKE	GEORGE H.	

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Last Name	First Name	Organization
PAUL	A.J.	
PEARCE	SENATOR DRUE	ALASKA STATE LEGISLATURE
PEARSALL	MARY	KENAI PENINSULA BOROUGH
PEASE	KATHERINE	NOAA GENERAL COUNCIL
PENDLETON	KEN	DEPT. OF THE INTERIOR, NATL. PARK SERVICE
PENHORWOOD	MARIAN	
PENNOYER, DIRECTOR	STEVE	NATIONAL MARINE FISHERIES
PETTITT	ROGER A.	US FISH & WILDLIFE SERVICE
PFEIFER	JOHN	KODIAK DAILY MIRROR
PHIL	JANIK	U.S FOREST SERVICE
PHILLIPS	BRAD	PHILLIPS CRUISES & TOURS
PHILLIPS	NATALIE	ANCHORAGE DAILY NEWS
PHIPPS	ALAN	ALASKA CENTER FOR THE ENVIRONMENT
PIATT	JOHN	U.S. FISH & WILDLIFE SERVICE
PICOU	STEVE	UNIVERSITY OF ALABAMA
PIERCE, COLONEL	JOHN W.	USCOE, DIST. ENGINEER
PIPUS	DORIS	
PISTORESI	ELAINE	DEPARTMENT OF ENVIRONMENTAL CONSERVATION
PITZMAN, MUSEUM DIRECTOR	BETSY	PRATT MUSEUM
PLANCHON	STEVE	THE NATURE CONSERVANCY
PLATT	JOHN	ALASKA FISH & WILDLIFE SERVICE
PLUMB-MENTJES	MARY LEE	US ARMY CORPS OF ENGINEERS
POLESKE	LEE E.	
POLLORD	TIM	
POOLE	BOBBY	CAMBRIDGE 7 ASSOCIATES
POWELL	P & P	
POWELL	STEPANIE	
PRATT	KEN	
PRESTON	JIM	
PRESTON, PRESIDENT	TOBIAS J.	PWS SETNETTERS ASSOCIATION
PRINGLE	JAMES	
QUARRE	CHARLES	
QUICK	THOMAS R	
RABINOWITCH	SANDY	NATIONAL PARK SERVICE
RANDALL	DAVIS	INTERNATIONAL WILDLIFE RESEARCH INC.
RAPPAPORT	ANN	US FISH AND WILDLIFE SERVICE
REAUSAW	ELAINE	
REDMAN	WENDY	UNIVERSITY RELATIONS
REED	CARRIE	
REILLY	PATRICK	
REZABECK	CATHY	U.S. FISH & WILDLIFE SERVICE
RHODE	ELAINE	EXPRESSION (C7A)
RICE	STANLEY	NOAA/NMFS AUKE BAY FISHERIES LAB
RICE	WILLIAM BUD	NATIONAL PARK SERVICE
RICHARDSON	TIM	
RICHMOND	DEBORAH	
RIGG	DIANA	
RINEER	ROY C.	
RITTER	CONRAD A.	
ROBILLIARD	GORDON A.	ENTRIX, INCORPORATED
ROBINSON	EDGAR	

