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Institute of Marine Science
Infrastructure Improvements
EVOS Trustee Council Project #94199

# PROJECT DESCRIPTION

**AND SUPPLEMENTAL MATERIALS**
**prepared for the**
***Exxon Valdez* Oil Spill**
**Trustee Council**

**DRAFT** **September 26, 1994**

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## 1. Executive Summary

# EXECUTIVE SUMMARY

The purpose of the proposed research facility is to provide needed infrastructure for conducting the long-term research and monitoring program required to restore and enhance resources injured by the *Exxon Valdez* oil spill (EVOS). This institute would conduct research and monitoring studies on injured resources and the ecosystem with specialized capabilities for studies on marine mammals, marine birds and fish genetics. Other research capabilities at the institute would include marine fish and invertebrate studies, oceanography, and a library.

$24.956 million is being requested of the Trustee Council for the research component of the project. The total proposed capital cost for this project is estimated to be $47.456 million for the total facility including both research and education components. In 1993, $12.5 million of the State's EVOS funds were appropriated by the Alaska Legislature to the City of Seward for the planning, design, and construction of the total project. $10 million is to be raised by SAAMS from private donations to fund the capital balance of the project

On March 9, 1994, DOI, as lead Federal Agency on behalf of the EVOS Trustee Council, published a Federal Register Notice of Intent to prepare an EIS on the Proposed IMS Infrastructure Improvement Project. A 45-day public comment period on the Draft EIS followed the June 24, 1994, publication of the Environmental Protection Agency's (EPA) Notice of Availability in the Federal Register (FR 59 32697). The public comment period ended on August 8, 1994. Public hearings on the Draft EIS were held on July 26 and 28, 1994 in Seward and Anchorage, respectively. The Final EIS was filed with EPA on September 16, 1994. The EPA's Notice of Availability for Final EIS was published in the Federal Register on September 23, 1994. The ROD is scheduled to be issued by October 28, 1994.

The facility would be owned by the City of Seward, and operated by the Seward Association for the Advancement of Marine Science, a non-profit corporation established in February 1990. EVOS restoration research will have the highest priority and lowest cost for use of the facility. The University of Alaska will provide quality assurance and standard operating procedures for research activities at the facility. All scientific and research programs at the facility will be coordinated by the Chief Facility's Scientist (a UAF representative) and the Facility's Director with the EVOS Trustee council scientific review function.

This project responds to the urgent need to provide the infrastructure needed to carry out the research and monitoring component of the restoration of injured resources within the EVOS area. The facility is scheduled to be operational in June 1997.

## 2. Background

# BACKGROUND

On January 31, 1994, the *Exxon Valdez* Oil Spill (EVOS) Trustee Council approved financial support for the Institute of Marine Science (IMS) Infrastructure Improvement Project (Project #94199). In its resolution approving the Project, the Trustee Council authorized the Executive Director to:

1. *Take necessary steps to secure NEPA compliance;*

2. *Consult with appropriate entities, including the University of Alaska, the City of Seward, the Seward association for the Advancement of Marine Science, and appropriate Trustee Agencies to review the assumptions relating to the proposed improvement and capital and operating budgets;*

3. *Develop 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;*

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

The proposed research facility described in this document has evolved from the original Alaska SeaLife Center (ASLC) project proposed by the Seward Association for the Advancement of Marine Science (SAAMS) in June 1992. In that proposal, the goal of the project was *to construct a permanent running seawater facility whose primary mission will be the rehabilitation of injured marine mammals and seabirds.* A secondary mission of the facility was to perform basic *biological research on marine mammals and seabirds so that impacts of human activities such as pollution and fishing can be better understood.* The funding request to the Trustee Council accompanying the proposal was $45,858,667.

In 1993, the Alaska Legislature appropriated $12.5 million of the state's EVOS criminal restitution funds pursuant to 1993 SLA Chapter 79, Section 2 *for development of the Alaska Sea Life Center as a recreation and marine mammal rehabilitation center and as a center for education and research related to the natural resources injured by the Exxon Valdez oil spill and to the prevention and amelioration of marine oil spills.* Following approval of the project plan and determination of financial viability by the Alaska Industrial Development and Export Authority, $4 million of the appropriation was made available to the city of Seward which, in turn, has transferred funds to SAAMS for planning, design, and engineering for the proposed facility.

During 1994, SAAMS has brought the technical and project management resources needed to advance the project through the schematic design phase; and to interface with Trustee Council Staff, prepare the Environmental Impact Statement, and secure necessary Federal, state, and local

authorizations.

During the same period, Trustee Council staff, particularly those with the Alaska Department of Fish and Game and the Department of Interior, have worked closely with the University of Alaska, City of Seward, SAAMS, and others to ensure that the proposed project addresses EVOS Restoration needs and complies with the National Environmental Policy Act, the Memorandum of Agreement and Consent Decree, and other applicable laws.

## PURPOSE AND NEED

The purpose of the proposed research facility is to provide needed infrastructure for conducting the long-term research and monitoring program required to restore and enhance resources injured by the *Exxon Valdez* oil spill (EVOS). This institute would conduct research and monitoring studies on injured resources and the ecosystem with specialized capabilities for studies on marine mammals, marine birds and fish genetics. Other research capabilities at the institute would include marine fish and invertebrate studies, oceanography, and a library.

In carrying out EVOS research objectives, scientists working at the facility including those with the University and Alaska Department of Fish and Game (ADF&G) would collaborate with other agency, academic and private scientists including those with the National Biological Survey (NBS), U.S. Fish and Wildlife Service (USFWS), and National Oceanographic and Atmospheric Administration (NOAA) and other research institutes including the Prince William Sound Science Center, Copper River Delta Institute, Fisheries Industrial and Technology Center and Auke Bay Laboratories. This facility would be available to interface with and enhance other EVOS research and monitoring work by offering marine research capabilities that do not currently exist in the region.

Because of the proposed institute's:

- Proximity to injured marine mammal, bird, fish and invertebrate resources
- Availability of high quality running seawater and freshwater for carrying out animal research and rehabilitation programs
- Opportunity to provide infrastructure which is lacking in the statewide research complex
- Opportunity to become operationally self-supporting with revenue derived from public visitation and education
- Use of $12.5 million already committed to the project
- Affiliation with the University of Alaska, School of Fisheries and Ocean Science and Institute of Marine Science

this project provides a unique opportunity for carrying out long-term research goals with respect to understanding and potentially influencing factors affecting the recovery of injured marine mammal, marine bird, and other resources.

The research and rehabilitation programs to be carried out at the proposed facility would, among other things, endeavor to restore, to their pre-spill condition, those injured, but not recovering

resources including: harbor seal, sea otter, common murre, harlequin duck, marbled murrelet, pigeon guillemot, herring, and pink salmon. Studies conducted at the institute would support the primary restoration strategies for these species as outlined in the *Draft Restoration Plan*:

- Conduct research to find out why these resources are not recovering
- Initiate, sustain, or accelerate recovery
- Monitor recovery
- Provide information to resource managers to enhance decision making capabilities

Additionally, research made possible by the proposed improvements would enhance the long-term research and monitoring program being implemented for the EVOS area. For example, laboratory studies on heritable injuries to pink salmon and potentially herring resulting from sublethal genetic damage would benefit from close proximity to oiled anadromous streams and beaches and the affected stocks of pink salmon and herring. Additionally, the availability of this facility would provide opportunities to perform studies on other fish and shellfish documented or suspected of being injured by EVOS that cannot presently be conducted at existing facilities. Similarly, research and monitoring efforts on injured marine mammals and marine birds would benefit from opportunities to utilize mammals and birds from the spill area in laboratory studies as well as having a center for supporting field studies.

The need for the proposed improvements to augment EVOS restoration efforts is illustrated by the following excerpts from the Research Strategies in the May 16, 1994 Invitation to Submit Restoration Projects for Fiscal Year 1995:

- *Five years after the oil spill, some resources are not recovering, while others are recovering only slowly. For these resources, restoration requires an understanding of the factors constraining recovery: Why aren't these resources recovering? If they are recovering only slowly, why? Without answers to these questions, restoration efforts may be ineffective.*
- *The ecosystem approach will require multi-disciplinary, long-term research on ecosystem processes that may be limiting recovery, in addition to resource-specific research projects.*
- *Because ecosystem processes are complex and may involve multiple resources, restoration projects to address these questions involve an integrated, collaborative, multi-disciplinary approach.*

## Relationship to Other Coastal Research Facilities

Marine research facilities conducting work in the EVOS area are summarized on Figures 3-1 through 3-4. **It is not the intent of the proposed facility to conduct nor direct all research and monitoring in the EVOS area.** However, the facility is anticipated to become a center for conducting research on marine mammals, marine birds, and fish genetics in the EVOS area. To date, Natural Resource Damage Assessment (NRDA) and subsequent restoration research and monitoring efforts have been largely field based. The reasons for this are numerous and include the following factors to various degrees: 1) the paucity of adequate laboratory facilities in the EVOS area has restricted the use of laboratory-based approaches for many studies, 2) NRDA studies and subsequent "restoration studies" were primarily designed as field experiments to measure *in situ* effects of the oil spill, 3) the research and management budgets of resource (Trustee) agencies in Alaska have historically focused on field techniques to derive estimates of fish and wildlife populations, and 4) Alaska's fish and wildlife resources are monitored and managed by multiple Federal and state agencies (USFWS, NBS, NMFS, NPS, USFS, ADF&G) which has resulted in fragmented funding for research facilities.

## Relationship to SEA Plan and Other Ecosystem Studies

Recently, the Prince William Sound Science Center has initiated the Sound Ecosystem Assessment (SEA) program to better understand the effects of human-caused and naturally occurring disturbances on the Prince William Sound ecosystem. Development of this program was partially driven by the need to understand the causes of unexpectedly low returns of wild and hatchery pink salmon in 1991, 1992, and 1993; and also, the failure of Pacific herring stocks in 1993 and 1994. The SEA program involves cooperative work among researchers from ADF&G, UAF, NBS, the Copper River Delta Institute, and the Prince William Sound Aquaculture Corporation; and is intended to be a long-term program with data collection for, at least, seven to ten years.

In FY95, work is anticipated to begin on marine mammal ecosystem studies (initially emphasizing factors affecting recovery of harbor seals), forage fish investigations (investigating whether the forage fish prey base is constraining recovery of injured resources including: common murre, harbor seal, harlequin duck, marbled murrelet, and salmon), and stable isotope analyses (using tracers to describe food sources and prey dependencies among marine mammals, seabirds and fish in Prince William Sound). Although it is not possible at this time to precisely predict how these studies would be structured in FY 97 when the facility is scheduled to open, it is anticipated that portions of these studies dealing with marine mammals, marine birds, and fish genetics would be carried out through UAF, ADF&G, and other researchers working at the proposed facility.

Despite the efforts of many capable marine scientists and the expenditure of nearly $100 million dollars on NRDA studies in the EVOS region, scientists and managers are currently unable to understand significant changes occurring in the northern Gulf of Alaska and Prince William Sound ecosystem as manifested by long term declines of pinnipeds (i.e., Steller sea lion, harbor seal) and

pelagic seabirds (e.g., marbled murrelet, pigeon guillemot, black-legged kittiwake) and recent catastrophic failures of pink salmon and herring stocks in Prince William Sound. The proposed improvements would provide a facility to focus on several key areas of marine research, notably marine mammals, marine birds, and fish genetics. Additionally, the facility would enhance the efforts of other research disciplines including oceanography and marine ecology that would provide additional opportunities for restoration of injured resources.

## Scientific Work Group

A scientific work group (SWG) was formed in March, 1994 to assist with identifying the research and rehabilitation functions of the proposed facility and to guide the design program for the project architects. The SWG is comprised of representatives of UAF, NBS, NOAA, and ADF&G and has included the assistance of Dr. Joseph R. Geraci, a consulting marine mammal specialist and Mr. W. Scott Drieschman, a consulting seabird specialist, as well as the Trustee Council Chief Scientist peer reviewers and Trustee Council agency liaisons. The SWG in conjunction with a corollary group, the education work group (EWG) (Page 5.1), has helped to produce the Design Program Workbook. The workbook document is further described in the Architectural Programming Process (Section 5). The Design Program Workbook has incorporated new information as the SWG, the EWG, and the project team continue to review assumptions and bring the project forward.

## Anticipated Research Program

The proposed IMS improvements would provide laboratory facilities (wet and dry laboratories, tanks, running seawater and freshwater, and offices) to focus the research and monitoring needs for marine mammals (primarily pinnipeds and sea otters), marine birds (primarily pelagic seabirds), and fish genetics (primarily pink salmon and herring) in the EVOS area. **There are no existing facilities in Alaska that can presently address these needs.** The facility would provide opportunities to enhance the oceanographic research needed for the EVOS region through the existing IMS oceanographic program at the Seward Marine Center. The facility would also house a specialized library with a repository of literature and other information relating to research in the northern Gulf of Alaska and EVOS region. This library would become part of the integrated information management system for EVOS restoration efforts. Research would be carried out at the facility by the UAF; ADF&G; and other Trustee Agencies including the NBS and USFWS. Additionally, it is anticipated that visiting scientists affiliated with agency, academic, and private institutes would use the facility.

The following is a description of anticipated research activities and programs that would be carried out at the proposed facility. Based on information gathered to date, in consultation with the Chief Scientist, we anticipate that the following long term research needs exist:

## Marine Mammals

**Harbor seal:**

The EVOS caused population declines and sublethal injuries to harbor seals in Prince William Sound. While some dead seals were recovered from the Kenai Peninsula, the extent of injury outside of Prince William Sound is unknown. Because harbor seal populations in northern Gulf of Alaska have declined precipitously since 1984, and the underlying causes of this decline are unknown, it is difficult to predict recovery from the oil spill. A better understanding of the causes of the decline will be required to determine the actions needed for recovery.

**Steller sea lion:**

Results from sea lion studies have been inconclusive concerning the effects of the EVOS. Steller sea lion populations have experienced a severe decline (up to 93%) over the last 30 years in the northern Gulf of Alaska. They are currently listed as Threatened under the Endangered Species Act. No estimate of recovery time is available. As with harbor seals, a better understanding of the causes of the decline will be required to determine the actions needed for recovery.

**Sea otter:**

The EVOS caused declines in populations of sea otters in Prince William Sound and possibly the Gulf of Alaska. Sea otters were the most abundant marine animal in the path of the oil and were particularly vulnerable to its effects. While little or no evidence of recovery has been detected thus far, sea otters are expected to eventually recover to their prespill population, perhaps in several decades. However, future rates of population increase are difficult to estimate.

**Marine mammal research program overview:**

The marine mammal program would be extremely diverse and a major user of the facility in terms of space and personnel. Projects would include: health status and disease studies, captive feeding/energetics, hydrodynamics, development and testing of telemetry equipment, testing of immobilizing drugs to benefit Steller sea lion studies, reproduction biology, physiology, behavior, and ecosystem modeling and data management. This program would interact with the veterinarian and rehabilitation projects at the facility as well as operate a field program, in coordination with other field studies in the EVOS region. Anticipated full-time research personnel include two to three dedicated UAF faculty, three to four dedicated students, two to three technicians/research faculty, and one to three visiting researchers (ADF&G, other agencies, academic, private). Present collaboration between the University of Alaska and ADF&G on EVOS marine mammal projects is reflected in at least two Category 1 proposals (#95001 & #95117BAA) dealing with harbor seals in the FY 95 Work Plan. Anticipated future work involving UAF and ADF&G personnel that is relevant to use of the proposed facility is described below. The projects require, among other things, specialized research tanks, animal holding and quarantine areas, research habitat with underwater viewing, wet labs with running sea water, dry labs, animal food preparation area, surgery and pharmacy, necropsy room, freezers, offices, library, and computer services. The following is a brief description of specific projects that are anticipated to be

undertaken at the institute:

Health/Disease Status:
Harbor Seals, Steller sea lions, and sea otters would be tested for a wide variety of specific blood indices of health and how these factors change over time with various handling regimes. This would provide opportunities to identify problems which may be preventing recovery. Veterinary panels of blood chemistry and research level analyses of stress proteins and hormone status would be used to assess health. Animals from captive situations would be compared to wild animals and historic samples would be taken from inside and outside of the EVOS region. This work involves routine blood sampling of captive and wild animals.

There is a great amount of information on health and disease that can be gathered from the live and dead animals that would be handled at the institute. To assist in the recovery of injured resources, ADF&G seal and sea lion projects would be able to obtain sample data from all available animals to compare with and help interpret results of field research being done on wild animals. This information would be used to produce a database on the clinical characteristics of sick and healthy Alaska pinnipeds. In the future, it would be possible to conduct experiments on exposures to disease and testing of vaccines for potentially aiding the recovery of injured species.

Body Condition:
Morphometric examinations of animals over time and development are used to model body condition (length, girth, mass relationships). These data are used to understand how an animal's mass and size can be used to determine health condition relative to fatness or malnutrition. These data also apply to studies on energetics through hydrodynamic relationships. Animals in captive conditions are used to compare and model data obtained from wild animals. This would provide opportunities to determine how recovery of injured species is linked to diet.

Energy assimilation:
Feeding studies would be undertaken to look at the relationships between types and quantities of food and whole body energy demands of animals. Carefully controlled studies of metabolic rates, digestion efficiency, body temperature fluctuations, and feeding rates would be conducted. These data would be used, in conjunction with field studies, to test *Limitation of Food* hypotheses on recovery of injured species.

Hydrodynamics and diving physiology:
While at sea, marine mammals spend a great deal of time swimming and diving underwater. Estimates on the energetic costs to marine mammals while they are at sea are obtained by modeling hydrodynamic constraints on animals in controlled situations. Estimates of how much energy an animal utilizes require studies on the control of body function, metabolic rate, thermoregulation, and breath-holding. These studies would be carried out in research tanks utilizing a suite of physical measurements, a swim mill, and computer modeling. Research of this type provides opportunities to determine how energetic costs are affecting the survival of adult and

juvenile harbor seals, sea otters, and other injured species.

Development and testing of telemetry equipment:
Satellite linked transmitters are being used to gather data on the distribution and behavior of injured resources, including harbor seals and sea lions, both on land and at sea. A variety of sensors are available to take various physiological (dive duration, speed, internal temperature, heart rate) and environmental (depth, water temperature, video, light and sound levels) measurements. Different attachment techniques are used for various instrument packages. The best way to test the sensors and attachment techniques is on captive animals of the appropriate species and sizes. This would be done in the large naturalistic habitat tanks where test animals have access to haulouts, diving areas, and other animals. The behavior of test animals and the instrument package would be monitored to determine effects. These studies would lead to more informative and reliable telemetry studies which are used to monitor recovery and determine factors limiting recovery of injured species.

Testing of immobilizing drugs:
The use of immobilizing drugs is essential to carrying out research and monitoring studies of injured marine mammals. There are some problems with the drugs currently available for immobilizing Steller sea lions. Testing of new drugs and development of immobilization protocols can best be done with captive animals. Immobilization studies would be done on animals in small research tanks under the supervision of a veterinarian with a full suite of physiological monitoring equipment. These studies would likely lead to improved capabilities for field scientists to collect blood and tissue samples and attach instrument packages to animals while reducing side effects and mortality to wild animals.

Stable isotope fractionation:
A series of studies are anticipated that would investigate the effects of diet type and physiology on the fractionation of stable isotopes in marine mammals. Diets of known composition would be fed to captive harbor seals and other pinnipeds to follow the incorporation of stable isotopes in keratinous tissues such as whiskers and claws. A determination of the fidelity of isotope ratio transfers would provide essential data for understanding food web interactions in wild populations. By adding trace amounts of labeled substrates to diets, the quality and assimilation efficiencies of food sources can be estimated. Hydrolysis and isolation of individual amino acids in whiskers and blood would enable the identification of essential amino acids in pinnipeds and the extent of transamination effects in altering nitrogen isotope ratios. This information would also assist in assessing the dietary quality of prey species in the trophic energetics of marine mammals.

## Marine Birds

**Murres:**
The oil spill caused population declines and sublethal injuries at murre colonies in the Gulf of Alaska. In general it is estimated that between 35% to 70% of the breeding adults at the Chiswell

Islands, Barren Islands, Puale Bay, and the Triplets were killed by the EVOS. The degree of recovery necessarily varies among the affected colonies. There are preliminary indications of recovery at the Barren Islands, but it is not yet known when the timing of reproduction will return to normal. Agency scientists estimate it could take many decades, and perhaps a century, before the injured murre populations return to their prespill levels. Variables affecting recovery time include the amount of disturbance near colonies and the rate of migration from healthy colonies.

**Marbled murrelet:**
The EVOS caused an estimated 5-10% decline in the marbled murrelet population in the spill area. Marbled murrelets were thought to be declining in Prince William Sound and the Gulf of Alaska prior to the oil spill. Although there is uncertainty associated with the decline, scientists expect it to continue. There are several factors that could account for this decline including a diminished food supply, increased predation, reduced nesting habitat, or fishery interactions, but there are no conclusive data indicating if any or all of these factors are affecting the population.

**Pigeon guillemot:**
The EVOS caused up to an estimated 15% decline in the population of pigeon guillemots in the Gulf of Alaska. Pigeon guillemots were thought to be declining in Prince William Sound prior to the spill. The reasons for the long-term decline are unknown which makes predictions about future population trends and the prospects for recovery extremely difficult.

**Harlequin duck:**
The EVOS caused population declines and appears to have caused sublethal injuries to harlequin ducks. An estimated 1,000 harlequin ducks were killed by the spill. Residual oil in the environment and in their preferred prey, is thought to be affecting their reproduction and subsequent recovery. However, there is little known about how oil may affect reproduction and what physiological changes can be induced by feeding on oiled prey. Scientists disagree on the time it will take harlequin ducks to recover to their pre-spill levels, but estimates suggest that recovery may not occur for several decades.

**Other marine birds:**
Numerous other birds were affected by the EVOS. Some of the other species found dead include ducks, gulls, terns, auklets, puffins, loons, grebes, shearwaters, petrels, cormorants, kittiwakes, and geese. There is a great deal of uncertainty about the recovery of populations of individual species because many were not studied during the NRDA process.

**Marine bird research program overview:**
The marine bird program would conduct a wide range of projects including captive feeding/energetics, health status and disease studies, reproduction biology, physiology, behavior, development and testing of telemetry equipment, and ecosystem modeling. This program would interact with the veterinarian and rehabilitation projects as well as operate a field program, in coordination with other field studies in the EVOS region. Anticipated full-time research personnel

include one to two dedicated UAF faculty, one to two dedicated students, one to three technicians/research faculty, and one to three visiting researchers (agencies, academic, private). The projects require, among other things, use of specialized research tanks and pens, animal holding and quarantine areas, wet labs, dry labs, and the research habitat. The marine bird program would share the following facilities with the marine mammal program: animal food preparation areas, surgery and pharmacy, necropsy room, freezers, offices, library, and computer services. The following is a brief description of specific projects that are anticipated to be undertaken at the institute:

Health/Disease Status:
NBS collects bird and mammal carcasses and conducts necropsies to obtain biological information. Presently these are frozen and returned to Anchorage for evaluation by the NBS veterinarian. There are minimal abilities to examine seriously ill specimens prior to mortality because of distance limitations. This results in higher mortality and some loss of data which could be used to determine the health/disease status of individual birds. The proposed institute would facilitate examination and tissue removal on sick or dead birds instead of transporting them to Anchorage. Examination of sick birds would also be useful for obtaining the physiological data needed to interpret disease processes. This would provide opportunities to identify problems which may be preventing recovery of injured resources.

Bird behavior:
Behavioral studies would be undertaken in the research habitat and tanks to examine diving and food selection/handling characteristics. This information would improve our understanding of prey selection and food web interactions in wild populations which is needed to understand factors affecting recovery of injured species.

Bird physiology:
Animals of known age, health condition, and dietary input kept at the facility would be examined to compare to physiological and biological data routinely collected in the field. This would provide a reference for interpreting information obtained from wild bird populations and would provide opportunities for determining how recovery is related to diet and overall fitness.

Development and testing of telemetry equipment:
NBS and others employ telemetry techniques routinely to examine movements of birds and fish. The tanks and research habitat at the facility would be used to develop and test units prior to implant. Additionally, studies would examine the impact of new instruments on the natural behavior of target species. Such testing would improve the design of units to collect data that more reflects natural behavior before they are used in field studies on wild animals. These studies would lead to more informative and reliable telemetry studies which are used to monitor recovery and determine factors limiting recovery of injured species.