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ROBINSON	JULIE	
ROCKWOOD	STEVE	
ROETMAN	PAUL	
ROG	STEVE	
RONNE	ESTHER	
ROSIER	CARL	ALASKA DEPT. OF FISH AND GAME
ROSS	JAY S.	
ROTH	BARRY	DOI OFFICE OF SOLICITOR, FISH & WILDLIFE
ROTTIE	NANCY	
ROWLAND	DOUG	
ROYER	THOMAS C.	
RUDDY	SUSAN	THE NATURE CONSERVANCY
RUE	FRANK	ALASKA DEPARTMENT OF FISH & GAME
RULE	ALEX S.	
RUTHERFORD	MARTY	ALASKA DEPARTMENT OF NATURAL RESOURCES
RUTHERFORD	SUSAN	PWS LAND MANAGER RECREATION PLANNING GRP
RUTZ	THOMAS J.	
RYAN-HARKEY	MARGARET	
SAARI	SHARON	ICF
SACKETT	RUSS	DNR - ST HISTORIC PRES OFFICE
SAKS	JANE	
SANDERSON	RICHARD	U.S. ENVIRONMENTAL PROTECTION AGENCY
SANDOR	JOHN	ALASKA DEPT. OF ENVIRONMENTAL CONSERVATION
SANKARI	MARTINE	
SANNER	CAROL JO	AK. DEPT. OF TRANS. AND PUBLIC FACILITIES
SANTIS	LOU DE	
SCHAEFERMEYER	DARRYL	SEWARD ASSOC. FOR ADV. MARINE SCI.
SCHELL, DIRECTOR	DONALD M, PHD	INSTITUTE OF MARINE SCIENCE, UAF
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SCZAWINSKI	WALTER	
SEAGER-BOSS	FRAN	
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SMITH	THOMAS	IMS/SCHL. OF FISHERIES
SMITH	TIMOTHY	
SNOWDEN	BRAD	
SONALDSON	JUDI	
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SPIES	ROBERT	APPLIED MARINE SCIENCES
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STARR	T.A.	
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STEVENS	BILL & MARY	
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YOUNG	HONORABLE DON	
ZABAWA	CHRISTOPHER	
ZIMMERMAN	STEVE	NATIONAL MARINE FISHERIES SERVICE

ACRONYMS AND ABBREVIATIONS

ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADOT/PF	Alaska Department of Transportation and Public Facilities
AHRS	Alaska Heritage Resource Survey
AIDEA	Alaska Industrial Development and Export Authority
ANILCA	Alaska National Interest Lands Conservation Act
APHIS	Agriculture and Plant Health Inspection Service
ARCO	Atlantic Richfield Company
AVTEC	Alaska Vocational Technical Center
AWA	Animal Welfare Act
CBD	Central Business District
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
COE	Army Corps of Engineers
CUP	Conditional Use Permit
dB	decibel
dBA	A-weighted sound levels, in decibels
DGC	Division of Governmental Coordination
DNR	Department of Natural Resources
DOI	Department of the Interior
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERU	Equivalent Residential Unit
EVOS	Exxon Valdez Oil Spill
F	Fahrenheit
FONSI	Finding Of No Significant Impact
FWS	U.S. Fish and Wildlife Service
gpd	gallons per day
gpm	gallons per minute
GTE	General Telephone Co. of Alaska
I	Industrial
IMS	Institute of Marine Science
INS	Institutional
KPBCMP	Kenai Peninsula Borough Coastal Management Plan
kw	kilowatts
kwh	kilowatt hours
LOS	level of service
LSS	Life Support System
mgd	million gallons per day

mg/L	milligrams per liter
MHWL	mean high water line
MLLW	mean lower low water
MMBF	million board feet
MMPA	Marine Mammal Protection Act
MW	megawatt
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSHC	Northern Stevedoring Handling Corporation
P	Park
P&Z	Planning and Zoning Commission
PFM	Public Financial Management
ppm	parts per million
PM_{10}	Particulate Matter less than 10 microns
PN&D	Peratrovich, Nottingham & Drage, Inc.
R3	multi-family residential
ROD	Record of Decision
RV	recreational vehicle
SAAMS	Seward Association for the Advancement of Marine Sciences
SCP	Seward Comprehensive Plan
SFOS	School of Fisheries and Ocean Science
SHPO	State Historic Preservation Office
SMIC	Seward Marine Industrial Center
UAF	University of Alaska at Fairbanks
USDA	U.S. Department of Agriculture

BIBLIOGRAPHY

BIBLIOGRAPHY

Alaska Department of Fish & Game (ADF&G). 1973. Alaska's Wildlife and Habitat. ADF&G, Juneau.