Stable isotope fractionation by seabirds:
The incorporation of distinctive isotope ratios by feeding seabirds depends upon the isotope ratios in the prey being consumed and the rate of turnover of body tissues. It is well known that seabirds undergo pronounced seasonal variation in energy storage and mobilization in response to migrational and breeding activities. These activities may cause major shifts in energy resources and concomitant changes in isotope ratios due to physiological processes such as lipid synthesis/catabolism or transamination during protein synthesis associated with molting. Through the use of diets of known isotopic composition and the sampling of feathers during regrowth, it is expected that one could determine the efficiency of food assimilation and the extent of carbon and nitrogen isotope fractionation during tissue synthesis. As various species of seabirds become available, work would be extended to interspecific comparisons. Intraspecific variation of isotopic fractionation will also be tested when multiple individuals of a species are fed known diets under controlled conditions.

## Fish/Invertebrates

**Pink salmon:**
The EVOS caused sublethal injuries to wild populations of pink salmon, but there is some uncertainty about the extent of effects on population levels. Extremely low returns of hatchery-produced and wild fish to Prince William Sound in 1993 have focused attention on this issue. There is evidence that exposure to oil caused genetic damage in pink salmon and potentially herring. The genetic damage may be causing reduced size or reproductive success. This is a very critical area of research for pink salmon.

**Intertidal and subtidal communities:**
The EVOS caused population declines and sublethal injuries to the community of plants and animals living in the intertidal and subtidal zones. Direct oiling and beach cleaning killed many organisms. Cleaning removed much of the oil from the intertidal zone but subsurface oil persisted in many heavily oiled beaches, and in mussel beds, which were avoided during cleanup. Moreover, cleaning transported oil contaminated sediments to the subtidal zone The lower and middle intertidal zones have recovered to a large extent; full recovery of the intertidal community, especially the upper intertidal zone may take more than a decade. Recovery of subtidal organisms is expected in most cases in several years.

**Fish/Invertebrate research program overview:**
The proposed improvements would expand the capabilities of UAF and other fish and invertebrate restoration and monitoring studies to make use of marine laboratory facilities in the EVOS area. At present, non-EVOS studies are currently occupying all available laboratory space at the SMC. Additionally, a fish genetics program to examine heritable genetic damage to pink salmon, sockeye salmon, and potentially herring would be conducted by ADF&G. Currently, facilities for conducting fish genetics research on spill related injuries are very scarce and current projects are being hampered by water and disease problems and logistical difficulties with conducting

studies at multiple locations including Anchorage and Southeast Alaska. The proposed facility would be located near the source of the injured resources and would provide the critical capability to raise individual fish from eggs to maturity (freshwater through saltwater life stages), thereby allowing the analysis of gonads and gametes, along with progeny from oil exposed adults, for evidence of heritable genetic damage. Projects would include: laboratory exposure of salmonid eggs, embryos and larvae to varying concentrations of crude oil and its water soluble components to determine genetic effects; analysis of tissues from oil exposed fish for evidence of genetic damage; analysis of gonads, gametes and progeny of oil exposed adult fish for genetic damage; and laboratory and *in situ* studies of oil pollution effects on fish and invertebrate populations, food web interactions, and health. Field studies of residual oil pollution effects would be supplemented with live studies of bioenergetics, reproduction, neurobiology, and disease.

Additional spill related genetics projects that would likely utilize the facility include inheritance studies using all salmon species to confirm the genetic origins of allozyme polymorphisms; population genetics of pink salmon in Prince William Sound, and genetic marking of hatchery pink salmon in Prince William Sound.

These projects require, among other things, wet laboratories with high quality running seawater and freshwater, tanks, incubators, raceways, dry labs, freezers, offices, library, and computer services. Anticipated full time research personnel include: six to eight fishery biologists, four to six technicians/research faculty, and one to three visiting research scientists.

## Oceanography

Recovery of injured resources may be related to physical conditions in the marine environment and lower trophic level functions including primary and secondary productivity. A comprehensive ecosystem approach for restoration would require establishing a long term oceanographic monitoring program for the EVOS area. The proposed improvements would provide opportunity to expand the existing IMS oceanographic program at the SMC to allow for long term, year round evaluations of oceanographic features of the EVOS region including temperature, salinity, and nutrients. This program would improve the understanding of food web relationships and species interactions within the physical environment of the EVOS area. Monitoring would include phytoplankton and zooplankton, and intertidal and subtidal community profiles. As envisioned, the oceanographic baseline from Seward to Middleton Island would be expanded to include a series of stations from Prince William Sound to the Barren Islands. A dedicated EVOS area vessel could make use of the existing dock and service facilities at the SMC when the *R/V Alpha Helix* is at sea. The program would use office space, library, and data management services at the proposed facility.

## Data Management

The data management function would support many of the data processing and computer service needs of the marine mammal, marine bird, fish/invertebrate, and oceanographic programs. This program would assist researchers in organizing and processing information and would compliment the ecological modelling effort in the EVOS area. The proposed improvements would provide computer and office space for one full-time UAF research faculty and one to two students involved in this program.

## Library

The library would support the research activities at the institute; and through a public interface and data links with other libraries it would provide an important component of an integrated restoration information program. The library would develop and maintain a specialized collection of information pertaining to marine research in the Northern Gulf of Alaska. This would include both published and unpublished reports associated with EVOS, University, agency, and private studies, maps, and databases. Through an information specialist, the library program would engage in synthesizing and making information available to researchers and the public. This would occur through special projects, symposia, newsletters, and bulletins. The proposed library is not envisioned as a full-service public library because this need can be met through other existing libraries. However, researchers and the public would have full access to library materials through an on-line catalog, interactive computer programs, interlibrary loans, and limited lending services.

## Wildlife Rehabilitation Program

Among other things, the facility would provide for the rehabilitation and study of marine mammals and marine birds, particularly pinnipeds (harbor seal and Steller sea lion), sea otters, and seabirds (common murre, pigeon guillemot, marbled murrelet). The rehabilitation function would be integrated into the research being carried out at the facility to gain an improved understanding of factors affecting the health and recovery of injured resources. The facility would include tanks and pens (including quarantine and short term and long term holding areas); life support systems (running seawater, waste treatment and disinfection); food preparation; pathology and water quality laboratory, x-ray, surgery, pharmacy, and necropsy. Presently, there are no facilities in Alaska with capabilities for intensive care, study, and rehabilitation of marine mammals.

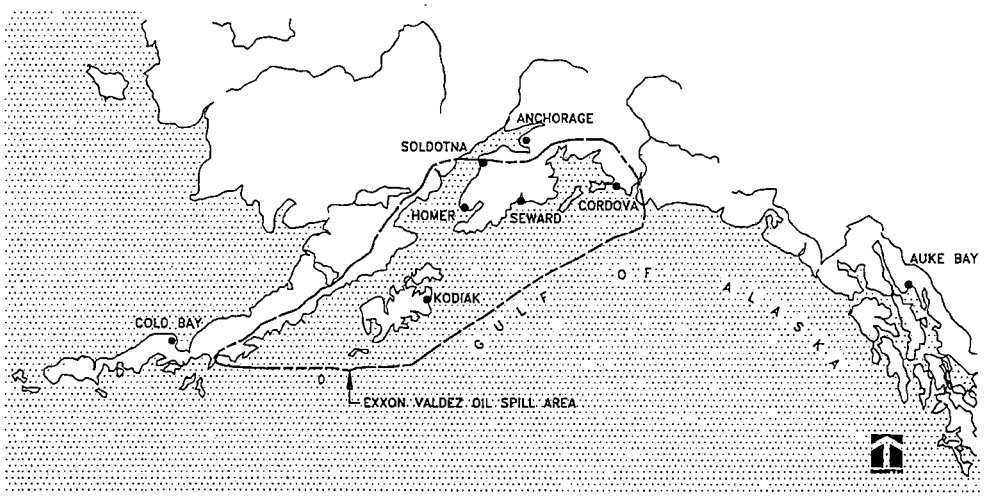
As a regional "stranding center" the institute would have trained staff and resources to respond to incidences involving sick, injured, or dead marine mammals and marine birds in the northern Gulf of Alaska. Based on National Marine Fisheries Service data, pinniped strandings have averaged about five per year. As the stranding network in Alaska is developed and rehabilitation facilities are made available, the number of reported dead, moribund, and stranded animals is

likely to increase. However, the institute would not function as an "animal rescue" center, *per se*. Trained staff and protocols would guide decisions concerning how much effort and resources are to be devoted to responding to stricken animals in each particular case. The facility would not fulfill oil spill contingency plan requirements though it could help in responding to future spills. Under state and federal law, the spiller is responsible for rehabilitating wildlife injured by oil or other hazardous substances. Through its public education program, the institute would discourage the public from bringing in healthy animals such as pups that appear to be abandoned. Animals which are dead or need to be euthanized would be properly necropsied to determine, to the extent possible, the cause of mortality and to maintain a repository of tissue and blood specimens. A record of each animal processed by the facility would be maintained in a database.

Animals which are recovered to full health and determined to be "releasable" would be returned to the wild. Those which are determined to be "non-releasable" would either be kept at the institute in long term care for research and public education purposes, transferred to other facilities, or, as a last resort, euthanized.

Animals kept at the institute may provide unique research opportunities. For example, all of the live sea otters treated during the EVOS rehabilitation program that were determined to be non-releasable because of debilitating injuries (e.g., organ damage) were sent to facilities outside Alaska (e.g., Vancouver Public Aquarium, Sea World of California, Monterey Bay Aquarium, The Seattle Aquarium). Subsequently, some of these animals have died or have been moved to other facilities. Opportunity to obtain long term medical follow-up on the oiled otters and their progeny may have been lost. Medical data from animals obtained through the rehabilitation and research components could provide important insights into processes that are affecting the status of populations in the wild.

# ALASKA MARINE RESEARCH FACILITIES




**Seward: SEWARD MARINE CENTER**

Ownership: University of Alaska, Institute of Marine Science

Mission: Shore station for the Institute of Marine Science (research arm of the School of Fisheries and Ocean Science [SFOS]). Oceanography (physical, chemical, biological), marine biology, physiology and ecology, medical research, shellfish aquaculture, graduate level education, vessel (R/V *Alpha Helix* and other) base and support.

Research Emphasis: Bioenergetics, crustacean physiology and reproduction, plankton, ecology, neural science

Professional Staff: 2 faculty, 6-12 visiting scientists; manager, public education; technicians; ship crew; port engineer; maintenance

Approximate Budget: $593,000 unrestricted; $1,514,400 restricted

**Kodiak: FISHERIES INDUSTRIAL TECHNOLOGY CENTER**

Ownership: University of Alaska, School of Fisheries and Ocean Science

Mission: Improved seafood processing methods, harvesting technology, fisheries technology transfer and instruction.

Research Emphasis: Seafood Processing and gear development

Professional Staff: 5 faculty, 2 research associates

Approximate Budget: $840,000 unrestricted; $1,515,400 restricted

**Juneau: JUNEAU FISHERIES CENTER**

Ownership: University of Alaska, School of fisheries and Ocean Science (SFOS)

Mission: Graduate Studies in marine fisheries for SFOS.

Research Emphasis: Genetic improvement of salmon, aging growth of fish, population dynamics, fishery management

Professional Staff: 8 faculty, 4 research associates, manager

Approximate Budget: $1,000,000 unrestricted; $1,550,000 restricted

**Juneau: AUKE BAY LABORATORY**

Ownership: NOAA, National Marine Fisheries Service

Mission: Support international treaty negotiations concerning interceptions of U.S. salmon; provide information on the status of ground fish in eastern gulf of Alaska; investigate impact of industrial development on fish and shellfish production in Alaska.

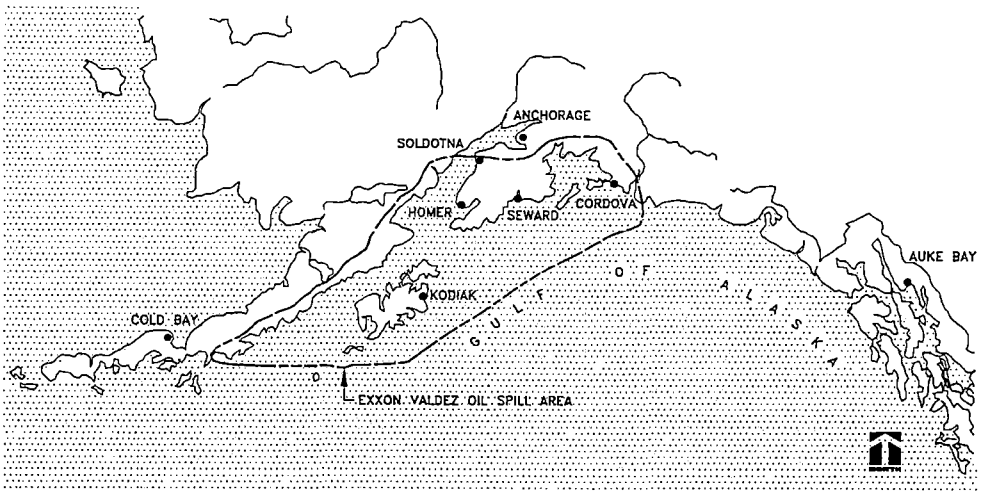
Research Emphasis: Salmon, ground fish, fish habitat, contaminants

Professional Staff:

Approximate Budget: $5,200,000

*Figure 3-1*

# ALASKA MARINE RESEARCH FACILITIES




**Homer: KASITSNA BAY LABORATORY**

Ownership: NOAA leased to University of Alaska, School of Fisheries and Ocean Science (SFOS)
Mission: Instruction in marine biology and intertidal ecology.

Research Emphasis: Near shore studies

Professional Staff: Maintenance, visiting faculty

Approximate Budget: $100,000 unrestricted

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**Cordova: PRINCE WILLIAM SOUND OIL SPILL RECOVERY INSTITUTE**

Ownership: Established by the Oil Pollution Act of 1990 and is administered by the PWS Science Center through the Department of Commerce.
Mission: To develop oil pollution R & D plan for cold water oil spills; and, to document, assess and understand the long-range of the Exxon Valdez oil spill.

Research Emphasis: Development of oil spill prevention, response, damage assessment and restoration techniques and equipment; long-term monitoring in EVOS impacted area. Coordinates research plans with Alaska's Hazardous Substance Spill Technology Review Council.
Professional Staff: 2 affiliate faculty researchers; 1 education associate; 2 administrative associates and several intermittent staff (positions shared with PWS Science Center).
Approximate Budget: $200,000

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**Cordova: PRINCE WILLIAM SOUND SCIENCE CENTER**

Ownership: PWS Science Center is a non-profit (501c3)

Mission: Develop a better ecological understanding of the Prince William Sound/Copper River Delta/North Gulf of Alaska through research, monitoring, and education programs.
Research Emphasis: Ecosystem, fisheries, oceanography, terrestrial
Professional Staff: 4 affiliate faculty researchers; 2 research associates; 3 education associates; 2 administrative associates and intermittent employees (several staff positions shared with the PWS Oil Spill Recovery Institute).
Approximate Budget: $3,000,000

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**Anchorage: ALASKA DEPARTMENT OF FISH AND GAME**
**Fairbanks COMMERCIAL FISHERIES MANAGEMENT**
**Cordova AND DEVELOPMENT DIVISION, WILDLIFE**
**Soldotna CONSERVATION DIVISION, SPORT FISH**
**Homer DIVISION, SUBSISTENCE DIVISION,**
**Kodiak HABITAT & RESTORATION DIVISION.**

Ownership: Alaska Department of Fish and Game

Mission: Manage, protect, rehabilitate, enhance, and develop fish, game, and aquatic plant resources in the interest of the economy and well-being of the state, consistent with the sustained yield principal and subject to allocations established through public regulatory processes.
Research Emphasis: Salmon, herring, shellfish, mammals

Professional Staff: 25 fishery biologist, 8 wildlife biologists, 3 resource specialists, 3 vessels with captains and crews

Approximate Budget: $6,000,000 (approximate research budget in EVOS area; includes $1.5 million for EVOS funded research)

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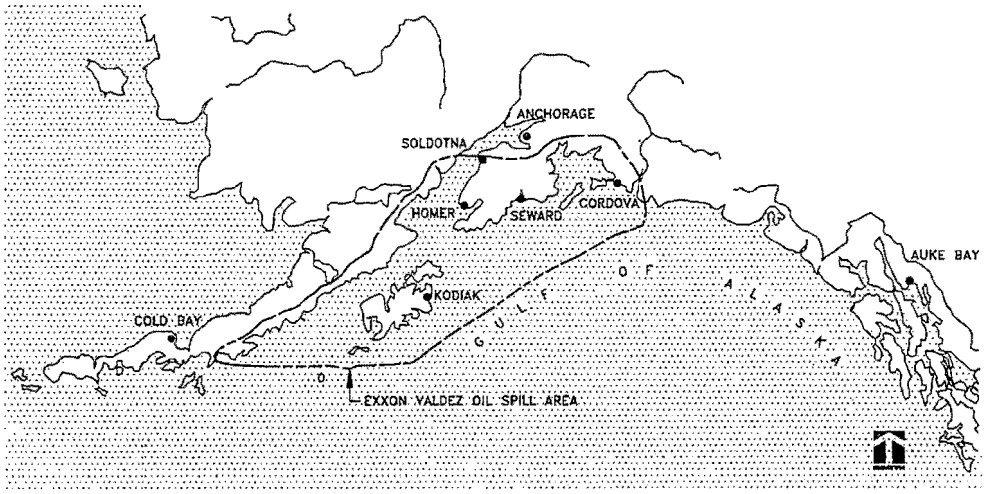
*Figure 3-2*

# ALASKA MARINE RESEARCH FACILITIES




**Fairbanks: University of Alaska Fairbanks School of Fisheries and Ocean Science Institute of Marine Science**

Ownership: University of Alaska
Mission: SFOS has the primary responsibility within the University for research, education, and public service in oceanography, marine biology, fisheries, seafood and fisheries technology, and limnology. Although the activates extend worldwide, the emphasis is on Alaskan waters and the Arctic. Through research, SFOS seeks to better understand physical, chemical, and geological processes in marine and freshwater environments; the interactions among and between environmental factors and organisms which are the basis controlling the productivity of aquatic ecosystems; the impact of natural environmental variability and anthropogenic environmental change on aquatic organisms, systems and resources; and the resource management and utilization methods which will lead to enhanced economic returns consistent with conservation of resources, habitats, and environments. Through education SFOS disseminates the knowledge gained through research, and through student participation in research, they enhance their ability to apply knowledge to problem-solving and to expand upon what they have been taught. Through public education and service, SFOS informs the community about important marine and fisheries issues, develop utilization technologies and strategies needed by those who use marine resources, and assist them in applying these technologies and strategies. The School's goal is to maintain and develop the broad expertise among its faculty and students needed to contribute to the wise use of Alaska's natural resources.

SFOS has the primary responsibility within the University of Alaska for research, education and public service in Oceanography, marine biology, fisheries, seafood and fisheries technology, and limnology.
Research Emphasis: Oceanography, fisheries biology, marine mammal biology, marine ecology, invertebrate biology
Professional Staff: 22 Faculty, 16 research associates
Approximate Budget: $7,300,000 (approximate research budget in EVOS area)

* SFOS's major units and program, locations, and their area of emphasis, are:

**Alaska Sea Grant College Program**
This program is based in Fairbanks, and funds research that broadens knowledge of the marine environment and supports sustainable use of Alaska's marine resources, seafood science and economics, oceanography and marine biology.

**Fishery Industrial Technology Center**
The FITC is located in a new 20,000 sq. ft. seafood processing research and development facility in Kodiak. The center's responsibilities include fisheries science and harvesting technology, seafood science and processing technology, technology transfer, and instruction.

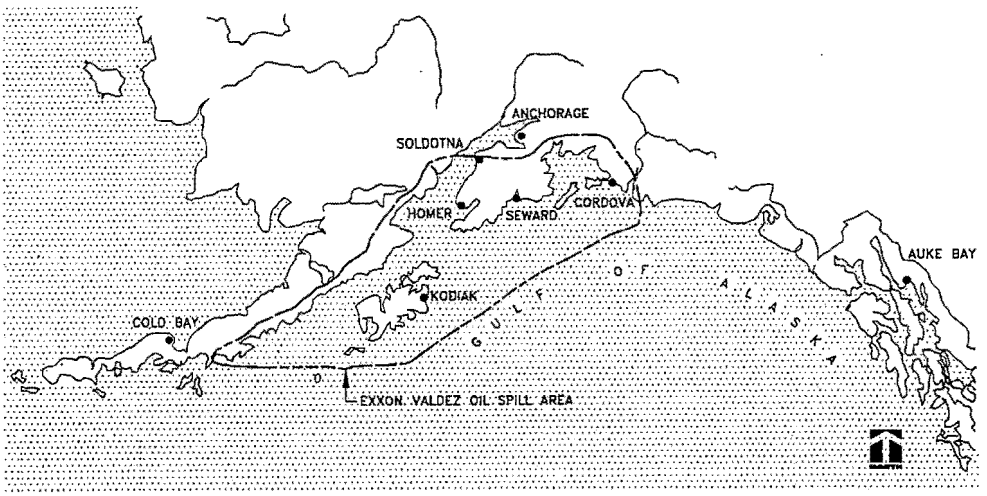
**Fisheries Instructional Program**
SFOS offers undergraduate and graduate programs in fisheries.

**Graduate Program in Marine Science and Limnology**
**Institute of Marine Science**
Central facilities for the Institute are located in Fairbanks. This is the major research arm of the SFOS, and projects include interdisciplinary studies of high latitude seas; the ecology, biology, and physiology of high-latitude organisms, ranging from plankton to marine mammals; physical oceanographic studies of the Gulf of Alaska, Bering, Chukchi and Beaufort Seas. Fairbanks is the major site for the Graduate Program in Marine Sciences and Limnology and the Undergraduate Fisheries Instruction Program.

**Juneau Center, School of Fisheries and Ocean Sciences.**
The Center is located on Auke Bay and is the principal site for graduate studies in marine fisheries for UAF. Research areas include genetic improvement of salmon broodstocks, aging and growth of larval fish, population dynamics and management of marine fish and invertebrates. The facility offers a sea water system, laboratories and small skiffs.

*Figure 3-3*

# ALASKA MARINE RESEARCH FACILITIES




**Cold Bay: RUSSELL CREEK LABORATORY**

Ownership: Aleutians East Borough
Mission: Fisheries and coastal marine research. Formerly a State of Alaska salmon hatchery; now operated by the Aleutians East Borough to provide facilities and opportunities for university and government research.
Research Emphasis: Limnology of shallow-water sockeye-producing lakes, productivity and nutrient uptake of seagrasses. Available for other freshwater, estuarine, marine, and terrestrial research projects.

rofessional Staff: Maintenance staff on-site, visiting scientist, administrative support from Aleutians East Borough
Approximate Budget: $150,000

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**Seattle: ALASKA FISHERIES SCIENCE CENTER**

Ownership: NOAA, National Marine Fisheries Center
Mission: Provide scientific and technical advice to two U.S. Fisheries Management Councils, NMFS Alaska Regional Office, U.S. representatives to international fisheries negotiations and to fisheries industry and constituents: coordinate fisheries research with state and federal agencies, academic institutions and foreign nations
Research Emphasis: Approximately 40 species of fish and crab that inhabit NE Pacific and Bering Sea; compile and analyze broad data bases on fishery, oceanography, marine mammal and environmental research to develop policies and strategies for fisheries management in the EEZ; monitor fishing operations for the incidental catch of protected fish, crab and marine mammals; protection of depleted marine mammal populations; study impact of chemical contaminants and physical alterations on organisms and marine habitat
Professional Staff: 300 staff trained in biological and physical sciences, economics, statistics, computer science, electronics, engineering and other.
Approximate Budget: (estimated North Pacific operations): $7,500,000.

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**Anchorage: ALASKA FISH AND WILDLIFE RESEARCH CENTER**

Ownership: National Biological Survey
Mission: Conduct ecosystem research for all ecosystems in Alaska including those in the marine environment.

Research Emphasis: Ecosystems, population dynamics of marine mammals, seabirds, waterfowl and anadromous fish. The Center specializes in studies of marine mammals and migratory birds using advanced satellite telemetry systems and in fish and wildlife genetics.
Professional Staff: Research biologists - 50, Research technicians - 47, Administrative - 10.
Approximate Budget: State-wide $6,500,000.

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*Figure 3-4*

# NEPA COMPLIANCE

## The National Environmental Policy Act (NEPA) Process

The NEPA is a national charter for the protection of the environment. NEPA applies to all Federal projects or projects that involve Federal funding decisions. 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 CFR 1500-1508) are the primary implementing regulations for NEPA. To ensure compliance of the proposed project with NEPA, an Environmental Impact Statement (EIS) process was followed. The steps are presented below.

## Notice of Intent to Prepare an EIS and Scoping

On March 9, 1994, DOI, as lead Federal Agency on behalf of the EVOS Trustee Council, published a Federal Register Notice of Intent to prepare an EIS on the Proposed IMS Infrastructure Improvement Project (59 FR 11082-1183). Scoping commenced on that date. Scoping is designed to be an open, public activity for identifying the scope of the significant environmental issues to be analyzed in an EIS. It can be accomplished through written communications, statements at public scoping meetings, and formal and informal consultation with agency officials, interested individuals, and groups.

Scoping meetings for the proposed project were held on March 22 and 24, 1994, in Seward and Anchorage, respectively. Public notices announcing these meetings and requesting comments were published in newspapers in Anchorage, Seward, Homer, Kenai, Valdez, Kodiac, and Cordova; and a scoping newsletter was distributed widely throughout the EVOS area and elsewhere. In addition to comments and suggestions received at the scoping meetings, over 300 written responses were received. These comments were evaluated by DOI in a scoping report which was distributed widely. The results of the scoping report formed the basis for the topics, issues, and alternatives addressed in the EIS.

## Publication of and Public Comment on the Draft EIS

A 45-day public comment period on the Draft EIS followed the June 24, 1994, publication of the Environmental Protection Agency's (EPA) Notice of Availability in the Federal Register (FR 59 32697). The public comment period ended on August 8, 1994. Public hearings on the Draft EIS were held on July 26 and 28, 1994 in Seward and Anchorage, respectively. A total of four individuals presented testimony at these hearings. A total of 31 comment letters were received on 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. Responses were prepared for 231 comments. Generally comments on the Draft EIS addressed: (1) traffic and

transportation, (2) quality of life in and near Seward, (3) recreation resources, 4) archaeological and historic resources, (5) the possible relocation of the Alaska Marine Highway's ferry service in Seward, and (6) the feasibility/propriety of the proposed project.

Comments regarding project propriety were referred to the EVOS Trustee Council for its consideration and have been provided under separate cover.

The Final EIS reflects revisions made as a result of public comments received. The effect levels predicted in the Draft EIS did not change for the Final EIS.

## Final EIS

The Final EIS was filed with EPA on September 16, 1994. The EPA's Notice of Availability for Final EIS was published in the Federal Register on September 23, 1994.

## Record of Decision

The Record of Decision (ROD) will be issued no earlier than 30 days after EPA's Notice of Availability for the Final EIS appears in the Federal Register. The ROD is scheduled to be issued by October 28, 1994.

# FIGURE 4-1
# MAJOR EIS MILESTONES (1994)

| | |
|---|---|
| **Federal Register Notice of Intent** | **March 9** |
| **Scoping** | **March 9 - August 8** |
| Public Scoping Meetings | |
| Seward | March 22 |
| Anchorage | March 24 |
| Agency Scoping Meeting | March 29 |
| **Draft EIS** | **March 9 - June 17** |
| Publication of Environmental Protection Agency's (EPA) Federal Register Notice of Availability | June 24 |
| Public Review Period | June 24 - August 8 |
| Public Hearings | |
| Seward | July 26 |
| Anchorage | July 28 |
| **Final EIS** | **June 24 - September 16** |
| Publication of EPA's Federal Register Notice of Availability | September 23 |
| 30-Day Wait Period | September 23 - October 23 |
| **Record of Decision** | **October 28** |

# ARCHITECTURAL PROGRAMMING PROCESS

Architectural Programming is a research and decision making process which involves the client, design team, consultants, specialists, and most importantly, the users of the facility. The purpose of the programming process is to provide the designers of the building with a clear definition of the scope of the project and the necessary design criteria for a successful design solution.

Two representative users groups have been formed to participate in the architectural programming process; the **Scientific Work Group** (SWG) and the **Education Work Group** (EWG). The mission of the project is to design a facility which meets the needs of the research activities identified by the Scientific Work Group while providing the educational experience outlined by the Education Work Group. The design criteria generated by the work groups has been integrated into the *Design Program Workbook Draft I* (published May 18, 1994) and the *Design Program Workbook Draft II* (published August 2, 1994). The Design Program Workbook serves as the repository of design information gathered about the project and is the product of the programming process.

## Scientific Work Group

The Scientific Work Group is comprised of researchers, scientists, Alaska agency and EVOS/TC representatives, and consultants. The SWG has met on four occasions. An introductory meeting held on March 14, 1994 in Anchorage, a programming workshop on April 11 and 12, 1994 in Seward, a meeting to review the Conceptual Design and Draft I of the Design Program Workbook on June 7, 1994 in Anchorage, and a meeting to review the Schematic Design and Draft II of the Design Program Workbook on September 14, 1994 in Anchorage. Work group members represent all areas of research to be conducted at the facility.

| | |
|---|---|
| Kim Sundberg, Work Group Chair | Alaska Department of Fish & Game |
| Dr. Leslie Holland-Bartels | Alaska Fish & Wildlife Research Center |
| Dr. Michael Castellini | UAF / IMS |
| Joseph Greenough | NOAA / National Marine Fisheries Service |
| Dr. Scott Hatch | Alaska Fish & Wildlife Research Center |
| Lloyd Lowry | Alaska Department of Fish & Game |
| Dr. Byron Morris | NOAA / National Marine Fisheries Service |
| Dr. Daniel Mulcahy | BioVet Services |
| Dr. A.J. Paul | UAF / IMS |
| Dr. John Piatt | Alaska Fish and Wildlife Research Center |
| Dr. Jim Seeb | Alaska Department of Fish & Game |
| Linda Shaw | NOAA / National Marine Fisheries Service |
| *Consultants* | |
| W. Scott Dreishman | Wildlife Concepts International |
| Dr. Joseph R. Geraci, VMD, PhD | Ontario Veterinary College |

*Liaisons*

| | |
|---|---|
| Dr. Dave Gibbons | U.S. Forest Service |
| Dr. Jerome Montague | Alaska Department of Fish & Game |
| Sandy Rabinowitch | National Park Service |
| Mark Broderson | Alaska DEC |

*EVOS/TC Peer Reviewers*

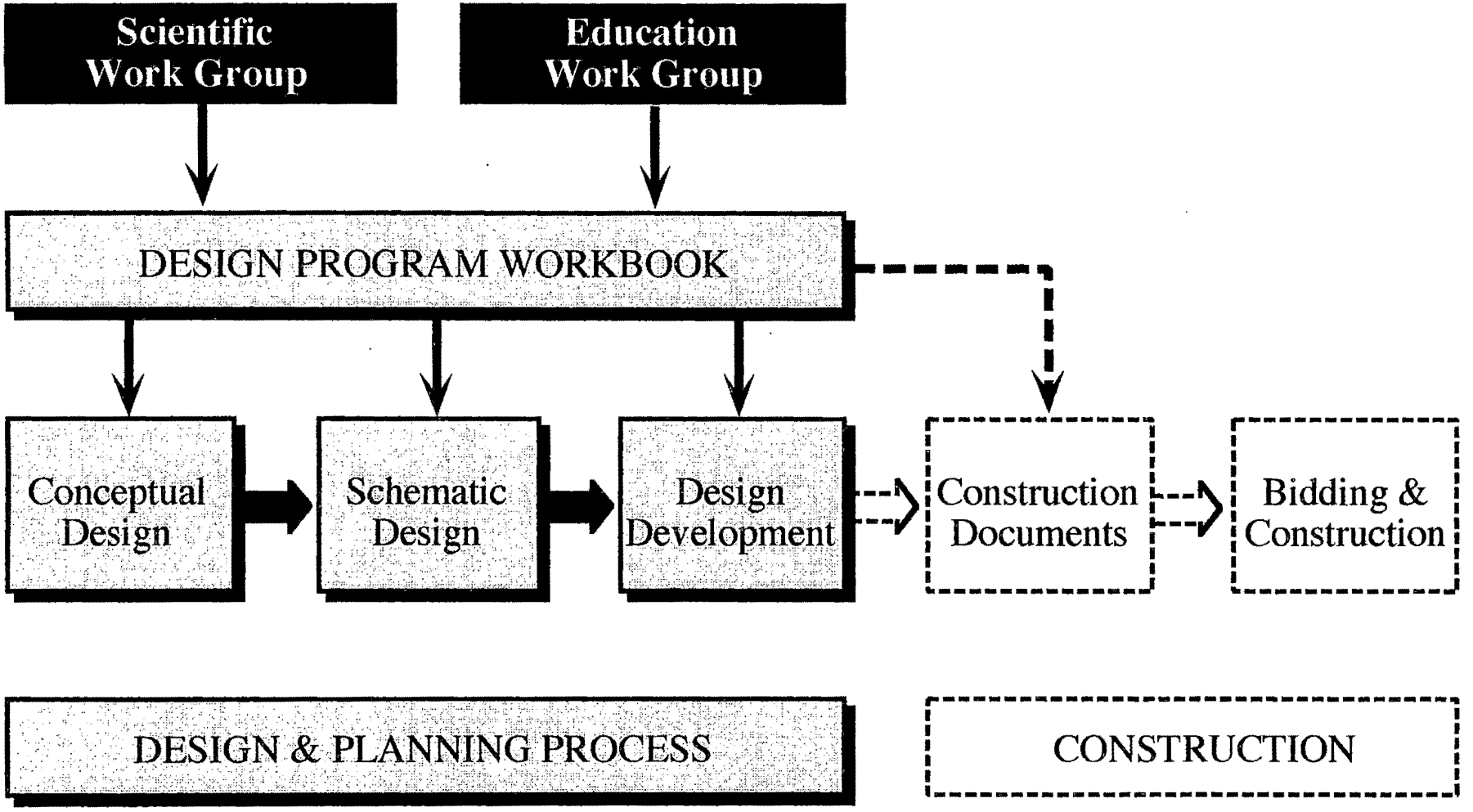
| | |
|---|---|
| Dr. Robert Spies | EVOS Chief Scientist |
| Dr. Phil Mundy | Fisheries & Aquatic Sciences |
| Dr. Charles "Pete" Peterson | University at North Carolina |

## Education Work Group

The Education Work Group is comprised of 22 Alaska representatives and two outside consultants / specialists. The EWG has met on three occasions. A two day programming workshop was held on April 13 and 14, 1994 in Seward, a meeting to review the Conceptual Design and Draft I of the Design Program Workbook on June 6, 1994 in Anchorage, and a meeting to review the Conceptual Design and Draft II of the Design Program Workbook on September 14, 1994 in Anchorage. Work group members represent a variety of public interests and educational disciplines.

| | |
|---|---|
| Darryl Schaefermeyer | Work Group Chair, SAAMS |
| Doug Capra | Seward High School |
| Ann Castellina | Kenai Fjords National Park |
| Doug Coughenhower | Marine Advisory Program |
| Willard Dunham | SAAMS Board |
| Paul Eppersos | Kenai Borough School |
| Malcolm Fleming | Seward Sr./ Jr. High School |
| Mary Hart | Downtown Merchants Association |
| Gary Holsten | Mat-Su Borough School District |
| Rich Houghton | Seward High School |
| Tyler Jones | SAAMS Board, City of Seward |
| Dave Karp | Kenai Penn. Tourism Marketing Council |
| Colleen Matt | Alaska Department of Fish & Game |
| Elaine Nelson | Seward Chamber of Commerce |
| Cathy Rezabeck | U.S. Fish & Wildlife Service |
| Orson Smith | U.S. Army Corps of Engineers |
| Thomas Smith | IMS / School of Fisheries and Ocean Science |
| Karen Wickersham | U.S. Forest Service |
| Wendy Wolfe | State of Alaska Division of Tourism |
| Donna York | Anchorage School District |
| Donna Matthews | Education Consultant |
| Christine Hoffman | Education Consultant |

# Work Groups Interface




*Work Groups Interface*
*IMS Infrastructure Improvements*
*EVOS Trustee Council Project #94199*
*Draft - September 15, 1994*
*Figure 5-1*

The architectural programming process feeds information into the design process predominately during the first three phases of design: Conceptual Design, Schematic Design, and Design Development. The design team has recently completed the Schematic Design phase of the project. Figure 5-1 illustrates this process. Detailed information (i.e., equipment specifications) will involve members of the work groups in the preparation of construction documents prior to bidding the project for construction.

## Review of Similar Facilities

Prior to beginning the programming process, the design team and project team members conducted a comprehensive review of west coast marine research and visitation facilities collecting both design and operations information. The facilities included Stephen Birch Aquarium-Museum (Scripps Institution of Oceanography), Hubbs-SeaWorld Research Institute, Long Marine Laboratories (UC-Santa Cruz), Monterey Bay Aquarium, Oregon Coast Aquarium, Hatfield Marine Science Center (Oregon State University), The Seattle Aquarium, and Vancouver Public Aquarium. A summary of these facilities follows:

### Stephen Birch Aquarium-Museum:

Stephen Birch opened in 1992 at a cost of $14 million. Its mission is to provide a "public window" on the research being conducted at Scripps Institution of Oceanography. The facility has 35,000 square feet of enclosed space and 6,000 square feet of aquaria displaying indigenous and tropical fish and invertebrates. These is also a large kelp tank. There are no mammals or birds. The facility also houses a museum of oceanographic equipment, classrooms, and interpretive and interactive displays of ocean processes. The facility is staffed by some 100 University of California employees; 45 are full time. They also have about 200 volunteers. The capital budget for the facility was under funded; they are currently having to retrofit and upgrade the building and physical plant. The program is being affected by state budget cuts and is operating at a deficit of $400,000 per year.

### Hubbs Sea World Research Institute / Sea World:

Hubbs is a non-profit institute founded in 1963 and is affiliated with Sea World of California, an Anheuser-Busch company. The facility is primarily grant supported and receives an annual donation from Sea World. Their current research emphasis is on hydro-acoustics, marine mammals, and sea turtles. Many of their projects are funded by the Department of Defense. They are currently renovating a former restaurant to provide approximately 20,000 square feet of new laboratory and office space.

Sea World is a major marine mammal stranding and rehabilitation center for southern California. They process an average of 100 animals per year including whales, dolphins, sea lions, seals, sea turtles, and sea otters. They have extensive marine mammal treatment capabilities consisting of surgery, pathology and water quality laboratories, pharmacy, x-ray, food preparation, necropsy, and quarantine and holding facilities. They receive no public funding for their rehabilitation program.

Long Marine Laboratory:
The LML was built in the late 1970's as a marine laboratory for the University of California Santa Cruz. It consists of approximately 10,000 square feet of permanent building housing wet and dry laboratories, and 6,000 square feet of portable buildings and offices. Additionally, there are three outdoor tanks for marine mammals. The current research emphasis is on marine mammals (behavior and bioenergetics of pinnepeds and dolphins), marine fish, and invertebrates. There are approximately 20 full and part-time University of California staff in addition to students and volunteers. The public is allowed free access to a trail and coastal overlook for viewing the marine mammal tanks. Tours of the facility can be taken by prior arrangement.

Monterey Bay Aquarium:
Monterey Bay Aquarium opened in 1984 at a cost of $55 million. Its mission is to stimulate interest, increase knowledge, and promote stewardship of Monterey Bay and the world's ocean environment. The facility was initially funded by a gift from the Packard family and is operated by a non-profit corporation. It encompasses 230,000 square feet consisting of aquaria of indigenous fish, invertebrates, and kelp, sea otters and shorebirds; discovery lab; classrooms; exhibits; auditorium; a 1,200 square foot research laboratory, restaurant; and gift/book shop. The annual visitation is 1.7 million, the highest of all facilities visited. The facility is staffed by 350 full and part-time employees and 650 volunteers. The annual operating budget is approximately $25 million. In addition to public education and visitation, Monterey Bay Aquarium services as a rehabilitation and research center for sea otters. They are currently constructing a 86,500 square feet, $57 million addition that will house open ocean and deep sea aquaria and exhibits.

Oregon Coast Aquarium / Hatfield Marine Science Center:
The Oregon Coast Aquarium opened in 1992 at a cost of $24 million. The capital funding included grants from state and federal agencies, corporation, foundations, private donations, and revenue bonds. Its mission is to showcase seabirds, marine mammals, fish, invertebrates, and plants native to the Oregon coast. It occupies a 32 acre site adjacent to the Oregon State University (OSU) Mark O. Hatfield Marine Science Center on Yaquina Bay. Aquaria and exhibits featuring indigenous fish, invertebrates, plants, seabirds, (tufted puffin, pigeon guillemot, common murre, rhinoceros auklet), shorebirds (black oystercatcher), pinnepeds (harbor seal, California sea lion), and sea otters are housed in a 40,000 square-foot building and 168,000 square feet of exterior pools and habitat. Additional facilities include an auditorium, classrooms, gift/book shop; and cafeteria. In addition to public education and visitation, the facility serves as a stranding and rehabilitation center for marine mammals and seabirds. The facility is operated by a non-profit corporation staffed by 69 permanent employees and 200 volunteers. The annual operating budget is $4 million. They are currently planning a $5 million expansion to provide more exterior exhibits.

The Hatfield Marine Science Center was originally established in 1965 as a marine laboratory for OSU. It now encompasses seven buildings, totalling 200,000 square feet and is comprised of 24 wet labs, dry labs, offices, and a 20,000 square-foot library. In addition to OSU, other occupants of the center include Oregon Department of Fish and Wildlife, Bureau of Land Management, Environmental Protection Agency, NOAA/NMFS, FWS, Sea Grant, and EdNet (a satellite uplink for marine

education). There are 300 full time staff including five tenured facility (one endowed) and 24 students in Marine Biology. Their annual operating budget is steadily growing and is anticipated to reach $21 million by 1995. OSU charges 40% for indirect costs; 21% goes to the facility. They are currently planning for a $7.2 million endowed marine mammal program, improved facilities for interpreting their research to the public, and improved on-site housing for students and visiting researchers.

Seattle Aquarium:

The Seattle Aquarium opened in 1977. It was funded by King County revenue bonds and is operated as a division of the City of Seattle Department of Parks and Recreation. Its mission is to expand knowledge of, inspire interest in, and encourage stewardship of the aquatic wildlife and habitats of Puget Sound and the Pacific Northwest. The facility encompasses 90,000 square feet comprised of aquaria for indigenous and tropical fish and invertebrates, seabirds, (tuffed puffin, rhinoceros aukelet, pigeon guillemot, common murre), shorebirds (black oystercatcher), pinnepeds (harbor seal, northern fur seal) and sea otter; a theater and auditorium; tide pool and discovery lab; a salmon hatchery and fish ladder; and a gift shop. The Seattle Aquarium is known for its work on captive breeding of sea otters and seabirds. The facility as approximately 52 full time equivalent staff and 300 volunteers. Its annual operating budget is approximately $3.4 million; annual revenue is approximately $2.7 million. The facility is planning a major corrosion repair effort next year.

Vancouver Aquarium:

The Vancouver Aquarium opened in 1956. It is operated by the Vancouver Public Aquarium Association, a non-profit corporation. Its mission is to affect conservation through display, interpretation, education, research, and direct action. The facility has undergone periodic expansion and renovation and now encompasses approximately 97,000 square feet on five acres leased from the Vancouver Parks and Recreation Department. The facility contains aquaria and exhibits for indigenous, Arctic, and tropical fish and invertebrates; pools for sea otters, pinnipeds (harbor seal, Steller sea lion) and cetaceans (beluga and killer whales), research laboratories, theater, discovery lab, library, and gift shop. In addition to pubic education and visitation, the facility supports marine mammal research and rehabilitation. Of eight sea otters transferred to the Vancouver Aquarium during EVOS for long term rehabilitation, six are still surviving and one had pups. The aquarium is currently supporting research on five Steller sea lions intended to help understand factors related to the decline of sea lions in the northern Gulf of Alaska. The facility has 91 full time employees, 67 part time employees and 300 volunteers. The annual budget is approximately $5.6 million.

Summary:

Information from this review allowed the design process to begin with a solid appreciation of what works from both a technical and management perspective. The design of the proposed facility incorporates the best features of those facilities visited and avoids the problematic designs solutions which hamper daily operations and increase life cycle costs.

## 6. Schematic Design

# SCHEMATIC DESIGN

The Schematic Design represents the present state of planning and design which has been generated from the architectural programming process, the conceptual design, visits to other similar facilities and close interaction with SAAMS, Scientific and Education Work Group members, City of Seward, design team members and special consultants.

In the Schematic Design, the **Research** component is the focus of the facility and will consist of a variety of research work areas and research habitats for scientific investigations to be conducted on the marine environment.

The **Education Component** will provide the public the opportunity to view and support the research occurring at the facility as well as involving the visitor in the significance and outcome of those investigations.

The **Facility Support** areas of the project will provide the infrastructure, such as life support, mechanical, administration, maintenance, and curatorial functions needed for daily operation and support of the facility.

## Research Component

The Research Component will consist of wet and dry laboratories, staff offices, a research library and computer work stations for the study and rehabilitation of marine mammals, marine birds, and other marine life. There will also be exterior spaces containing tanks and pools and an outdoor research habitat for pinnipeds, sea otter, marine bird and fish genetics research. The design of the Research Component will provide state-of-the-art, flexible research labs to support a variety of changing research activities.

The project's design provides extended research facilities for current and future efforts of UAF faculty scientists, ADF&G biologists and other scientists in an integrated program that emphasizes EVOS restoration research. The anticipated length of research projects will vary from a few months to multiple years. Examples of the types of research which would be conducted are described in Section 3.

## Laboratory Overview

A series of flexible indoor labs (both wet and dry ) and outdoor lab space are included in the design to accommodate the needs of research projects. The indoor labs are located on the lower level (or street level) of the schematic design plan. The outdoor labs (tanks and pools) are located next to the indoor labs. All of the research labs are located on the west side of the facility and adjacent to the IMS site. This provides a link to the IMS campus for research activities.

The visiting public will have limited visual access to view the scientific studies occurring within the lab areas. Current research projects occurring at the facility will be interpreted to the public throughout the facility.

## Wet Labs

Wet labs will be provided consisting of large open areas capable of containing a collection of portable tanks and pools for marine mammals, birds, fish or invertebrate research projects. These areas will be "wet" areas and will be designed to have washable and non-corrosive surfaces. Both seawater and freshwater will be provided to these labs. Water and other utility supply lines will be provided overhead. Drainage lines will be provided in the floor with the capability to isolate contaminated wastes. The design concept behind the location of these utilities is to provide a modular system which allows the researcher to adapt the utility distribution to his or her individual research project. Flexibility is also planned within these labs to accommodate variable lighting levels and ambient environment controls depending on the needs of the research project.

## Dry Labs

Two types of dry labs will be provided: smaller / individual dry labs will be assignable to specific research projects and a large central dry lab will be available to all researchers and staff at the facility. Dry labs will be used to conduct chemistry, hematology, physiology, metabolism, isotope, bacteriology and toxicology studies. An electronics lab for the research and development of monitoring devices will also be provided. Freezer storage for tissue and other samples will be adjacent to the dry lab area. Veterinarian and support staff will use the labs to conduct studies on the health of animals at the facility. A photographic darkroom will be provided for developing medical x-rays as well as other photographic materials used by researchers. The dry labs will be provided with scientific casework and laboratory equipment. Husbandry staff will use the central dry lab for daily water quality testing of the life support system.

## Outdoor Tanks and Pools

A combination of tanks and pools will be provided which are located outdoors adjacent to the indoor research labs. These tanks and pools will be used for research projects on marine mammals, birds and fish. Both permanent outdoor pools and open space for a more flexible arrangement of portable tanks and pools are included in the design. This outdoor area is essentially an outdoor working research lab able to accommodate a variety of changing research projects. It will be provided with an appropriate amount of shelter from wind and precipitation for both researchers and animals such that this space can be used throughout the year.