Alaska Department of Fish & Game (ADF&G). 1976. Alaska's Wildlife Management Plans, Southcentral Alaska: A Public Proposal for the Management of Alaska's Wildlife, Juneau.

Alaska Department of Fish & Game (ADF&G). 1985. Alaska Habitat Management Guide - Southcentral Region, Volume 1: Life Histories and Habitat Requirements of Fish and Wildlife. Division of Habitat, Juneau.

Alaska Department of Fish & Game (ADF&G). 1993. Catalog of Waters Important to Spawning, Rearing and Migration of Anadromous Fishes. ADF&G - Division of Commercial Fisheries, Anchorage.

Alaska Department of Labor. 1991. Alaska Population Overview, 1991 Estimates. Research and Analysis Section, Demographics Unit.

Alaska Department of Labor. 1992. Alaska Population Overview, 1992 Estimates. Research and Analysis Section, Demographics Unit.

Alaska Department of Transportation and Public Facilities (ADOT/PF). 1991. Central Region Traffic Volume Report.

Alaska Department of Transportation and Public Facilities (ADOT/PF). 1992. Central Region Traffic Volume Report.

Alaska Department of Transportation and Public Facilities (ADOT/PF). 1993. Central Region Traffic Volume Report.

Alaska Marine Highway System, ADOT/PF. March 1994, Annual Traffic Volume Report (January 1 to December 31. 1993)

Alaska Marine Highway System, 1994 Summer Schedule and Information Code.

American Birds. 1993. The 93rd Christmas Bird Count (1992). American Birds, Vol. 47(4).

Andrews, J., R. McHenry, R. Scher, T. Tobish, and D. Sonneborn. 1988. Birds of Seward - A Checklist. Seward Chamber of Commerce, Seward, AK.

Beck, R.W. 1993. Seward Utility Study. Seattle.

City of Seward. 1985. City of Seward Comprehensive Plan. Seward Planning and Zoning Commission. Seward, Alaska.

City of Seward. 1990a. Planning and Land Use Regulations (Title 15, Supplement No. 93-2) and Utilities (Title 14).

City of Seward. 1990b. City of Seward 2010 Comprehensive Plan. Seward Planning and Zoning Commission. Seward, Alaska.

City of Seward. 1993. Parks and Recreation Master Plan. Parks and Recreation Department. Seward Planning and Zoning Commission. Seward, Alaska.

City of Seward. 1993. Seward Historic Preservation Plan, Phase I.

City of Seward. 1994a. "Seward Alaska: A Community Profile."

City of Seward. 1994b. Comprehensive Annual Financial Report for Fiscal Year Ended June 30, 1993.

City of Seward. 1994c. "City of Seward 1994 Community Survey Analysis."

City of Seward. 1994d. "Seward Partnership Meeting Summary."

City of Seward. 1994e. Tariff Governing all Waterfront Facilities in Seward, City of Seward Harbor Department, May 20, 1994.

Cowardin, L., V. Carter, F. Golet, and E. Laroe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. Office of Biological Services, U.S. Fish and Wildlife Service, Washington, D.C.

Dames & Moore. 1977. Sea Otters and Their Subtidal Habitats in Prince William Sound. Final Report to the U.S. Fish and Wildlife Service. Anchorage, Alaska.

Environmental Services, Ltd. 1989. Seward Otter Rescue Center: Environmental Site Investigation.

Exxon Valdez Oil Spill (EVOS) Trustee Council. 1994. Draft Environmental Impact Statement - Proposed IMS Infrastructure Improvement Project, Seward, Alaska.

EVOS Trustee Council. 1994b. Invitation to Submit Restoration Projects for Fiscal Year 1995.

EVOS Trustee Council. 1993. Draft Exxon Valdez Oil Spill Restoration Plan, November 1993. U.S. Department of the Interior.

Fox Practical Marketing and Management. 1993. Alaska SeaLife Center: Resident/Non-resident Market Demand Study.