The outdoor tanks and pools will be located adjacent to indoor wet labs with large overhead doors to allow the transportation of research tanks and pools between the indoor and outdoor lab areas.

Other design features will include an overhead crane to lift large marine mammals in and out of pools, outdoor lighting for winter work, corrosion resistant materials as well as a flexible arrangement of required utilities.

## Habitats

Naturalistic research habitats are included in the design to provide for the long-term care of those marine mammals and birds involved in specific research and rehabilitation programs. It will, to the extent possible, duplicate the natural environment for proper husbandry and behavioral studies. It is anticipated that research on animal sensory systems, telemetry, behavior, physiology, growth, nutritional needs, reproduction and other life history aspects will be conducted in the research habitats.

Research habitats will be designed for Steller sea lions, seals, sea otters and marine birds. The design of the naturalistic habitat will consist of wet pools, dry haul out and resting areas. Rock cliffs will form and enclose the habitats. The design of the rock surfaces will consist of a combination of artificial and natural rock work. Researchers will have dedicated access to marine mammal haul out spaces, underwater viewing, and sea bird burrows. The habitat will include provisions for the separation of species groups and specific individual animals as needed for specific scientific and husbandry projects. The naturalized setting will be designed and constructed to exceed existing regulatory requirements and industry established standards.

The visiting public will also have access to view the animals in the naturalistic research habitat. Both above water and below water viewing will be provided. Current research projects occurring at the facility with the animals in the habitats will be interpreted to the public.

## Veterinary and Husbandry

Veterinary and husbandry areas necessary for animal care activities are provided in the design. These areas will be shared by visiting researchers and veterinarian and husbandry staff and consist of animal quarantine and rehabilitation, animal care and treatment clinic, and food services.

Quarantine areas are provided for care for marine mammals and birds to prevent possible transmission of disease to healthy animals. These quarantine / critical care areas will also be used for incoming animals in need of rehabilitation. The quarantine areas will be capable of accommodating marine mammals, marine birds or fish and will be designed to provide variable temperature and light depending on the needs of the animal.

The animal care and treatment clinic will provide veterinary services and treatment areas for animal health services. This area consists of offices for veterinary staff, surgery, treatment and necropsy areas. A centrally located food service area will provide food storage and preparation areas for

feeding marine mammals and birds. It is anticipated that the facility will accommodate short term food storage; long term food storage will be secured off-site.

## Education Component

The Education Component will engage the visitor in the research, rehabilitation and husbandry activities occurring at the facility. The mission of the education and visitation component is to offer the message of environmental responsibility of Alaska's marine resources through educational programs. The research and rehabilitation activities involving indigenous seabird, pinniped, sea otter, and fish and invertebrate species will be the education exhibit focus. The visitor will be exposed to the interaction of research and animal care activities for the above species and the general ecology of the region through the use of the naturalistic research habitat, video, graphics, printed materials and interpretation with trained docents or researchers in laboratory conditions. The proposed facility will complement marine programs in educational institutions across the state.

The emphasis of the Education Component will be placed upon communicating current research activities and events within the institution and EVOS region that are contributing to general knowledge of the EVOS area and beyond. This current events program will be integral to the continuing success and public interest at the institution. The nature of this activity will constantly create new information and activities that will need to be communicated to the general public and educational groups.

The design of the facility will integrate the Education and Research Components such that the visiting public is able to view the research currently being conducted without interfering with the research itself. The visiting public will have the greatest viewing access to the naturalistic research habitat but they will also have an overhead view into the research wet labs, dry labs and outdoor tanks and pools area from the upper floor level. Specific educational programs can provide small groups tours directly into the research lab areas.

The Education Component of the project will function in concert with, and in support of, the Research Component. **The capital funding of the Education Component will not come from the Trustees Council Joint Funds (as defined by the Memorandum of Understanding and Consent Decree), but from other sources.** The Education Component will provide, via admission fees, parking fees, and sales of educational materials charged to its visitors, financial support for the operation of all aspects of the facility.

## Facility Support Areas

Facility support areas are necessary for the daily operations of the Center and are shared by the Research Component and Education Component. Facility support areas include a life support

system, mechanical, electrical, administrative offices, building security, maintenance and building service areas. The design of the facility places the "back-of-house" spaces, such as life support, in the below grade level of the building. The lobby and public services will be provided on the street level and administration is planned to occur on the upper level.

## Life Support System (LSS)

**Introduction:**

The seawater supply system for the facility comprises duplicate intake pipelines and intake structures; a seawater intake wet well located within the building facility; 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, and marine habitat facilities within the complex. (Figures 6-4 and 6-5).

The fresh water supply system for the facility comprises an intake well at a spring; pumps and piping to carry the water to the facility; a storage tank; and various fresh water distribution systems consisting of pumps, piping, valves, fittings, filters where required, flow meters, operating controls, etc.

The following separate seawater supply distribution systems are included:

- Marine Mammal and Bird Habitats
- Marine Quarantine and Critical Care Facilities
- Research Tanks
- Wetlands
- Classroom

Each system will include at least two pumps (one to be redundant for emergency standby purposes) and a single pipe distribution system feeding the respective tanks and/or pools. A separate recirculation line will return a portion of the total system supply flow to the wet well; this will ensure that the seawater in the piping distribution system will be constantly renewed. Filters to remove particulate will be required on some of the systems. High rate pressure sand and gravel filters are considered the most appropriate selection at this time.

The following statements describe the concept for the freshwater systems, seawater intake and supply system and for the associated seawater and freshwater collection and disposal systems.

**Freshwater System:**

The freshwater system will supply 150 gallons per minute of high quality freshwater needed to

conduct salmonid culture and fish genetics research at the facility. A spring located approximately 2,500 feet from the project site on Lowell Point Road is the intended source for this system. This source which currently is not being used, was previously used for many years to supply a fish processing plant and efforts are underway to secure the rights to appropriate it for the facility. Analysis of this water source indicates the quantity and quality are within acceptable ranges for the ADF&G fish genetics needs.

The water would be collected in a shallow well and pumped to the facility via a pipeline buried along Lowell Point Road. A storage tank at the facility will provide a reservoir for the distribution system. Any pathogens will be removed by U.V. or ozone treatment. Fresh water will be distributed to the wetlabs, tanks and raceways via pipes. A backup freshwater system will be provided using city water with chlorine removal by activated carbon or sodium thiosulfate.

**Seawater Intake System:**
The intake structures for the seawater systems will be perforated pipes supported on concrete anchor blocks to keep the intakes off of the sea bottom at a depth of approximately 250 feet. The number of perforations will be calculated and determined on the basis of the established final design flow and on the criterion to keep the intake velocity less than 0.1 feet per second.

Each intake structure and pipeline will be designed for the full flow requirements of the facility. At this time the flow is estimated to be between 4,500 and 5,000 gallons per minute. The second intake line is for redundancy and will allow one line to be maintained while the other is in service. The concept of two intakes provides the degree of reliability required for life support systems supplying ongoing research work which can extend for years in duration.

The wet well is common to all of the seawater supply and distribution systems. It services as a recirculation and monitoring chamber as well as an untreated (raw) seawater holding well. Because it is readily accessible it provides on shore storage, settling and degassing of untreated seawater. If both intake pipelines were to fail due to a seismic event, or some other event, temporary construction 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.

As described above, each seawater supply distribution system then draws water from this wet well and distributes it to the respective facilities.

**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, the concept of disposing of used seawater is to discharge it into an outfall pipe which terminates below extreme low water at a depth of approximately 50 feet below low water.

Several categories of used seawater have been identified as follows:

Clean Waste Water:
This includes once through systems for research and rehabilitation facilities where untreated (raw) or filtered seawater is supplied to a research or holding tank or pool. This waste water will be discharged directly to the disposal system outfall without treatment. Some of this seawater may also be directed or discharged through the tidal pool which is proposed for future construction.

Contaminated Waste Water:
This includes once through systems as for clean waste for research and rehabilitation facilities but where the waste water emanating from the holding and research tanks may be contaminated. This waste water will be separately collected and discharged to a treatment facility which will disinfect, dechlorinate, or otherwise treat the waste water prior to discharge to the main outfall.

Chlorinated Waste Water:
This includes overflow waste water from any marine mammal and/or sea bird habitat containing a chlorine residual will be separately collected and discharged to a treatment facility prior to discharge to the main outfall.

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

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

**Freshwater Collection and Disposal:**
Generally the concept of disposing of used freshwater will be to mix it with the used seawater being discharged to the outfall. As with the seawater intake, any fresh water potentially contaminated with disease pathogens or chemicals will be treated with ozone prior to discharge.

**Marine Mammals and Sea Birds:**
Each marine mammal and sea bird habitat will employ a self-contained recirculating life support system using high rate sand and gravel filters; biological filters where fish are held; and disinfection facilities (ozone, chlorination or a combination of both).

The seawater make-up supply system to all of the habitats will have a capacity of 600 gallons per minute. Because these habitats include underwater viewing, the seawater make-up flow will be filtered using high rate sand and gravel filters.

Some of the overflow water from the habitats may be chlorinated (not greater than 0.5 ppm residual),

such as the seal and sea lion habitats. It is proposed that the chlorinated overflows will be treated (with ozone) along with other wastes from the complex.

Overflow water which is not chlorinated or otherwise contaminated will be discharged to an outfall sump, along with other waste discharges, and then to the outfall pipe.

**Marine Rehabilitation and Critical Care Facilities:**
The seawater supply system to all holding tanks and pools will have a capacity of 1,000 gallons per minute. The seawater supply will be unfiltered water.

The used or spent seawater from some of these tanks or pools, if considered contaminated by disease pathogens or chemicals, will flow to the waste treatment facility prior to discharging to the outfall sump and outfall.

Uncontaminated seawater emanating from these rehabilitation tanks and pools will discharge either through the proposed tidal pool or directly to the outfall.

**Research Tanks:**
The seawater supply system to all research tanks will have a capacity of 2,600 gallons per minute. This supply will be unfiltered water.

As for the rehabilitations system, the used or spent seawater emanating from the tanks or holding pools will 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.

**Wet Lab Areas:**
The seawater supply system to all wet lab areas will have a capacity of 200 gallons per minute. This supply will include filtered and unfiltered water.

It is anticipated that waste water emanating from these areas may be contaminated and that all will be separately collected and discharged through the waste seawater treatment facility, prior to discharging into the outfall.

**Seawater Outfall:**
The seawater outfall system will comprise a main collection sump or manhole on shore and a 20-24 inch diameter outfall pipe with perforated diffuser structure at the discharge end. The diffuser discharge structure will be located at a depth of approximately 50 feet to allow for mixing the warmer and more biologically active surface waters. A treatment system will remove solids, pathogens, and residual chlorine to meet state water quality standards at the point of discharge.

## Exterior Building Design

The exterior finishes of the building will be in keeping with the status and mission of a marine research and education institution. The roof forms will be a combination of flat and sloped surfaces and will be designed such that the views from downtown Seward to the bay will not be inappropriately blocked. On August 3, 1994, the Seward Planning and Zoning Commission approved a variance permit which allows the maximum building height for the proposed project to exceed the existing 34' height limitation. The average height of the building will be 40 feet with limited portions of the building at 48 feet above street level. The primary aesthetic feature of the complex will be the integration of local architectural elements with the new habitat forms.

Through the use of materials and specific design elements the architectural character of the facility will honor the context of the buildings on Railway Avenue. The visual line of the bus drop off canopy will reflect the single story character of the older, possibly historic buildings across the street. Stucco, natural or synthetic, may be used in specific locations, such as for the exterior finish of columns or of the canopy itself, to reflect the use of materials similar to those on the surrounding buildings.

## Architectural Systems

**Floors:**

The proposed floor system will consist of a concrete slab on grade for the basement and concrete structural slabs for the first and second floors.

Finishes: Proposed floor finishes will balance the need for long wearing, durable products with aesthetics and desired flexibility of uses.

Wet Labs / Animal Treatment Areas - sealed concrete
Dry Labs and Work Areas - vinyl
Offices - carpet
Public Areas - carpet and tile
LSS / Mechanical / Electrical / Storage- sealed concrete
Janitorial / Support Areas - vinyl tile

**Walls:**

The building will be framed with a combination of concrete and wood columns and beams. Wood beams and trusses will be used where the structural system is exposed to the interior.

Exterior Walls: Concrete and masonry with a minimum of R-30 insulation. Interior side of walls in lab areas will be masonry with a polyurethene coating. Interior side of other work areas will be gypsum board with a final finish. Exterior side of walls will be predominately masonry with architectural metal panels, wood trim, and stucco (natural or synthetic).

Interior Partitions: Masonry interior partitions with a polyurethene coating in wet labs and animal treatment areas and metal partitions with gypsum board facing throughout the remainder of the building. Acoustical insulation will be provided as needed. Final finishes will include paint, wall fabric, or tile as each space warrants. Special attention to the execution and finish in animal treatment areas and research labs will be provided.

**Roof and Ceiling Systems:**
Roofs: The proposed roof system will consist of a combination of metal roof finish on a plywood deck for the sloped portions of the roof and an IRMA roof system on the flat portions of the roof.

Ceilings: Wet labs and animal treatment areas will be open to the underside of the concrete floor framing above. Dry labs and research work areas on the lower level will have either a lay-in tile or gypsum board ceiling. Public spaces, library, classroom and offices on the upper level will be open to the wood framing of the roof above.

**Doors and Windows:**
Exterior Doors: Doors will consist of a combination of metal and glass. Exterior doors for public use will be glass (store front) with metal trim and be part of a glazed door and window system. Doors for employees and research staff will be painted or prefinished metal. Overhead garage doors will be provided at the loading dock and wet labs. Corrosion resistance will guide final material selections.

Interior Doors: Interior doors in public areas and for offices will be clear finished wood doors. Research labs, storage areas and facility support areas will have painted metal doors.

Windows: All exterior windows will be low maintenance frames with insulated glazing units. Windows used between interior spaces will be wood or metal frames with single safety glazing.

Translucent Window System: An insulated translucent window panel system will be used to provide additional natural lighting throughout the building.

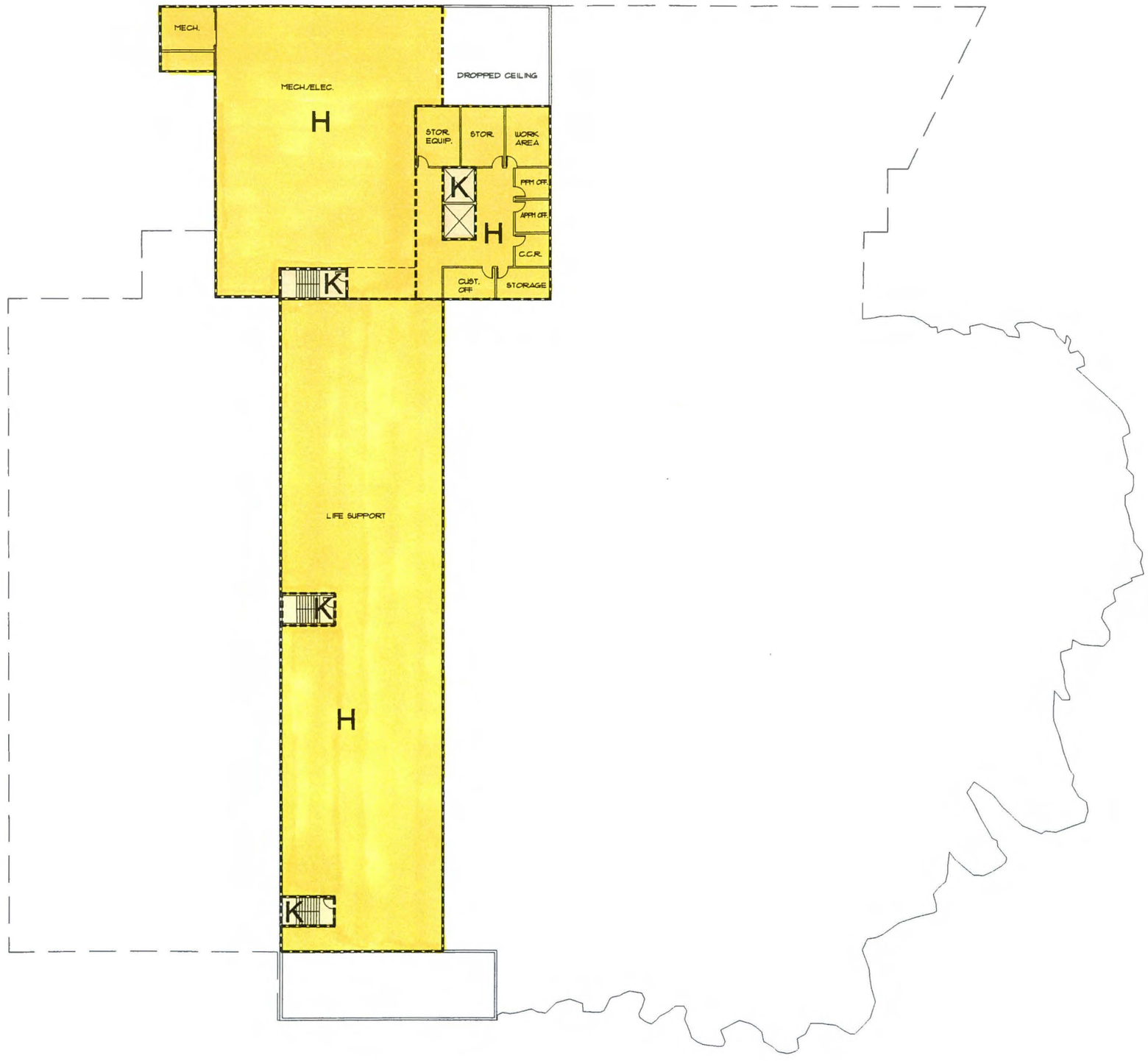
## Space Program Summary

The following Space *Program Summary* is the compilation of activity and facility requirements identified in the *Design Program Workbook* and their anticipated square footage assignments for this phase of design. The programming process will continue to develop during subsequent design phases.

| | *INTERIOR Area (sf)* | *EXTERIOR Area (sf)* |
|---|---|---|
| **RESEARCH AND REHABILITATION COMPONENT** | | |
| Marine Mammals: Research Habitats, Research Tanks, Pools, Pens, Wet and Dry Labs, Mammal Quarantine, Offices, and Storage | 3,300 | 18,000 |
| Marine Birds: Research Habitat, Research Tanks, Pools, Wet and Dry Labs, Bird Quarantine, Offices, and Storage | 1,875 | 4,200 |
| Fish / Invertebrates: Outdoor Raceway, Tanks and Pools, Wet and Dry Labs, Quarantine Lab, Offices and Storage | 3,950 | 2,000 |
| Monitoring and Research: the EVOS Restoration Library and Ecological Modeling Program | 2,500 | 0 |
| Oceanography: Offices | 375 | 0 |
| Veterinary / Husbandry & Support: Central Dry Lab, Clinic, Quarantine, Food Services, Offices and Husbandry Work Areas | 3,650 | 0 |
| Research Component Service Areas: Staff Areas and Storage | 1,700 | 600 |
| Research Component Subtotal | 17,350 | 24,800 |
| *Efficiency @ 80%* | 4,337 | |
| SUBTOTAL | 21,687 | 24,800 |

| | *INTERIOR Area (sf)* | *EXTERIOR Area (sf)* |
|---|---|---|
| **EDUCATION COMPONENT** | | |
| Exhibits: Marine Mammals, Marine Birds, Exhibits with Research Interpretation | 5,000 | 0 |
| Education / Outreach Programs: Exhibit Development / Interpretation, Offices and Classrooms | 1,600 | 0 |
| Lobby and Public Areas*: Entry, Lobby, Ticketing, Information, Gift Shop / Bookstore, Auditorium, Coat Room, Restrooms and Storage | 8,500 | 0 |
| Education Component Subtotal | 15,100 | 0 |
| *Gallery / Circulation* | 10,800 | 0 |
| SUBTOTAL | 25,900 | 0 |
| **FACILITY SUPPORT REQUIREMENTS (shared spaces)** | | |
| Administrative Areas: Administrative Offices, Conference Room, Administrative Storage and Staff Areas | 2,275 | 0 |
| Life Support System / Mechanical and Electrical System | 16,810 | 0 |
| Building Security and Maintenance: Security / Receiving Office, Custodial, Workshop, Physical Plant / Maintenance and Building Storage | 1,675 | 0 |
| Building Services: Loading Dock / Receiving Area / Holding and Trash Storage | 600 | 0 |
| Facility Support Subtotal | 21,360 | 0 |
| *Efficiency @ 80%* | 5,340 | 0 |
| SUBTOTAL | 26,700 | 0 |
| **TOTALS** | *Interior* | *Exterior* |
| **Research and Rehabilitation Component** | 21,687 | 24,800 |
| **Education Component** | 25,900 | 0 |
| **Facility Support** | 26,700 | 0 |
| | **74,287** | **24,800** |

* The proposed auditorium and a portion of the programmed lobby have been designed as a future phase of the project.