Gleason, R. 1974. Marine Biological Resources in Resources Inventory - South Central Region. Resource Planning Team, Joint Federal-State Land Use Planning Commission. Anchorage, Alaska.

Harding Lawson Associates. 1985. Results of geotechnical investigation for the Seward Community Center. Anchorage, Alaska: Harding Lawson Associates.

Heggie, David T., D.W. Boisseau, D.C. Burrell. 1977. Hydrography, Nutrient Chemistry and Primary Productivity of Resurrection Bay, Alaska 1972-75. Institute of Marine Science, University of Alaska. IMS Report R77-2, Alaska Sea Grant Report 77-9, Fairbanks, Alaska.

Heery International, Inc., 1994. IMS Infrastructure Improvement Project #94199: Draft Proposed Operating Characteristics. pp10.

Institute of Transportation Engineers. 1991. Trip Generation, 5th edition.

Kenai Peninsula Borough School District (KPBSD). 1994. "KPBSD Enrollment Count Summary by Year and Date."

Lemke, R.W. 1967. Effects of the Earthquake of March 27, 1964, at Seward, Alaska. Geological Survey Professional Paper 542-E. Washington, D.C.: U.S. Geological Survey.

Mills, M. J. 1990. Harvest and Participation in Alaska Sport Fisheries during 1989. Alaska Department of Fish & Game, Fishery Data Series No. 90-44. Anchorage, Alaska.

Northern Economics. 1991. "Economic Multipliers for Seward, Alaska." Anchorage.

Northern Economics, Jon Isaacs and Associates, ResourceEcon, and Resource Valuations, Inc. 1994. The Commercial Fishing Industry of the Gulf of Alaska.

NORTECH. 1993. Phase I Site Assessment Alaska Sea Life Center. Anchorage, Alaska.

Payne, T.G. 1955. Mesozoic and Cenozoic tectonic elements of Alaska. Geological Survey Miscellaneous Investigations Map I-84. Washington D.C.: U.S. Geological Survey.

Peratrovich, Nottingham & Drage (PN&D). 1993. Alaska Sea Life Center, Geotechnical Literature Review. Anchorage, Alaska.

Peratrovich, Nottingham & Drage (PN&D). 1990. Letter to Cambridge Seven Assocaites, Inc. regarding Alaska SeaLife Center Wave Study - Seward, Alaska, November 16, 1993.

Scher, R. 1989. Birding Resurrection Bay, Seward, Alaska. Winging It. Vol. 1 (4).

Selkregg, L. 1974. Alaska Regional Profiles - Southcentral Region. In cooperation with the Joint

Federal-State Land Use Planning Commission for Alaska. University of Alaska, Arctic Environmental Information and Data Center. Juneau, Alaska.

Seward Chamber of Commerce. 1994. Cruiseship Docking in Seward, 1985-1994.

Shannon and Wilson. 1964. Report on subsurface investigation for City of Seward, Alaska and vicinity. Report to U.S. Army Engineer District, Anchorage. Contract No. DACA-95-507-CIVENG-64-18 (NEG.). Seattle, Washington: Shannon and Wilson, Inc.

Thomas J. Martin Economic Research and Management Consultants. 1993. Feasibility Study for The Alaska Sealife Center. Cambridge, Massachusetts.

Transportation Research Board. 1985. Highway Capacity Manual: Special Report 209.

U.S. Army Corps of Engineers (USCOE). 1982. Detailed Project Report and Final Environmental Impact Statement - Seward Harbor, Alaska - Proposed Small Boat Harbor Navigational Improvements. U.S. Army Corps of Engineers, Alaska District. Anchorage, Alaska.

U.S. Bureau of the Census. 1991. 1990 Census Data for Housing.

U.S. Fish and Wildlife Service (USFWS). 1991. Bald Eagle nest locations for Seward A7 quadrangle, 1:63,360 scale map. UFWS, Eagle Management, Juneau, AK.