A MARINE MAMMALS

B MARINE BIRDS

C FISH/INVERTEBRATES

D OCEANOGRAPHY

E DATA MANAGEMENT

F LIBRARY

G VETERINARY/ ANIMAL HUSBANDRY

H FACILITY SUPPORT

J EDUCATION

K VERTICAL CIRCULATION

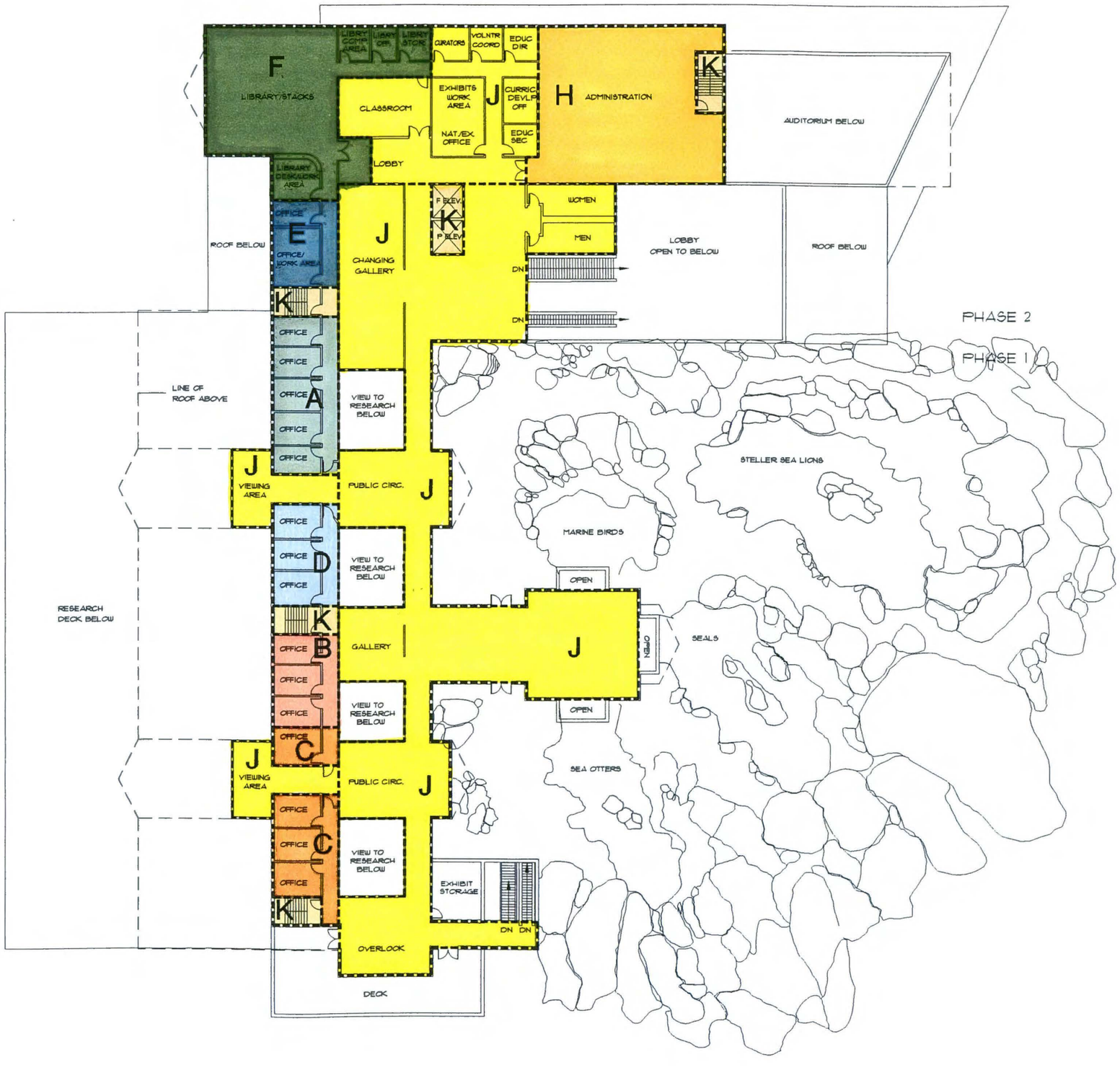
# BASEMENT

## IMS INFRASTRUCTURE IMPROVEMENTS

LIVINGSTON SLONE INC.
CAMBRIDGE SEVEN ASSOCIATES
SEPT. 6, 1994

0 5 10 20 40
SCALE IN FEET

*Figure 6-3*




A MARINE MAMMALS

B MARINE BIRDS

C FISH/INVERTEBRATES

D OCEANOGRAPHY

E DATA MANAGEMENT

F LIBRARY

G VETERINARY/ ANIMAL HUSBANDRY

H FACILITY SUPPORT

J EDUCATION

K VERTICAL CIRCULATION

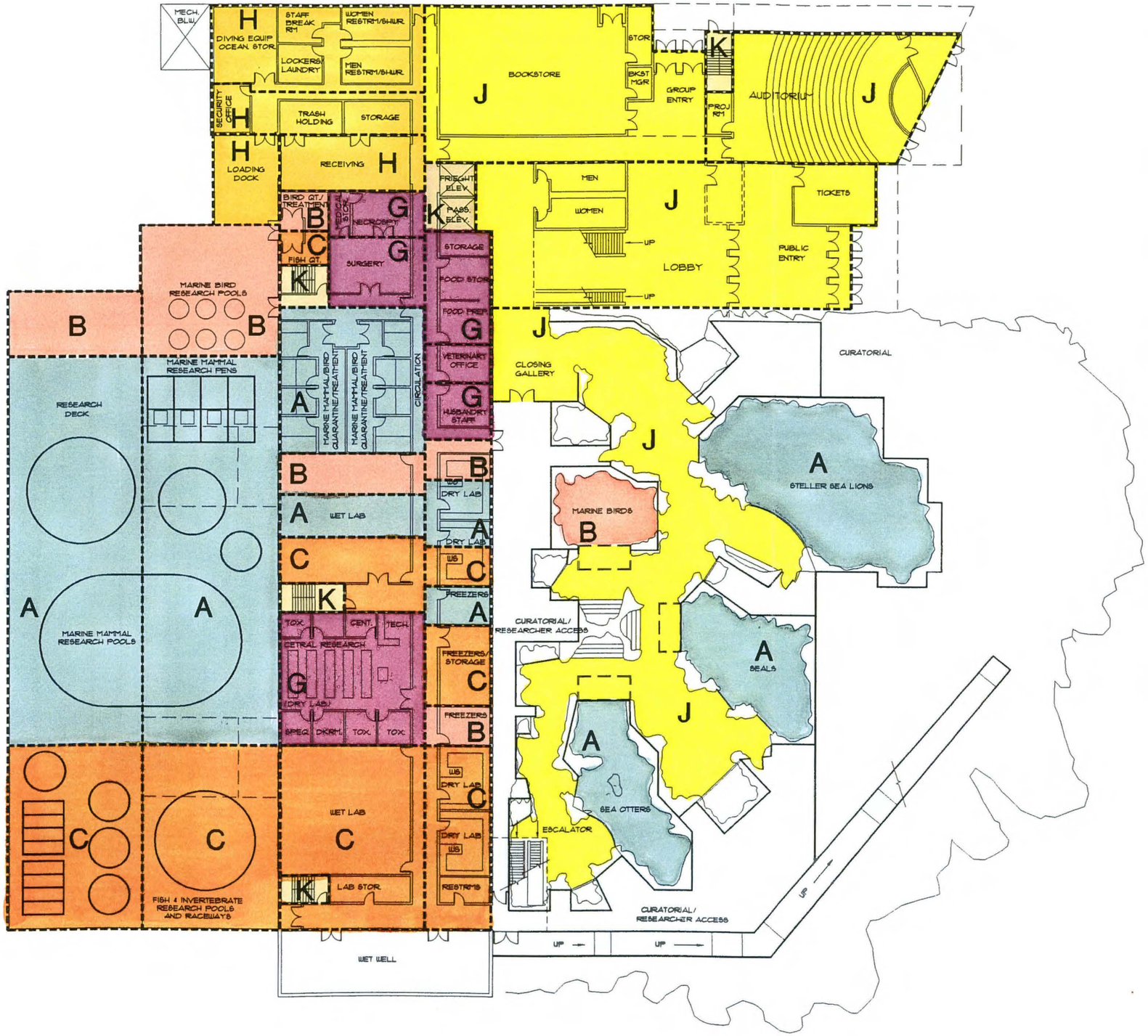
# UPPER LEVEL

## IMS INFRASTRUCTURE IMPROVEMENTS

LIVINGSTON SLONE INC.
CAMBRIDGE SEVEN ASSOCIATES
SEPT. 6, 1994

*Figure 6-2*

0 5 10 20 40
SCALE IN FEET




- A — MARINE MAMMALS
- B — MARINE BIRDS
- C — FISH/INVERTEBRATES
- D — OCEANOGRAPHY
- E — DATA MANAGEMENT
- F — LIBRARY
- G — VETERINARY/ ANIMAL HUSBANDRY
- H — FACILITY SUPPORT
- J — EDUCATION
- K — VERTICAL CIRCULATION

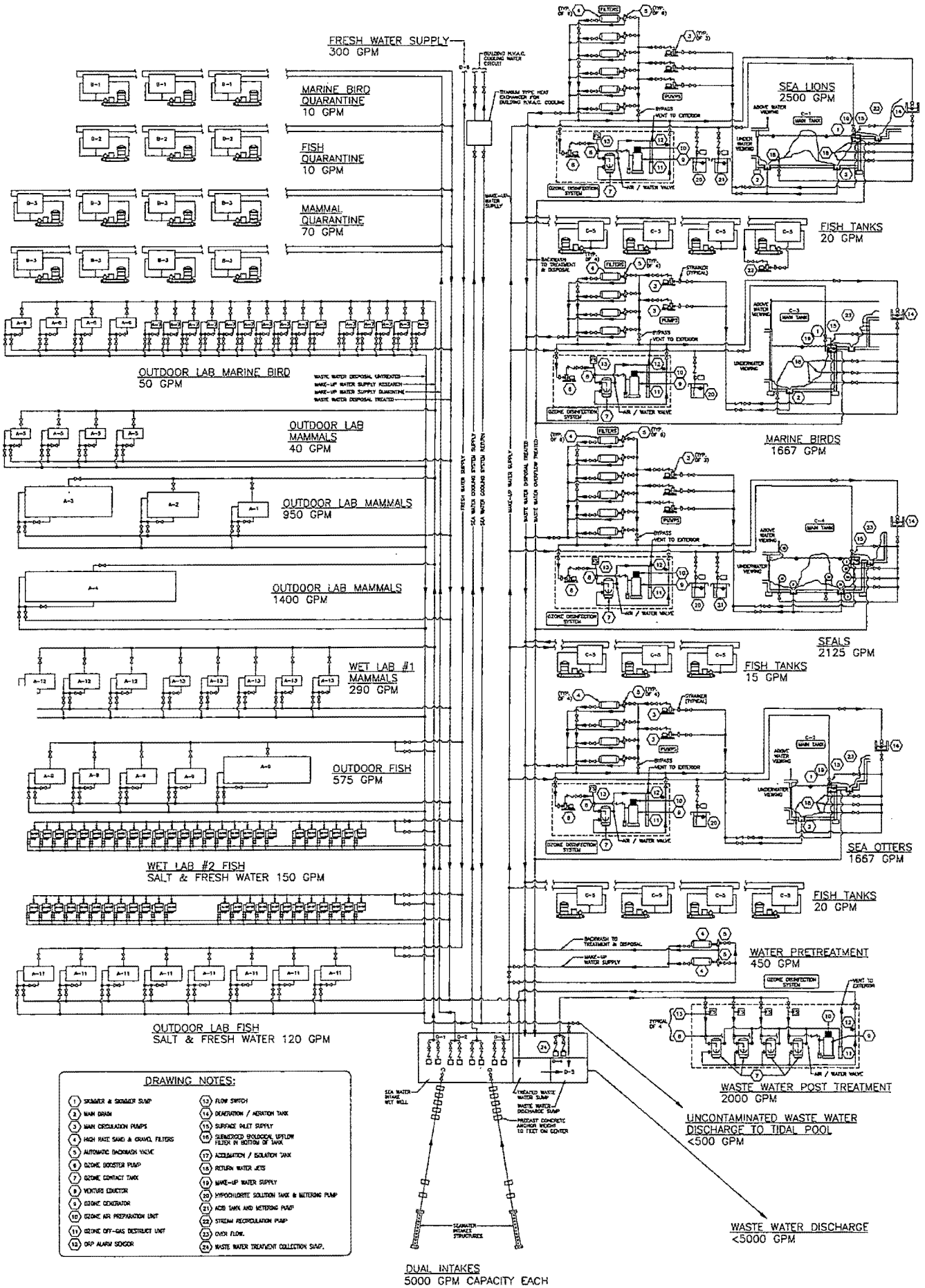
# MAIN LEVEL

## IMS INFRASTRUCTURE IMPROVEMENTS

LIVINGSTON SLONE INC.
CAMBRIDGE SEVEN ASSOCIATES
SEPT. 6, 1994

*Figure 6-1*

0 5 10 20 40
SCALE IN FEET



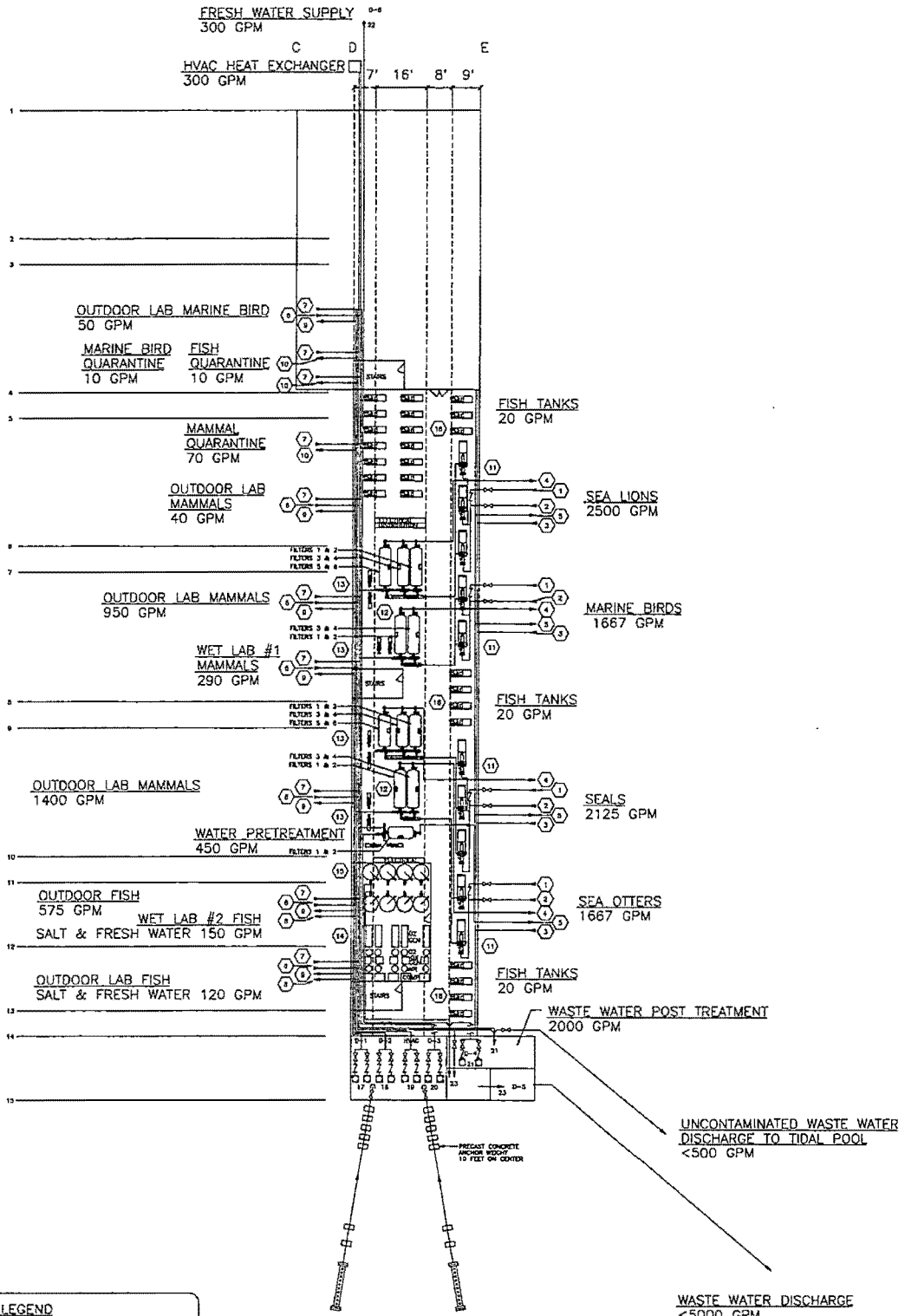

| | | | |
|---|---|---|---|
| SHEET NO. LSS-1 | TITLE LIFE SUPPORT SYSTEM SCHEMATIC FLOW DIAGRAM | DRAWN BY: T.M. REVIEWED BY: T.M. DATE: Sept. 7, 1994 PROJECT NO. 401.00 | DWT LIVINGSTON SLONE Cambridge Seven Associates, Inc. |

SAAMS

# ALASKA SEALIFE CENTER
# IMS INFRASTRUCTURE IMPROVEMENT

SEWARD, ALASKA

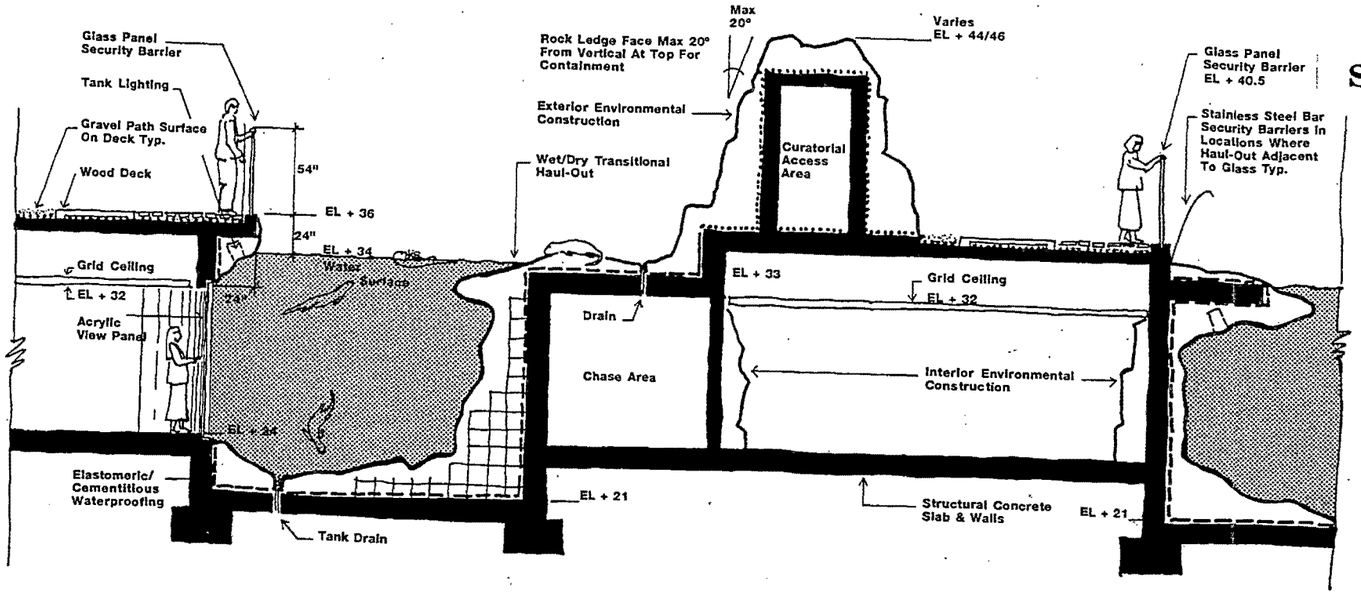
*Figure 6-4*



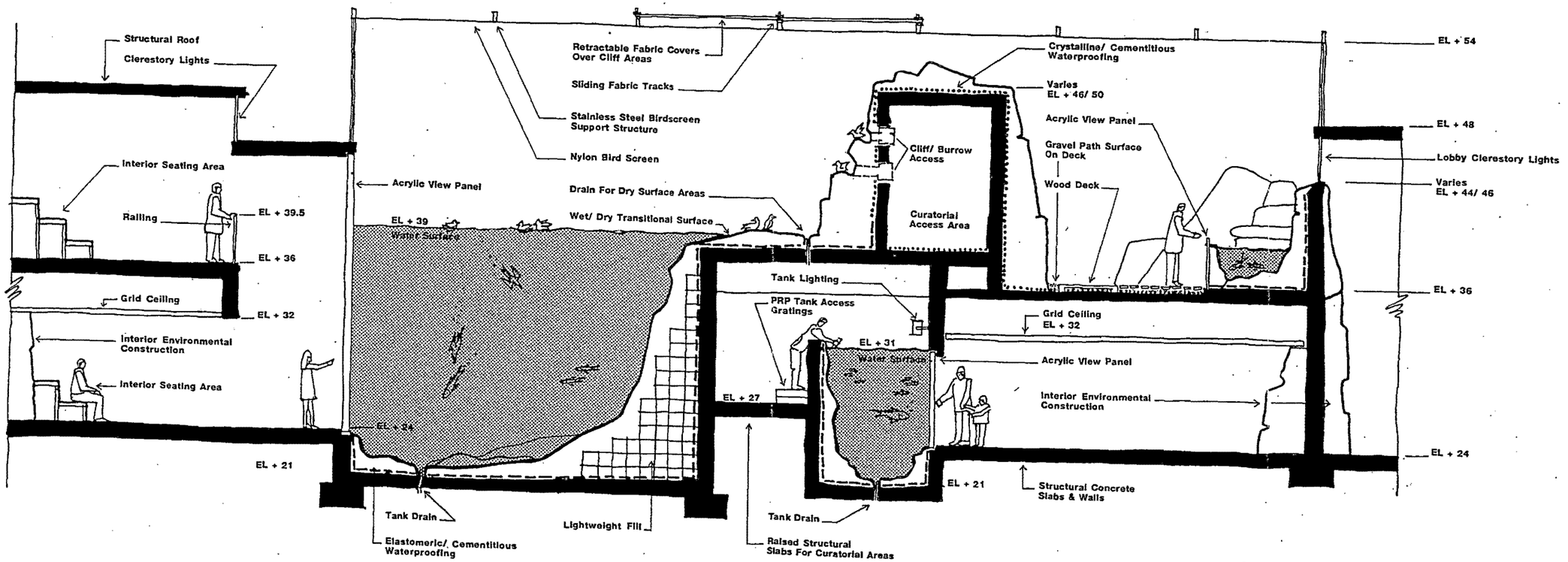

| | | | | |
|---|---|---|---|---|
| SHT NO. LSS-2 | TITLE ALASKA SEA LIFE CENTER LIFE SUPPORT SYSTEM PLAN | PROJECT NO. 401.00 DRAWN BY K. MORTON REVIEWED BY DATE Sept. 1, 1994 Scale: 1"=16'-0" | DWT D. W. Thompson Consultants Ltd. Marine Engineering Consultants Specializing in Offshore Construction and Environmental Systems | LIVINGSTON SLONE ARCHITECTURE ENGINEERING PLANNING INTERIOR DESIGN 3800 ARCTIC BOULEVARD SUITE 301 ANCHORAGE, ALASKA 99503-5790 TEL 907 562 3004 FAX 907 561 4326 | Cambridge Seven Associates, Inc. Architects and Exhibits Designers 1383 Massachusetts Ave. Cambridge, MA 02238 617 492-7660 Fax 492-1857 | SAAMS ALASKA SEALIFE CENTER IMS INFRASTRUCTURE IMPROVEMENT SEWARD, ALASKA |

Figure 6-5

# Sections




## Section C: Sea Otters




## Section C: Sea Otters

## Section D: Marine Birds

*Figure 6-18*

SAAMS

ALASKA SEALIFE CENTER
IMS INFRASTRUCTURE IMPROVEMENT

SEWARD, ALASKA


Cambridge Seven Associates, Inc.
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1565 Massachusetts Ave.
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ENGINEERING
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3900 ARCTIC BOULEVARD
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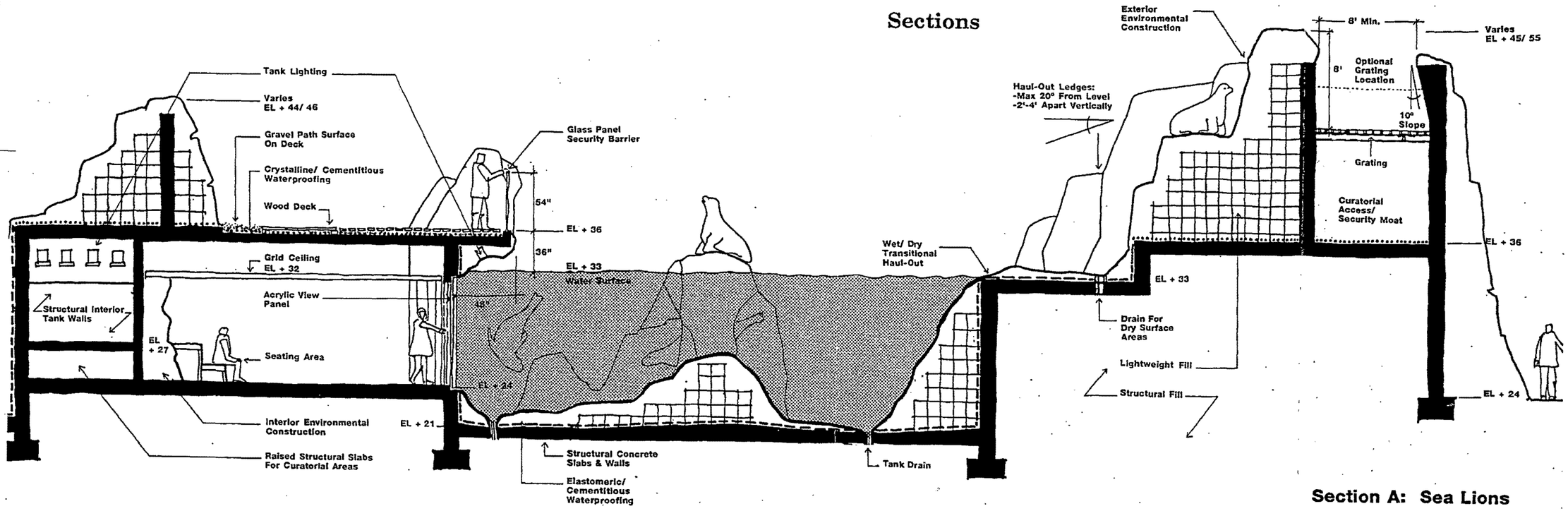
TEL 907 561 4166
FAX 907 561 4328


PROJECT NO. 401.00
DRAWN BY: C7A / SI
REVIEWED BY:
DATE AUGUST 1994

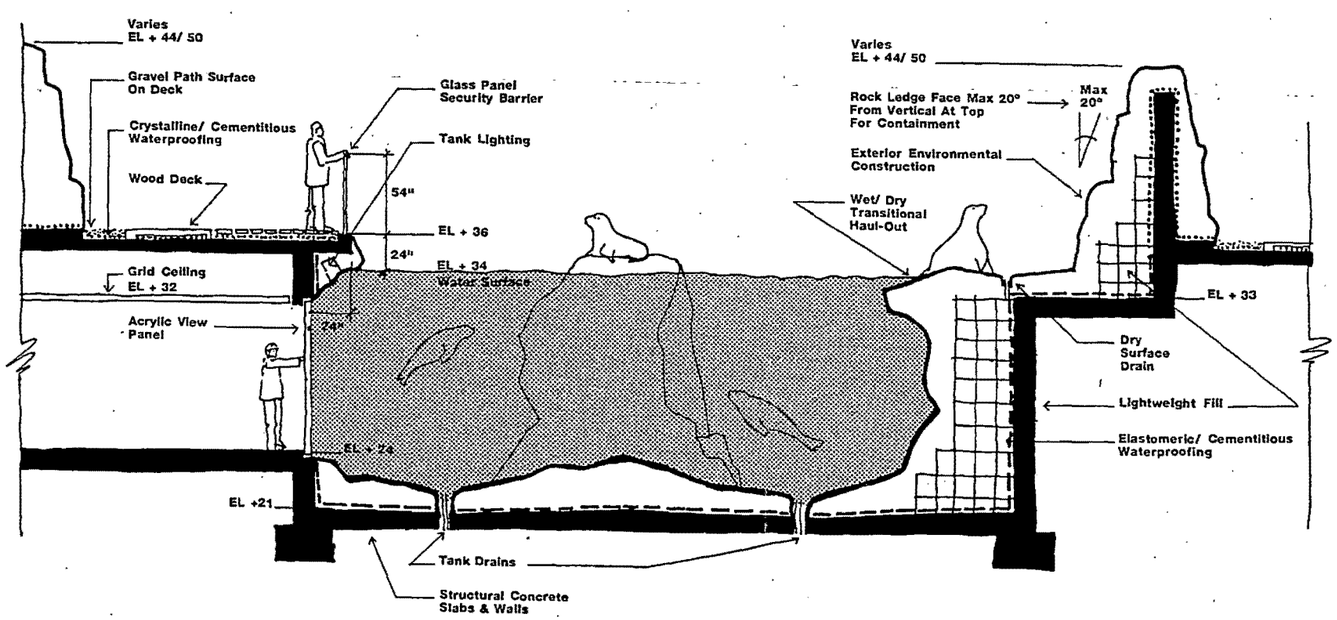
TITLE
HABITAT SECTIONS

SHEET NO.

# Sections




**Section A: Sea Lions**




**Section B: Seals**

*Figure 6-17*

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ENGINEERING
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INTERIOR DESIGN
3340 ARCTIC BOULEVARD
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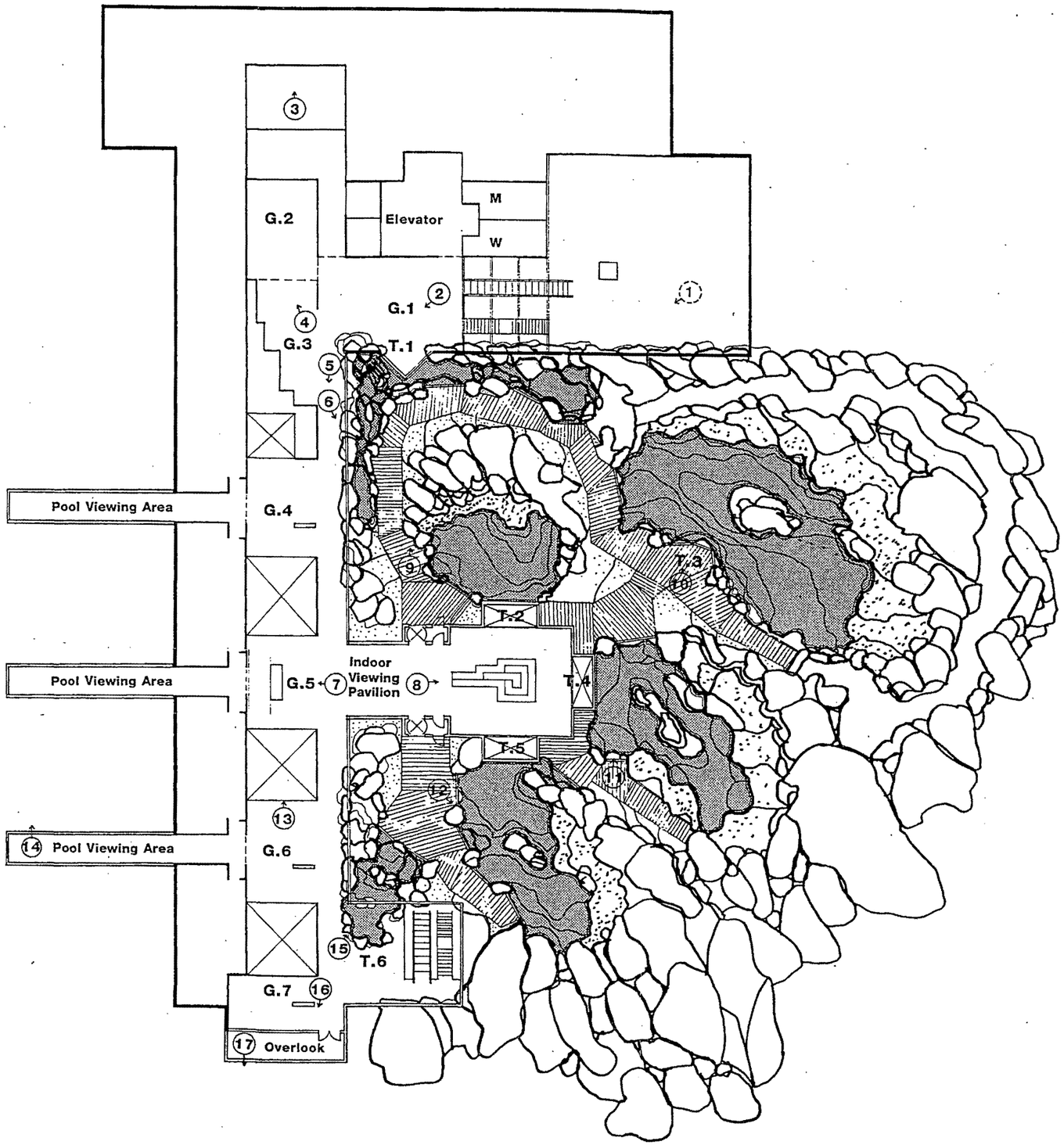
TEL 907 561 3004
FAX 907 561 4329

PROJECT NO. 401.00
DRAWN BY: CTA / SI
REVIEWED BY:
DATE AUGUST 1994

TITLE
HABITAT
SECTIONS

SHEET NO.




**Upper Level**

Galleries
- G.1 Orientation
- G.2 Exxon Valdez Oil Spill
- G.3 Changing Exhibit
- G.4 ASLC Animal Care
- G.5 Visitor Lab Station

Indoor Viewing Pavilion

Rookery Habitat
- T.1 Freshwater Stream
- T.2 Marine Birds
- T.3 Steller Sea Lions
- T.4 Seals
- T.5 Sea Otters
- T.6 Tide Pool

Galleries
- G.6 ASLC Marine Research
- G.7 Commercial and Sport Fishing

Overlook

*Figure 6-16*

SAAMS

ALASKA SEALIFE CENTER
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SUITE 204
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TEL 907 561 2256
FAX 907 561 4525

PROJECT NO. 401.00
DRAWN BY CTA / SI
REVIEWED BY
DATE AUGUST 1994

TITLE
UPPER LEVEL
HABITAT
PLAN

SHEET NO.

# Main Level




**Main Level**

Lobby

Underwater Gallery

| | |
|---|---|
| T.2 | Marine Birds |
| T.3 | Steller Sea Lions |
| T.4 | Seals |
| T.5 | Sea Otters |
| T.7 | Rocky Bottom |
| T.8 | Flat Fish |
| T.9 | Giant Octopus |
| T.10 | Kelp Forest |
| T.11 | King Crabs |
| T.12 | Schooling Fish |
| T.13 | Jellyfish |
| T.14 | Freshwater Stream Sink |
| T.15 | Gulf of Alaska |

Galleries

| | |
|---|---|
| G.8 | Closing Exhibit |

*Figure 6-15*

SAAMS

ALASKA SEALIFE CENTER
IMS INFRASTRUCTURE IMPROVEMENT

SEWARD, ALASKA

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PLANNING
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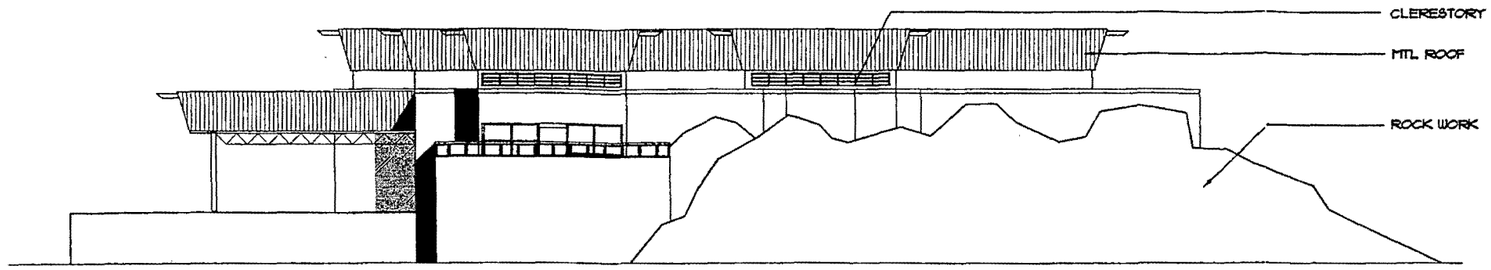
FAX 907 561 4535

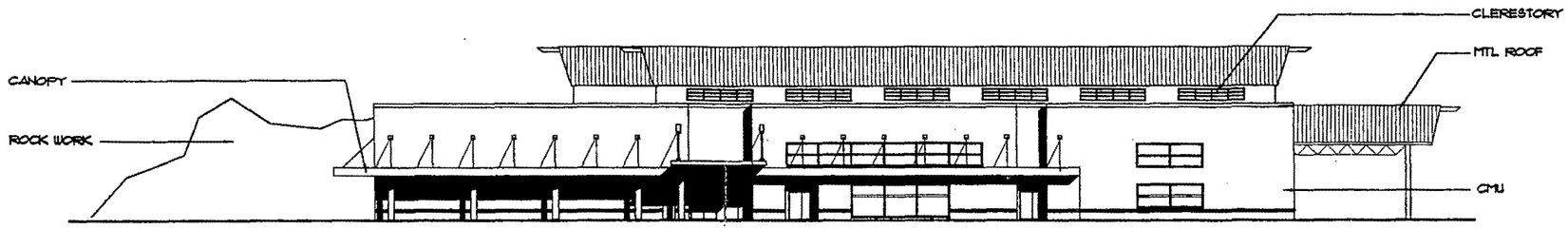
PROJECT NO. 401.00
DRAWN BY: CTA / SI
REVIEWED BY:
DATE AUGUST 1994

TITLE
MAIN LEVEL
HABITAT
PLAN

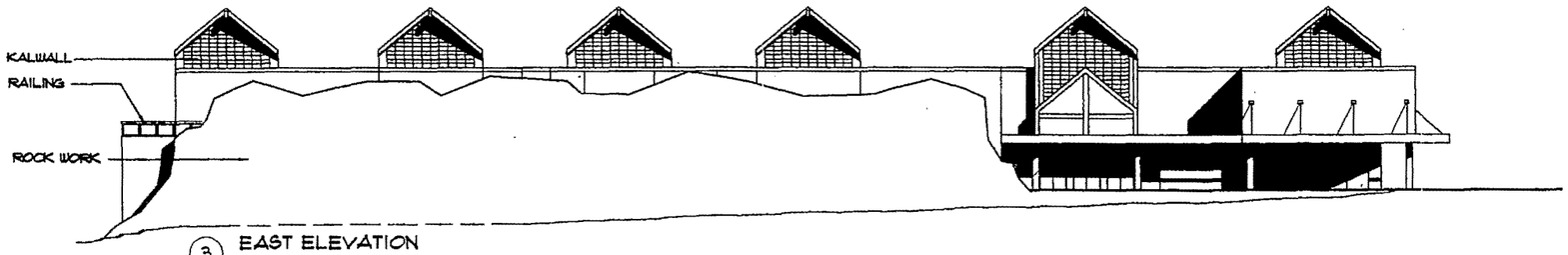
SHEET NO.




1 SOUTH ELEVATION
SCALE: 1/16"=1'-0"




2 NORTH ELEVATION
SCALE: 1/16"=1'-0"




3 EAST ELEVATION
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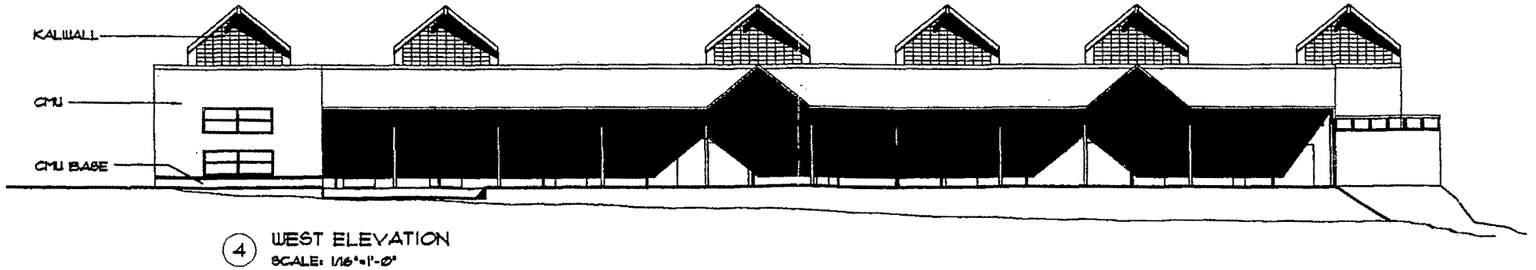


4 WEST ELEVATION
SCALE: 1/16"=1'-0"

*Figure 6-14*

SAAMS

# ALASKA SEALIFE CENTER
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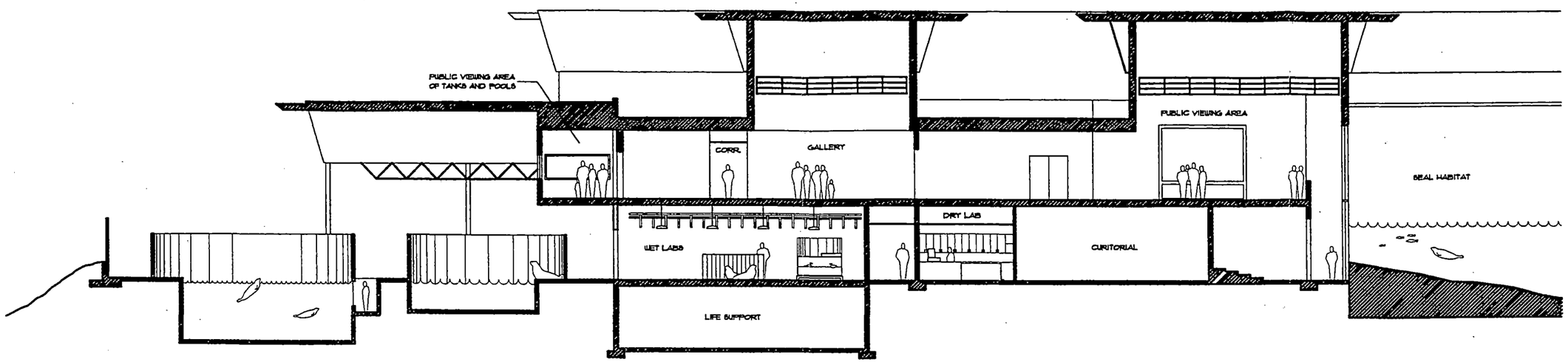
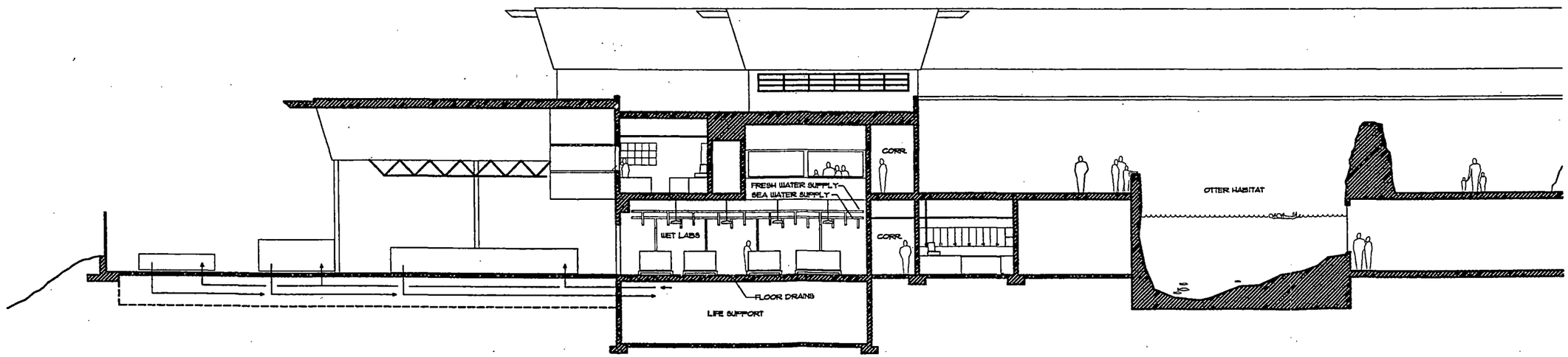
3000 ARCTIC BOULEVARD SUITE 301 ANCHORAGE, ALASKA 99503-3796
TEL 907 561 3205 FAX 907 561 4628

PROJECT NO. 401.00
DRAWN BY: HAI
REVIEWED BY: LS
DATE MARCH 24, 1994

TITLE
**ELEVATIONS**

SHEET NO.

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# ALASKA SEALIFE CENTER
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Cambridge Seven Associates, Inc.
Architects and Urban Designers
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PLANNING
BRIDGE DESIGN
3800 ARCTIC BOULEVARD
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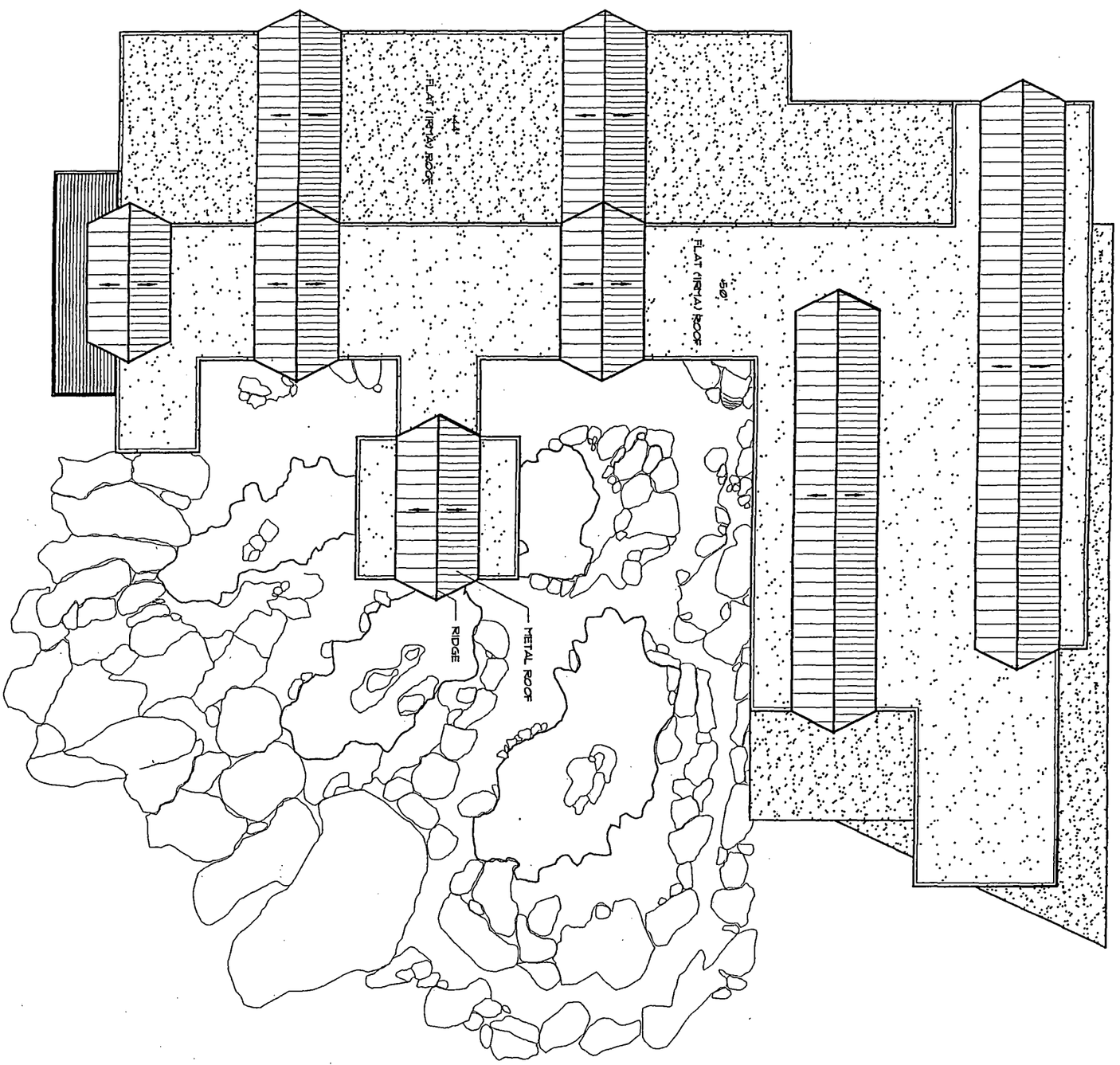
ANCHORAGE, ALASKA 99503-3790
TEL 907 562 2000
FAX 907 561 1432

PROJECT NO. 401.00
DRAWN BY:
REVIEWED BY:
DATE SEPT.1, 1994

TITLE
**SECTIONS**

SHEET NO.

*Figure 6-13*




SCALE IN FEET
0 5 10 20 40

Figure 6-12

| | | | | | |
|---|---|---|---|---|---|
| SHEET NO. | TITLE<br>ROOF<br>PLAN | DATE SEPT. 1, 1994<br>REVIEWED BY:<br>DRAWN BY: HVO<br>PROJECT NO. 401.00 | | LIVINGSTON SLONE<br>ARCHITECTURE ENGINEERING PLANNING INTERIOR DESIGN<br>3650 ARCTIC BOULEVARD SUITE 301 ANCHORAGE, ALASKA 99503-5790<br>TEL 907 562 2044 FAX 907 561 4035 | Cambridge Byron Associates, Inc.<br>Architects and Exhibits Designers<br>1060 Massachusetts Ave. Cambridge, MA 02138<br>617 868-7000 Fax 868-7007 | SAAMS<br>ALASKA SEALIFE CENTER<br>IMS INFRASTRUCTURE IMPROVEMENTS<br>SEWARD, ALASKA |

0 5 10 20 40
SCALE IN FEET

*Figure 6-11*

SAAMS

# ALASKA SEALIFE CENTER
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Cambridge, MA 02138
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PLANNING
INTERIOR DESIGN
3900 ARCTIC BOULEVARD
SUITE 201
ANCHORAGE, ALASKA 99503-3790
TEL 907 562 2053
FAX 907 561 4328


PROJECT NO. 401.00
DRAWN BY: HVO
REVIEWED BY:
DATE SEPT. 1, 1994

TITLE
SECOND FLOOR PLAN

SHEET NO.