U.S. Fish and Wildlife Service (USFWS). 1984. National Wetlands Inventory for Seward A7 quadrangle, 1:63,360 scale map. USFWS, Anchorage, AK.

U.S. National Park Service. 1994. Visitation Statistics for Kenai Fjord's National Park 1989-1993.

Vincent-Lang, D. 1991. Age, Length, and Species Composition of Groundfish Harvested in the Marine Sport Fisheries of Resurrection Bay, Alaska, 1988-1990. Alaska Department of Fish & Game, Division of Sport Fisheries, Fishery Data Series No. 91-28. Anchorage, Alaska.

West, G. 1994. Bird finders guide to the Kenai Peninsula. Birchside Studios, Homer, AK.

Personal Communications

Anderson, Branton, Alaska State Troopers, Division of Wildlife Protection. Personal communication, June 1994.

Ashmore, Mary, CIP Planner, Alaska Department of Transportation and Public Facilities (ADOT/PF). Personal communication, August 10, 1994.

Baumgardner, Otto, Manager/Operator, Alaska Landfills (Seward Transfer Facility). Personal communication, June 8, 1994.

Beckling, Pat, Area Planner, ADOT/PF. Personal communication, August 11, 1994.

Brosso, Dave, Deputy Police Chief, City of Seward Police Department. Personal communication, April 18, 1994.

Calvert, Dave, Manager Seward Utilities. Personal communication, April 1994.

Echard, Mary, Personnel Officer, Alaska Vocational Technical School. Personal communication, June 8, 1994.

Fleming, Malcolm, Principle, Seward Junior and Senior High School. Personal communication, April 15, 1994.

Frothingham, Tad, Solid Waste Specialist, Kenai Peninsula Borough. Personal communication, June 8, 1994.

Gage, John, Fire Chief, City of Seward. Personal communication, April 15, 1994.

George, Jerome, Chief of Engineering Operations and Public Facilities, ADOT/PF. Personal communication, August 12, 1994.

Green, Anne, Personnel Administrator, Seward Fisheries (Icicle Seafoods). Personal communication, June 8, 1994.

Jones, Richard, Hospital Administrator and Chief Executive Officer, Seward General Hospital and Wesley Rehabilitation and Care Center, Inc. Personal communication, April 11, 1994.

Jones, Tyler, City Manager, City of Seward. Personal communication, April 11, 1994.

Kelly, Dan, Traffic Analyst, ADOT/PF. Personal communication, March 24, 1994.

Lau, Richard, Traffic, ADOT/PF. Personal communication, August 11, 1194.

Martin, Kerry, Community Development Director, City of Seward. Personal communication, April 11, 1994, April 18, 1994, and March 23, 1994.

Moeser, Harold, Deputy Director, Alaska Marine Highway System. Personal communication, August 12, 1994.

O'Brian, Murph, Chief of Leasing, ADOT/PF. Personal communication, August 12, 1994.

Raymond, Ronny, Manager, Seward Office, Gray Line tours. Personal communication, August 15, 1994.

Rogers, Dotty, City of Seward Chamber of Commerce. Personal communication, September 7, 1994.

Shook, Pete, Assistant Manager of Maintenance and Operations, Central Region, ADOT/PF. Personal communication, August 19, 1994.

Shumacher, Melanie, Institute of Marine Science, Seward. Personal communication, 1994.

Smith, Tom, Facilities and Maintenance Director, Institute for Marine Science Seward Station. Personal communication, April 11, 1994.

Squires, D., Deputy Fire Chief, City of Seward. Personal communication, May 26, 1994.

Sturdy, Karen, Director of Parks and Recreation, City of Seward. Personal communication, May 12, 1994.

Thiel, Ron, Engineer, ADOT/PF. Personal communication, August 11, 1994.

Wright, Burt, Seward Forest Products Co. Personal communication, June 8, 1994.

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As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