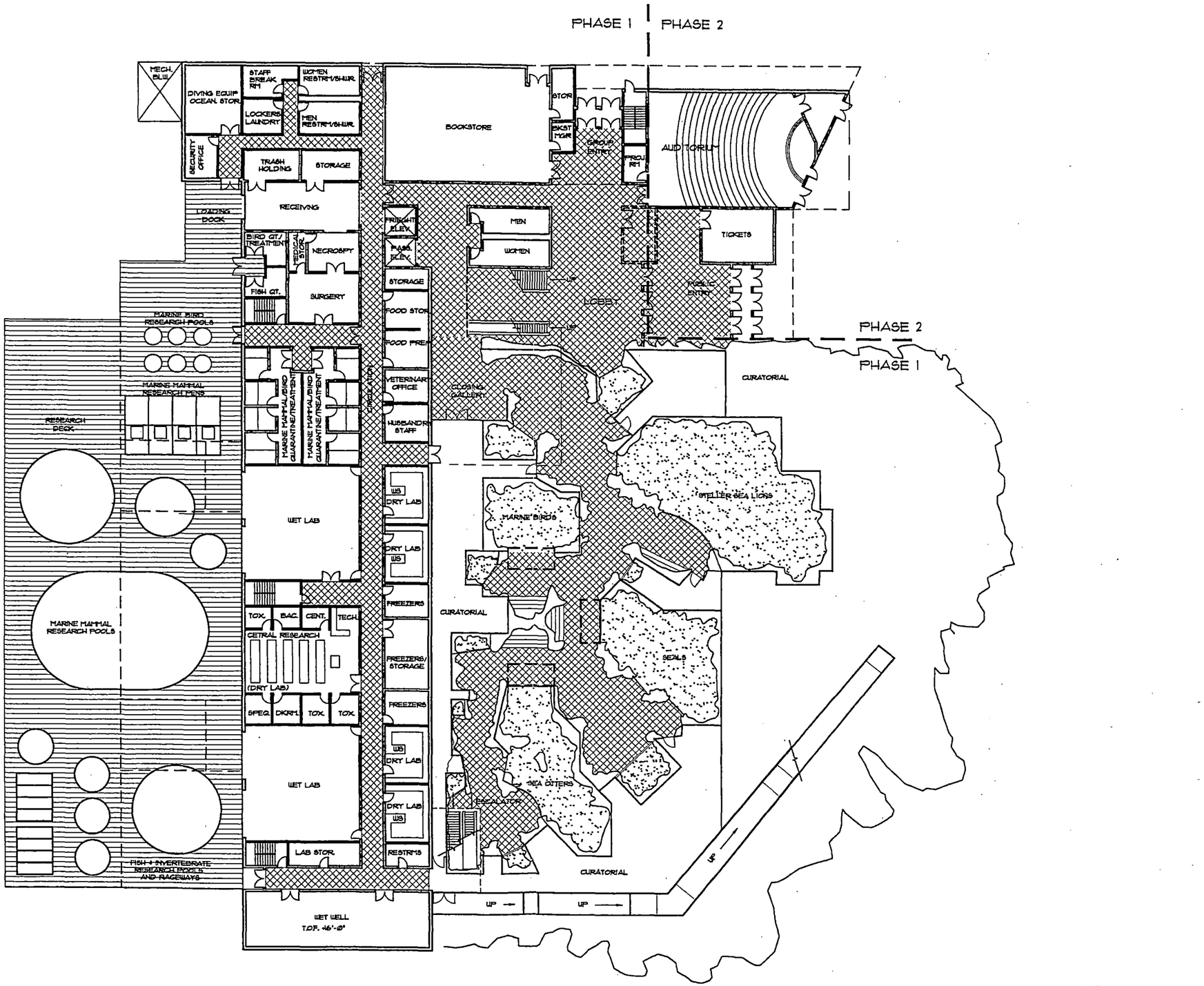


*Figure 6-10*

SAAMS

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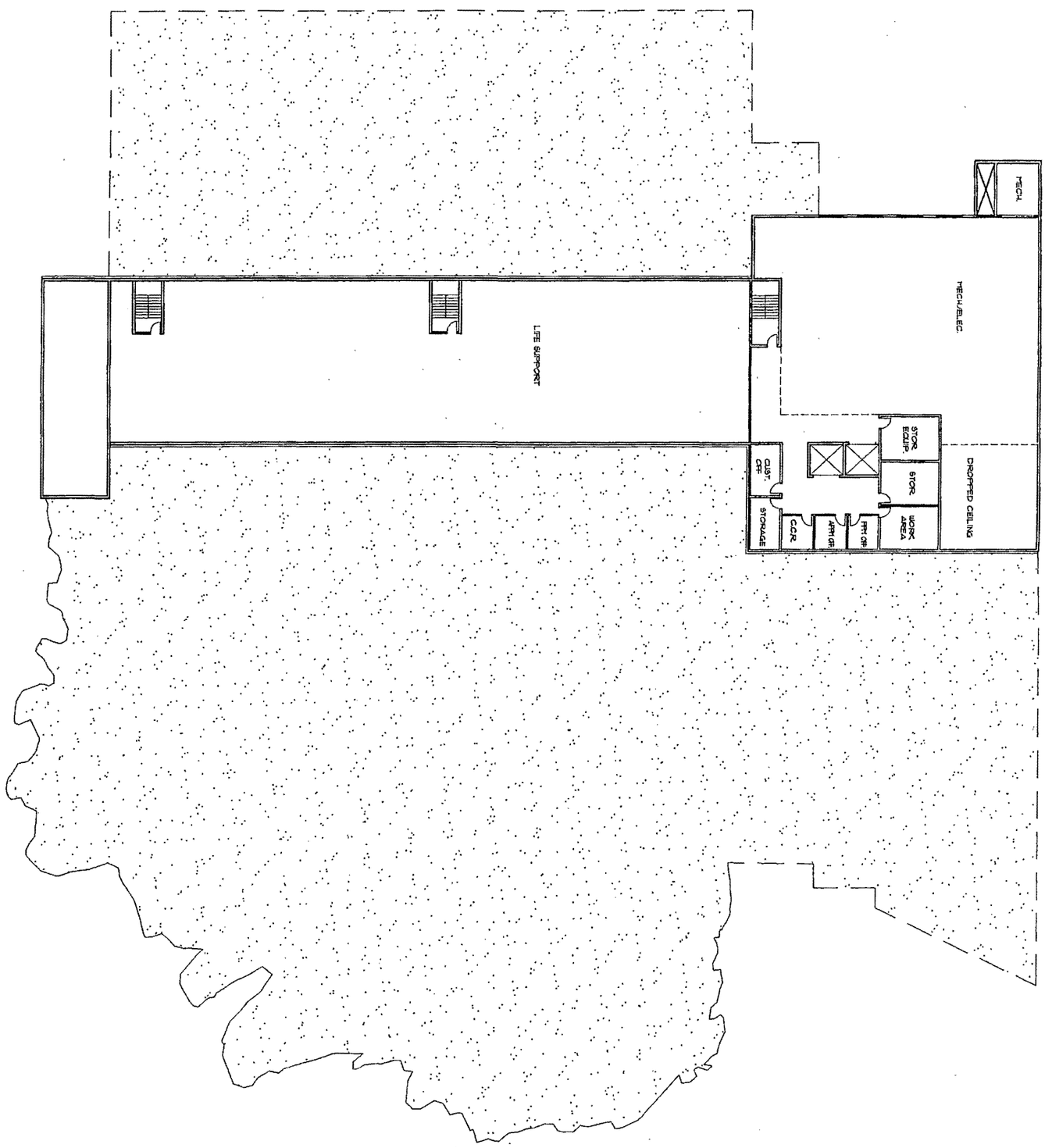
3000 ARCTIC BOULEVARD
SUITE 301
ANCHORAGE, ALASKA 99503-3990
TEL 907 561 3004
FAX 907 561 4328


PROJECT NO. 401.00
DRAWN BY: HVO
REVIEWED BY:
DATE SEPT. 1, 1994

TITLE
**MAIN LEVEL PLAN**

SHEET NO.




SCALE IN FEET
0 5 10 20 40

Figure 6-9

| | | | | | |
|---|---|---|---|---|---|
| SHEET NO. | TITLE<br>BASEMENT PLAN | PROJECT NO. 401.00<br>DRAWN BY: HVO<br>REVIEWED BY:<br>DATE SEPT. 1, 1994 | LIVINGSTON SLONE<br>ARCHITECTURE 3900 ARCTIC BOULEVARD<br>ENGINEERING SUITE 301<br>PLANNING ANCHORAGE, ALASKA 99503-5790<br>INTERIOR DESIGN TEL 907 562 2058<br>FAX 907 561 4328 | Cambridge Seven Associates, Inc.<br>Architects and Exhibits Designers<br>1050 Massachusetts Ave.<br>Cambridge, MA 02138<br>617 492-7000 Fax 492-7007 | SAAMS<br>ALASKA SEALIFE CENTER<br>IMS INFRASTRUCTURE IMPROVEMENTS<br>SEWARD, ALASKA |

THIRD AVE.
FOURTH AVE.
FIFTH AVE.
WASHINGTON AVE.
NEW PARKING LOT
EXISTING PARKING LOT
RAILWAY AVE.
SERVICE ENTRY
FENCE
BUS DROPOFF
GATE
MECH. ACCESS
FUEL TANK
LADIES PARK
CONCRETE w/ EDGING
EXISTING BIKE PATH (IDITAROD TRAIL)
EXISTING ALASKA RAILROAD DEPOT
AMPHITHEATER
PUBLIC ENTRY
PLAZA
NEW PARKING LOT
BOULDERS & RUBBLE
PUBLIC ACCESS
GRAVEL PATH
SALT SANCTUARY
EXISTING ARMOR ROCK
FUTURE TIDE POOL
FUTURE ARMOR ROCK ISLAND
BOULDERS & RUBBLE
SITKA SPRUCE
DUNE GRASS
EXISTING PIER

Figure 6-8

SAAMS

# ALASKA SEALIFE CENTER
# IMS INFRASTRUCTURE IMPROVEMENT

SEWARD, ALASKA

Cambridge Seven Associates, Inc.
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3000 Arctic Boulevard, Suite 100
Anchorage, Alaska 99503-3189
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LIVINGSTON STONE
ARCHITECTURE PLANNING
3000 ARCTIC BOULEVARD SUITE 100
ANCHORAGE, ALASKA 99503-3189
TEL 907 562 3004 FAX 907 561 4139

LAND DESIGN NORTH

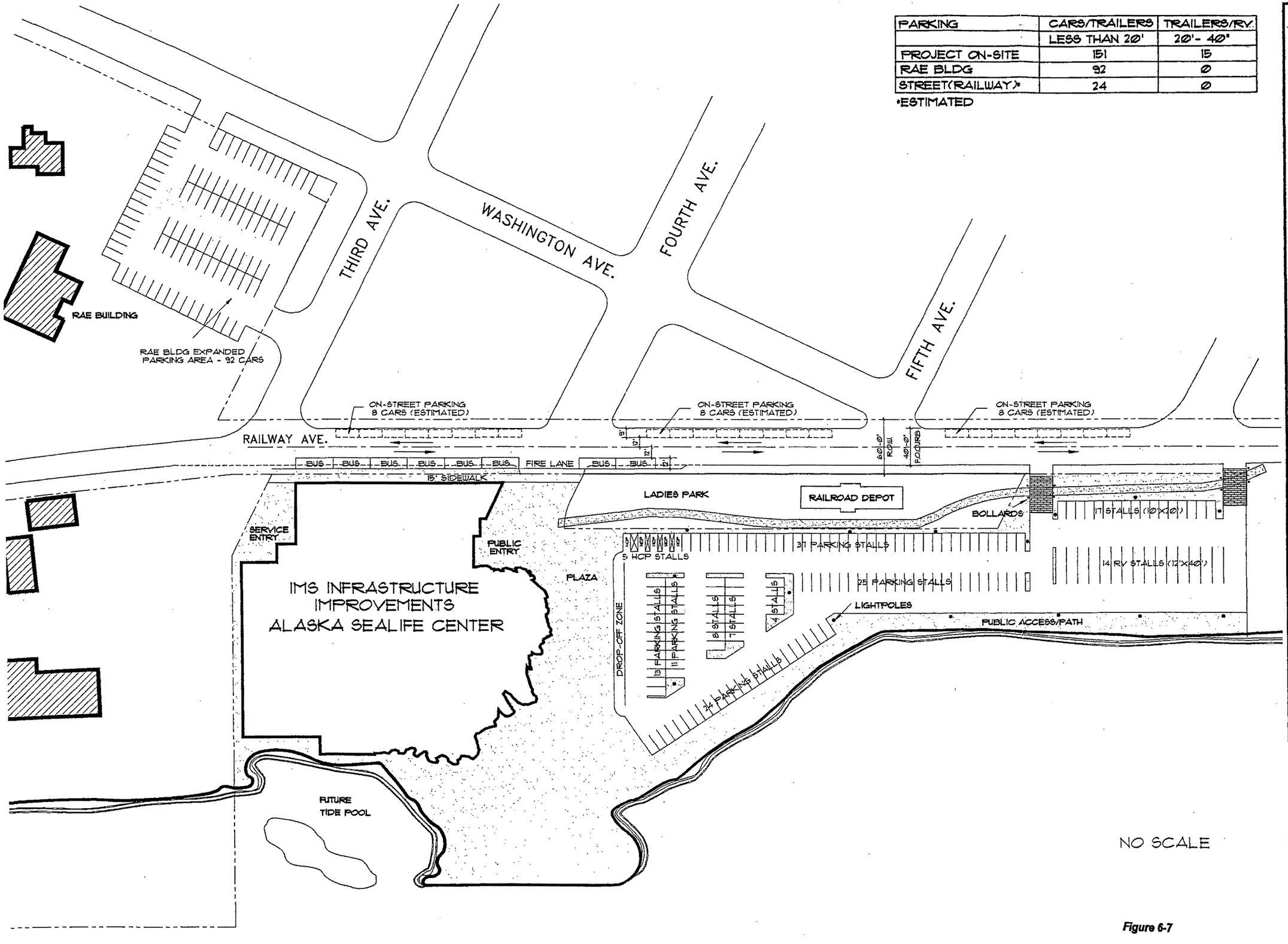
PROJECT NO. 401.00
DRAWN BY: LS/LDN
REVIEWED BY: LS
DATE SEPT. 1, 1994

TITLE
PROPOSED LANDSCAPE PLAN

SHEET NO.

| PARKING | CARS/TRAILERS | TRAILERS/RV. |
|---|---|---|
| | LESS THAN 20' | 20'- 40" |
| PROJECT ON-SITE | 151 | 15 |
| RAE BLDG | 92 | 0 |
| STREET(RAILWAY)* | 24 | 0 |

*ESTIMATED




NO SCALE

*Figure 6-7*

SAAMS

# ALASKA SEALIFE CENTER
# IMS INFRASTRUCTURE IMPROVEMENTS

SEWARD, ALASKA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Cambridge, MA 02138
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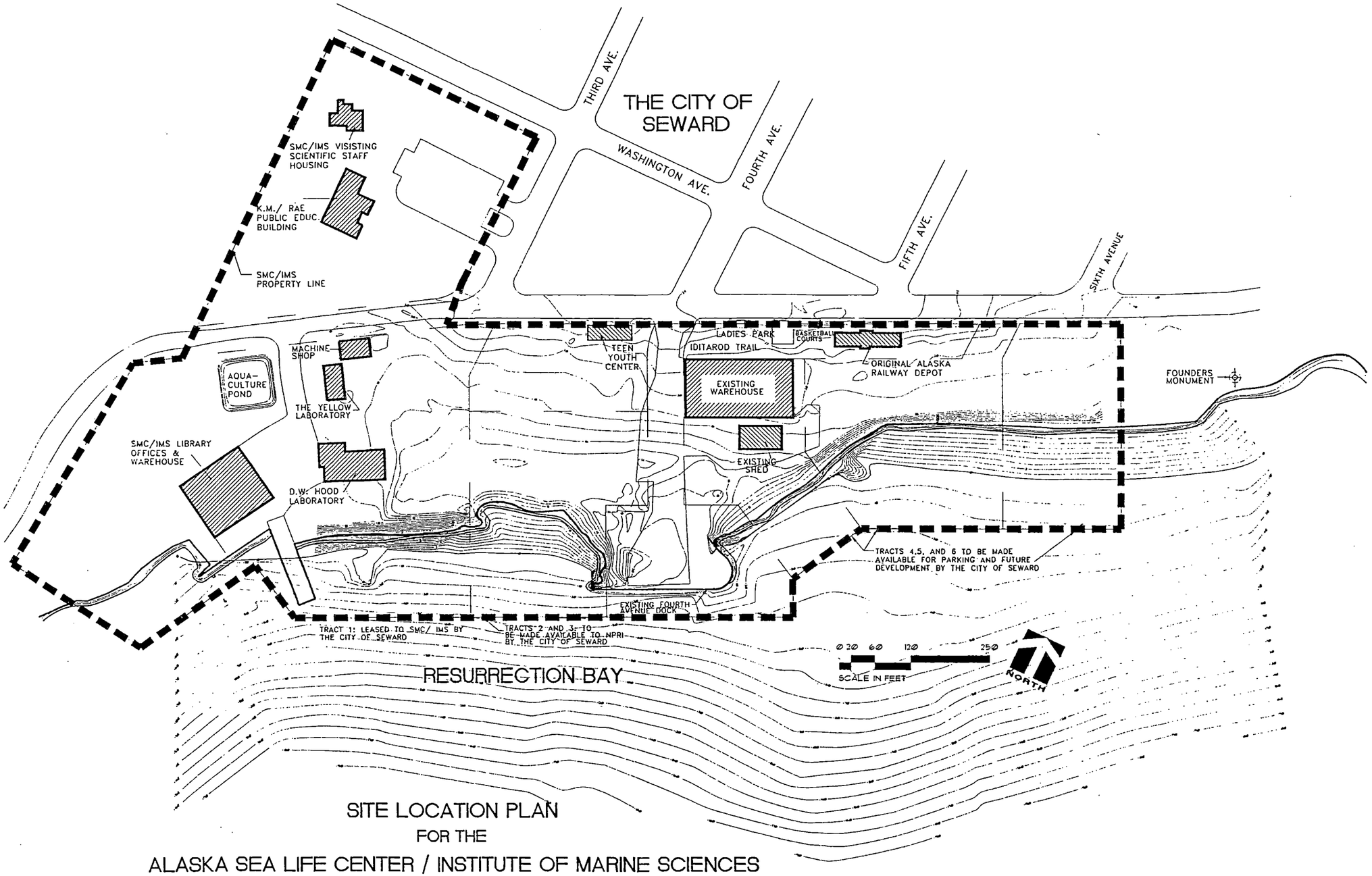
3000 ARCTIC BOULEVARD
SUITE 301
ANCHORAGE, ALASKA 99503-3796
TEL 907 562 2038
FAX 907 561 4533


PROJECT NO. 401.00
DRAWN BY: DSH
REVIEWED BY: DSH
DATE SEPT. 1, 1994

TITLE
**PROPOSED PARKING PLAN**

SHEET NO.




SITE LOCATION PLAN
FOR THE
ALASKA SEA LIFE CENTER / INSTITUTE OF MARINE SCIENCES
REQUIRED INFRASTRUCTURE IMPROVEMENTS

*Figure* **6-6**

## 7. Operating Structure

# OPERATING STRUCTURE

The facility would be owned by the City of Seward, and operated by the Seward Association for the Advancement of Marine Science, a non-profit corporation established in February 1990. SAAMS (the corporation) is currently administering the development of the facility and will continue in their role as "Operator" of the project.

The Corporation is organized for any lawful purpose including, but not limited to, educational, social, and cultural purposes including marine research, public education, and providing educational and scientific programs and any other lawful purpose or endeavor permitted under the laws of the State of Alaska to non-profit corporations incorporated under AS 10.20.

The Corporation is organized exclusively for charitable purposes within the meaning of Section 501(c) (3) of the Internal Revenue Code. The Corporation shall have no stock, and no dividends or pecuniary profits shall be declared or paid to the directors thereof, or to any private individual, and all of its earnings shall be used to further the purpose of this Corporation.

Based on a review of other similar facilities operated in the lower 48 states, the non-profit corporation with formal ties to an established research institute is the most appropriate operating structure for this facility and provides important advantages to the project. It allows flexibility in the areas of staff recruitment of key positions, procurement, taxation, and fundraising. It also minimizes administrative overhead costs associated with government or institutional ownership and provides some insulation from the political changes which occur in state and federal government. This results in a more efficient operation and directs more dollars towards research rather than other non-research costs.

## Board of Directors

The affairs of the Corporation shall be managed by its Board of Directors. The number of directors is currently eight (8), as established by the Bylaws. A list of current Board members is in the appendix.

The Board has decided to establish an advisory group to help modify their composition. The advisory group will include representation from the University of Alaska, EVOS Trustee Council Executive Director and the City of Seward. The advisory group will assist SAAMS in modifying their Board composition reflect:

- The needs of the Trustee Council to carry out restoration of injured resources.
- The use of public and private funds for both capital and operating expenditure.
- The goal of the facility to be operationally self supporting through public and private

partnership.

- The central role of the University of Alaska to integrate this facility into the statewide research infrastructure.

- The complimentary and harmonious co-existence of the facility with the community of Seward.

## Relationships with EVOS Trustees Council

The SAAMS non-profit corporation Board of Directors will have a direct reporting relationship to the Executive Director of the EVOS Trustee Council. Figure 7-1 defines the proposed operating structure. The EVOS Trustee Council Executive Director will provide a single point of contact with EVOS Council members and EVOS Trustee Council policy regarding EVOS funding for both research infrastructure and research activities.

The Facility Director will be an employee of the SAAMS non-profit corporation and will establish a working relationship with the EVOS Trustee Council Executive Director and EVOS Council scientific review function. The establishment of this relationship will ensure that the Trustee Council's priorities to restore injured resources are being met for EVOS funded work at this facility. **EVOS restoration research will have the highest priority and lowest cost for use of the facility.**

## Relationships with University of Alaska

Two members of the SAAMS non-profit corporation Board of Directors would be from the University of Alaska, to be appointed by the President of the University. The University of Alaska is also expected to be a participant in the EVOS Trustee Council scientific review function.

The University of Alaska will provide quality assurance and standard operating procedures for all at the facility. All scientific and research programs at the facility will be coordinated by the Chief Facility's Scientist (a UAF representative) and the Facility's Director with the EVOS Trustee council scientific review function.

The SAAMS non-profit corporation has begun to revise formats to endow three University of Alaska chairs with support staff to establish a long term research program environment for the University at the facility.

## Board of Governors

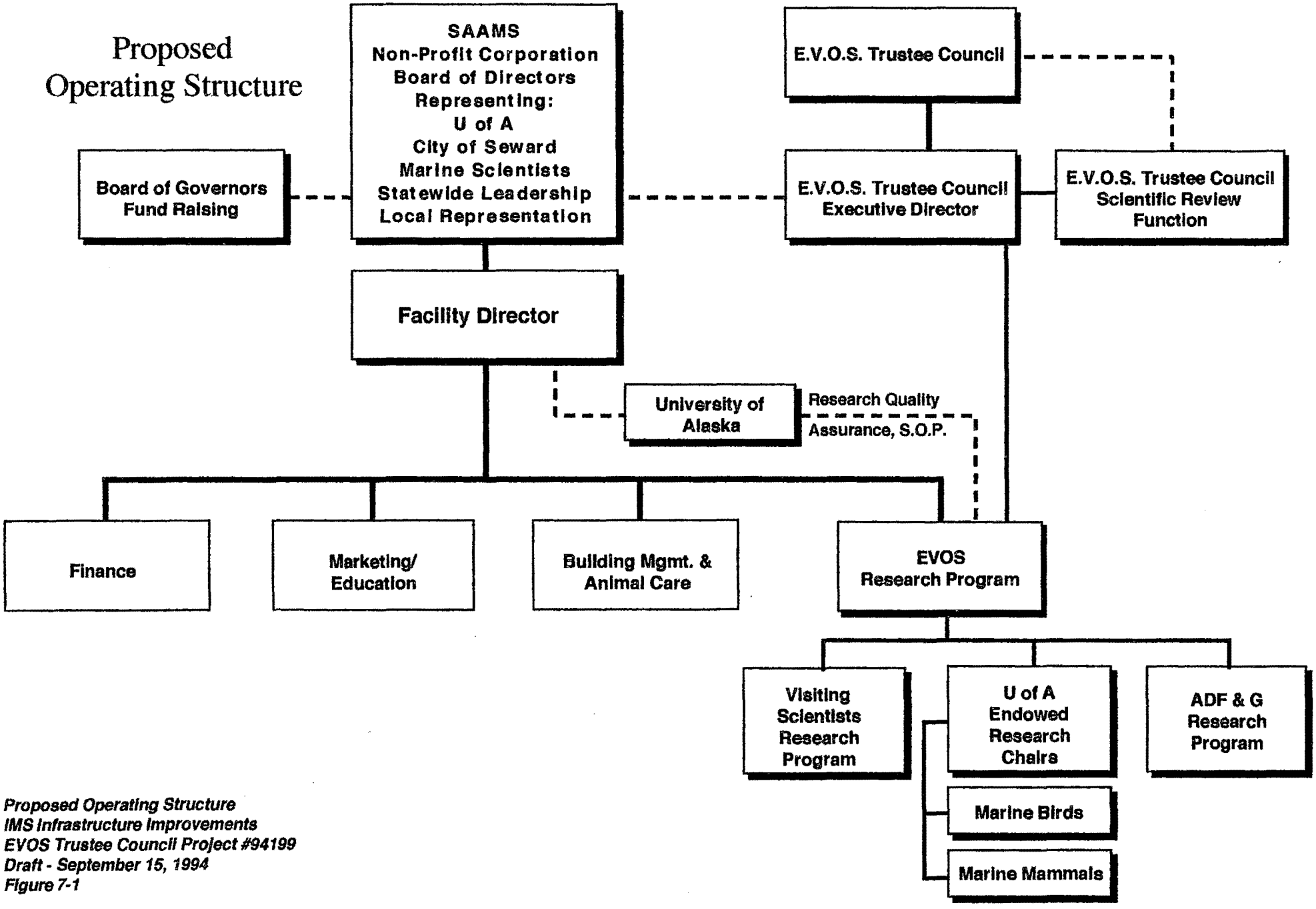
One of the functions of the SAAMS non-profit corporation will be to establish a long term

development program to fund research and education capital construction as well as endow long term research programs.

The SAAMS Board will establish a Board of Governors which will be comprised of selected individuals representing leaders in the private sector and scientific institutions who's primary role will be to assist the Board in the long term funding of the development program.

The Board of Governors is an honorary appointment and will not be a voting member of the SAAMS Board of Directors.

# Proposed Operating Structure




*Proposed Operating Structure*
*IMS Infrastructure Improvements*
*EVOS Trustee Council Project #94199*
*Draft - September 15, 1994*
*Figure 7-1*

## 8. Integrated Funding Approach

# INTEGRATED FUNDING APPROACH

The total proposed capital cost for this project is estimated to be $47.456 million for the total facility including both research and education components. In 1993, $12.5 million of the State's EVOS funds were appropriated by the Alaska Legislature to the City of Seward for the planning, design, and construction of the total project. $24.956 million is now being requested of the Trustee Council for the research component of the project. Lastly, $10 million is to be raised by SAAMS from private donations to fund the capital balance of the project.

There is also a plan to implement a $6 million endowment fund raising campaign to fund three University of Alaska faculty research chairs at the facility. Figure 8-1 shows the integrated funding approach for the project.

## EVOS Trustee Council Joint Fund Request $24.956 Million

As tasked by the January 31, 1994 EVOS Trustee Council resolution, the project team has prepared a recommendation of the appropriate level of funding for consideration by the Trustee Council that would be legally permissible under the terms of the Memorandum of Agreement (MOA) and Consent Decree. The apportionment of facility design and costs to EVOS research functions is described in the Progress Schematic Design Phase Construction Cost Budget Review dated July 26, 1994 and has been reviewed by the Trustee Council legal team. **The proposed request of $24.956 million would be utilized for the research component of the project only.**

## State's EVOS Criminal Restitution Funds $12.5 Million

In 1993, the Alaska Legislature appropriated $12.5 million of the state's EVOS criminal restitution funds pursuant to 1993 SLA Chapter 79, Section 2 *for development of the Alaska Sea Life Center as a recreation and marine mammal rehabilitation center and as a center for education and research related to the natural resources injured by the Exxon Valdez oil spill and to the prevention and amelioration of marine oil spills.* Following approval of the project plan and determination of financial viability by the Alaska Industrial Development and Export Authority, $4 million of the appropriation was made available to the City of Seward which, in turn, has transferred funds to SAAMS for planning, design, and engineering for the proposed facility.

The funding strategy for the project as defined in Figure 8-2 would allocate $7,040 million to the research component of the project and $5.460 to the education component of the project. This allocation of funding is consistent with the statutory language of the appropriation and would allow for the construction of a sufficient portion of the education component to enable operating revenue to be earned to offset facility operating expenses.

## Private Fund Raising Plan $10 Million Capital and $6 Million Endowment

In April of 1994 SAAMS selected, through a competitive RFP process, J. Donovan Associates a professional fund raising consulting firm to prepare a fund raising campaign feasibility study to examine the feasibility of a $10 million capital campaign goal and a $6 million endowment campaign goal.

The executive summary of this study is provided in Appendix D of this document.

The recommendations by J. Donovan for the fund raising plan included three key points with respect to focus and timing of the fund raising campaign.

1.) A $5 million capital campaign for the research and rehabilitation component of the project seeking support from foundations and corporations begin on or about November 1994 with a goal to have funds in hand by January 1996. The fund raising plan would provide the $5 million by January 1996 to allow completion of the research component of the project by June of 1997.

2.) A $5 million capital campaign for the education and visitation component of the project seeking support by membership and actual visitors to the facility beginning in April of 1996 and complete by the year 2000. Bridge financing would be required to make available the $5 million required to complete the education component of the project by June of 1997. The project team is having ongoing discussions with a New York based financial advisory consultant and is prepared to develop bridge financing alternatives which would provide the $5 million by January 1996 to allow completion of the education component by June 1997.

3.) A $6 million endowment campaign for research chairs beginning in 1996 with the first chair funded by the year 2000, the second by 2003 and the third by 2006.

## Proposed Fund Transfer

It is proposed that the EVOS Trustee Council joint funds would be transferred to Alaska Department of Fish and Game (ADF&G). ADF&G would then transfer capital funds to the City of Seward pursuant to AS 37.05.315(c).

In accepting these funds for constructing the facility, the City of Seward would agree by contract with the State of Alaska that it will operate and maintain the facility for the practical life of the facility, and the City of Seward will not look to the State of Alaska or the Trustee Council (beyond support for EVOS funded research) to operate or maintain the facility or pay for its operations and maintenance.

The method of fund transfer would be a continuing capital designation as provided under AS37.25.020. Contract language describing the fund transfer and obligations to the City of Seward

would be developed between ADF&G and the City of Seward.

A Memorandum of Agreement for long term development and operations of the facility would be developed between the City of Seward and SAAMS.

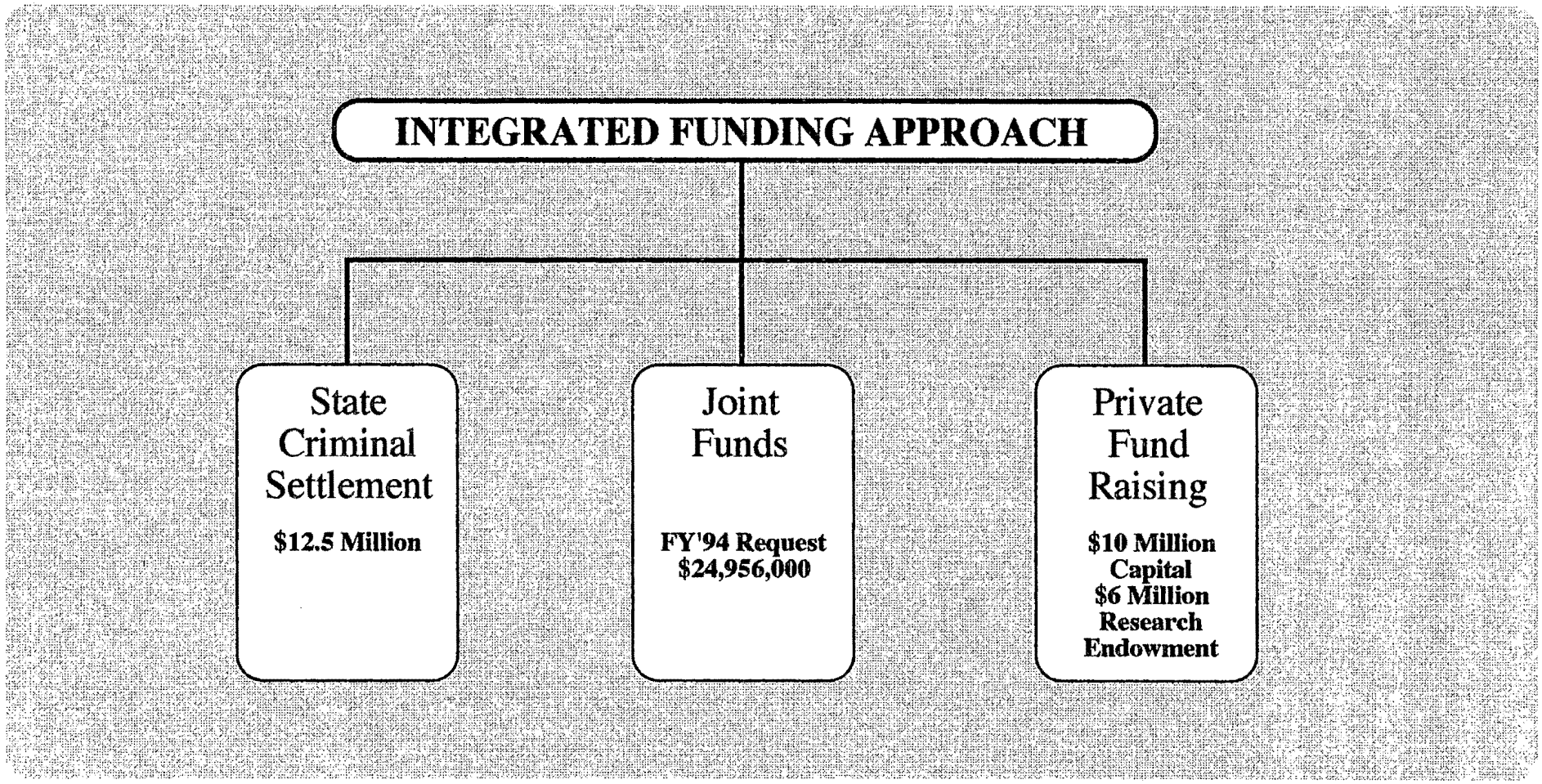
## Project Funding and Phasing Strategy

The fund raising plan is based on conservative projections of available private funds for the construction of the project. A phasing strategy for the project has been developed which represents three scenarios with respect to the potential success of the private fund raising plan.

1. A $47.5 million project constructs 100% of both the research and education components of the project with the facility operating costs being supported by education revenue. This phasing approach recognizes that the $5 million capital fund raising campaign for the research and the $5 million for education was successful. Figure 8-3 illustrates the phasing strategy for the project.

2. A $42.5 million approach would construct approximately 89% of the total project. This phasing approach would recognize that the $5 million capital fund raising campaign for the research component was successful and would construct 100% of the research component. Only a portion of the education component would be complete and available to support the total research operating expenses.

3. A $37.5 million approach representing only the state appropriation and requested EVOS joint funds would complete 78% of the total project, leaving a portion of the visitation and education components to be completed at a future date when private funds were available. This would provide a reduced scope operating facility with facility operational cost only partially being supported by education revenue.




*Integrated Funding Approach*
*IMS Infrastructure Improvements*
*EVOS Trustee Council Project #94199*
*Draft - September 15, 1994*
*Figure 8-1*

# Integrated Funding Strategy

| Project Component / Fund Source | State Criminal Settlement $12.5 M | Joint Funds $24.956 M | Private Fund Raising $10M | | Total Project $47.456 M | Private Fund Raising Endowed Chairs |
|---|---|---|---|---|---|---|
| RESEARCH | $ 7.040 M | $ 24.956 M | $ 5 M * | | $ 36.996 M | |
| EDUCATION / VISITATION | $ 5.460 M | Ø | | $ 5 M ** | $ 10.460 M | |
| ENDOWED CHAIRS | Ø | Ø | Ø | Ø | | $ 6 M *** |

* *$5M Capital Campaign (Research) over 15 months beginning November 1994 complete January 1996*

** *$5M Capital Campaign (Education) over 48-60 month beginning 1996 complete 2000*

*** *$6M Endowment Campaign beginning 1996 complete 2006*

# Fund Raising Focus

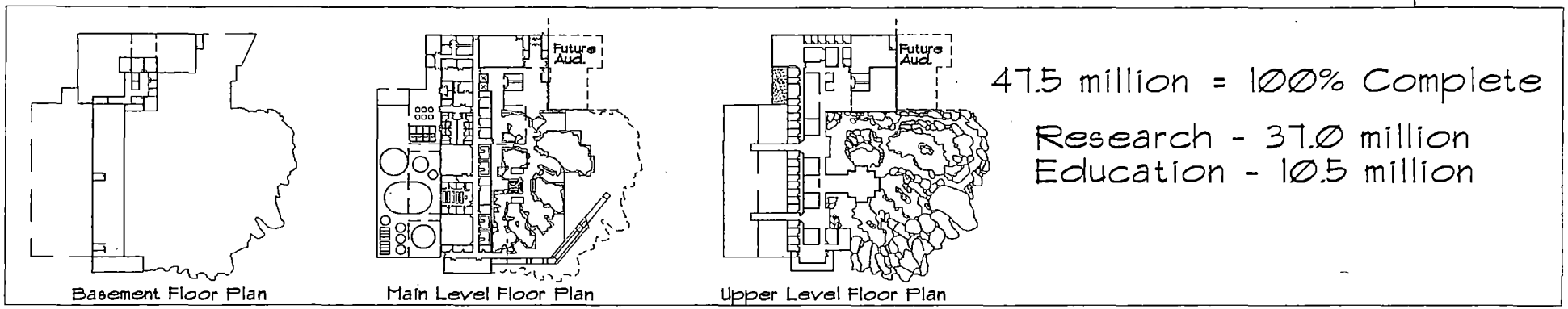
- Limit initial focus of major fund raising to research
- Conduct a 15 month campaign to raise $5M for research
  - Foundations
  - Corporations
  - Major donors - Alaska-Northwest-National-International
- Recruit leadership (limited numbers - significant access)
- Begin major donor cultivation program
- Identify/recruit development officer 1996
- Implement national membership/donor program
  - 1996 Major national mail program
  - 1997 Active on-site program (visitation)
  - 1996-2000 All-Alaska membership thrust
- Introduce concept of endowed chairs (3) @ $2M

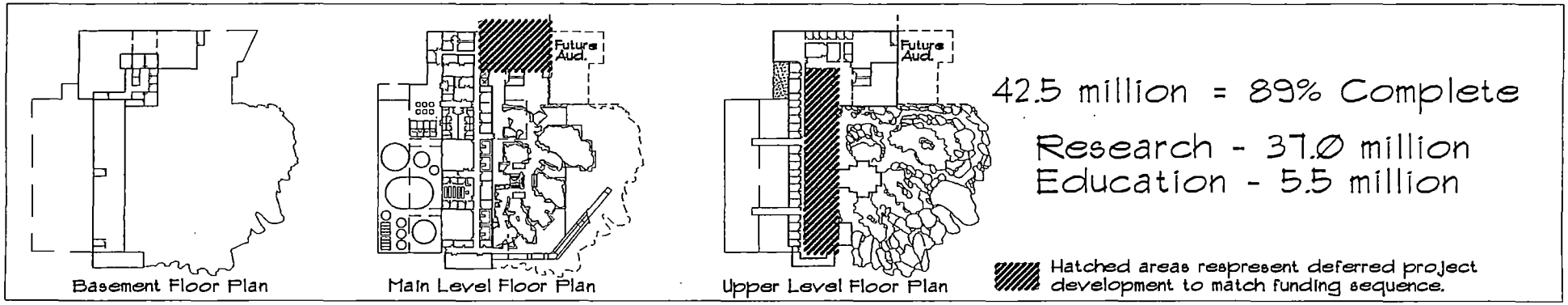
***Integrated Funding Strategy***
***IMS Infrastructure Improvements***
***EVOS Trustee Council Project #94199***
***Draft - September 15, 1994***
***Figure 8-2***

# CONCEPTUAL PROJECT DEVELOPMENT

LIVINGSTON SLONE INC.

September 1994



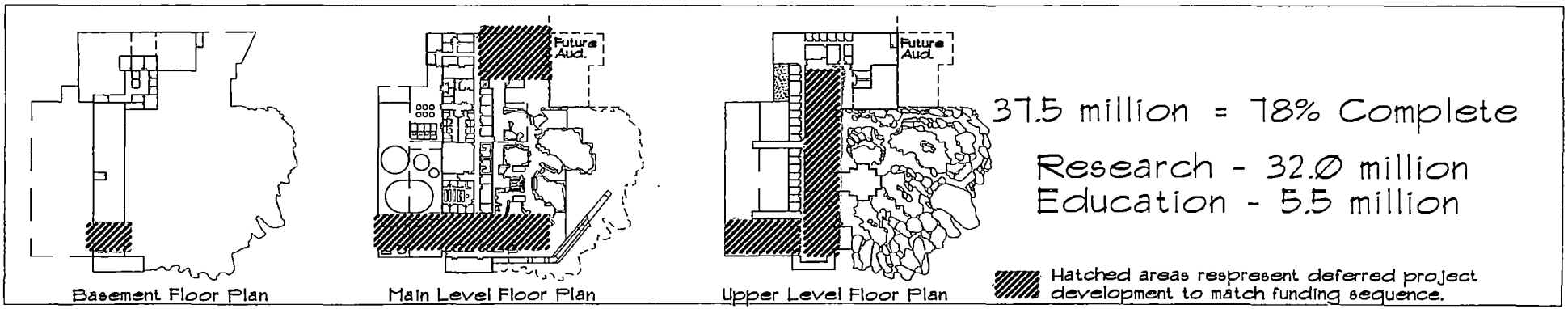




Figure 8-3

# CAPITAL AND OPERATING BUDGET

## Capital Budget

The capital budget for the total project is $47,456,000. This budget is based on a detailed estimate of the cost of constructing the total facility as defined by the schematic design documents. The construction cost estimate has been prepared by a professional cost estimating consultant, received careful analysis by the project manager; and has been independently reviewed by a third party cost estimating consultant.

To develop the total capital budget for the project the cost of design, project administration, project management, contingency, and planning/EIS preparation must be applied to the estimated cost of construction. The basis of the estimate for the non-construction cost elements of the total capital budget are industry standards for a project of this complexity.

The total project budget has been formatted to separately identify the costs of the research component and the education component of the project. A Construction Cost Budget Review document, dated July 26, 1994 was prepared by the project team and reviewed with the Trustee Council legal staff. The Review documents the rational that is used to identify the cost of the research component of the project.

The capital budget for the research component is $36,996,000.

The capital budget for the education component is $10,460,000. Figure 9-1 provides a capital budget spreadsheet of costs.

## Balanced Program and Budget

Throughout the planning and design process the project team has endeavored to keep the program requirements for the use of the facility and the corresponding facility costs in balance. There have been two value management exercises where the cost of the project and the requested program have been reduced without jeopardizing prioritized needed functions. The magnitude of cost reductions have exceeded $3,000,000 and included savings found in more efficient use of space life support system and construction methodology on site. Figure 9-2 demonstrates the management process used to obtain a balanced program and budget.

## Construction Estimate

The schematic design cost estimate for construction of the project has been prepared by Estimations, Inc., a professional cost estimating consultant, reviewed by Heery International, Inc. the project manager and analyzed by HMS, Inc. another independent cost estimating consultant.

The cost estimate is organized to reflect the major design components of the project (Level 1) which

include the main building, habitat, life support, site development and furniture, fixtures and equipment (ff&e). Each of these major design components is subdivided into 13 separate construction specification categories (Level 2), such as sitework, substructure, superstructure, exterior closure, roof system, interior construction, conveying system, mechanical, electrical, equipment, special construction, general requirements and contingencies. The major construction specification categories are supported by detailed quantity measurements of the materials and labor necessary to accomplish the construction (Level 3 & 4). These detailed quantities are individually priced and provide the cost data base upon which the construction cost estimate is prepared. The executive summary from the schematic design estimate is provided in Appendix F.

## Operating Budget

The operating budget assumptions are based on three feasibility/market studies: 1) Thomas J. Martin and Fox Practical Marketing for SAAMS dated August 1993, 2) an independent analysis of the Martin Fox study prepared for AIDEA by Public Finance Management, Inc. dated September 23, 1993, and 3) a detailed update of the original market assumptions by Fox Practical Marketing dated August of 1994. The executive summary from these studies is included in Appendix E.

The operating projections have assumed a well planned, constructed and operated facility that is unique in regards to the interface of research activities and public education. It is also assumed that the project will receive full community support from both the public and private sectors and will be aggressively marketed.

## Operating Expenses

The annual operating expenses for the total project is projected to be $3,836,600 in its first full year of operations. Figure 9-3 provides a performa for the annual operating budget.

Projected annual operating expenses for the project have been developed based on estimates of personnel costs, administrative expenses, facility operation expenses and curatorial expenses.

The estimates are based on cost information from similar facilities of this size, the research functions which will be ongoing, visitation patterns and the unique relationship between the research and education components of the project.

Annual personnel costs are projected to be $1,965,600. Figures 9-4 and 9-5 provide a description of personnel assumptions.

Annual administration costs are projected to be $776,000.

Annual facilities costs are projected to be $720,000.

Annual curatorial costs are projected to be $375,000.

## Operating Revenue

The facility is projected to generate $3,883,986 in revenues in the first full year of operation and to be self supporting. The basis of this operating assumption is that revenues will be collected primarily from the education component of the project and applied to the total operating budget. The revenue for the project will be generated by admissions, memberships, shop sales, utility/space charges to research projects, rehabilitation contracts, grants and donations, and miscellaneous income. The estimates for these revenues are based on detailed evaluations of conservative visitation patterns expected for this project and conservative assumptions for the non-visitation revenues.

Annual admissions revenue is estimated to be $2,354,748 based on 250,500 visitors.

Annual admissions membership revenue is estimated to be $360,000.

Annual shop sales revenue is estimated to be $603,238.

Annual research revenue is estimated to be $246,000 based on a subsidized utility consumptions charge not to exceed $.55 per square foot per month.

Annual rehabilitation revenue is estimated to be $150,000.

Annual miscellaneous grants and donations are estimated to be $150,000.

Annual miscellaneous revenues are estimated to be $20,000.

## Operating Costs to be Charged to Research Activities

Operating costs to be charged to research activities at this facility, is based on an evaluation performed on the non-research grant supported overheads projected for the research component of the total operating budget discussed above. See Figure 9-6. The total non-research grant supported overhead comprised of personnel and expenses is estimated at $1,925,650.

Non-research grant supported personnel required at this facility to support only the research component activities is estimated to be $585,000.

Non-research grant supported expenses required at this facility to support only the research component activities is estimated to be $1,340,000.

The revenue assumptions in the operating budget include an item for research contracts providing $246,000 of income. The basis of this revenue is an assumption that research activities in the facility would be charged a cost for utility consumption only. The charge is currently projected to be $.55 per square foot per month. This represents a subsidized charge for utility consumption which is actually projected to be $1.00 per square foot per month.

The $.55 per square foot charge would be applied to offset the cost of research consuming electricity, heat, seawater, freshwater, sewer, and trash disposal.

## Ramp-up Cost Assumptions

Prior to the facility opening in June of 1997 it will be necessary to build up the operating staff and incur operating expenses. This ramp-up will occur before any revenue can be collected to offset operating expenses.

An estimate of ramp-up costs has been prepared which is based on the first full year operating budget. (Figure 9-7). Assumptions have been made regarding each line item in the operating budget as an allocation based on months which have been applied to develop the ramp-up budget.

The projected ramp-up expenses for the project is $2,353,650 and has been developed based on estimates of personnel costs, administrative expenses, facility operations expenses, curatorial expenses and working capital required.

Ramp-up personnel costs are estimated to be $792,150. ( Figure 9-8).

Ramp-up administrative costs are estimated to be $659,000.

Ramp-up facility operations expenses are estimated to be $290,000.

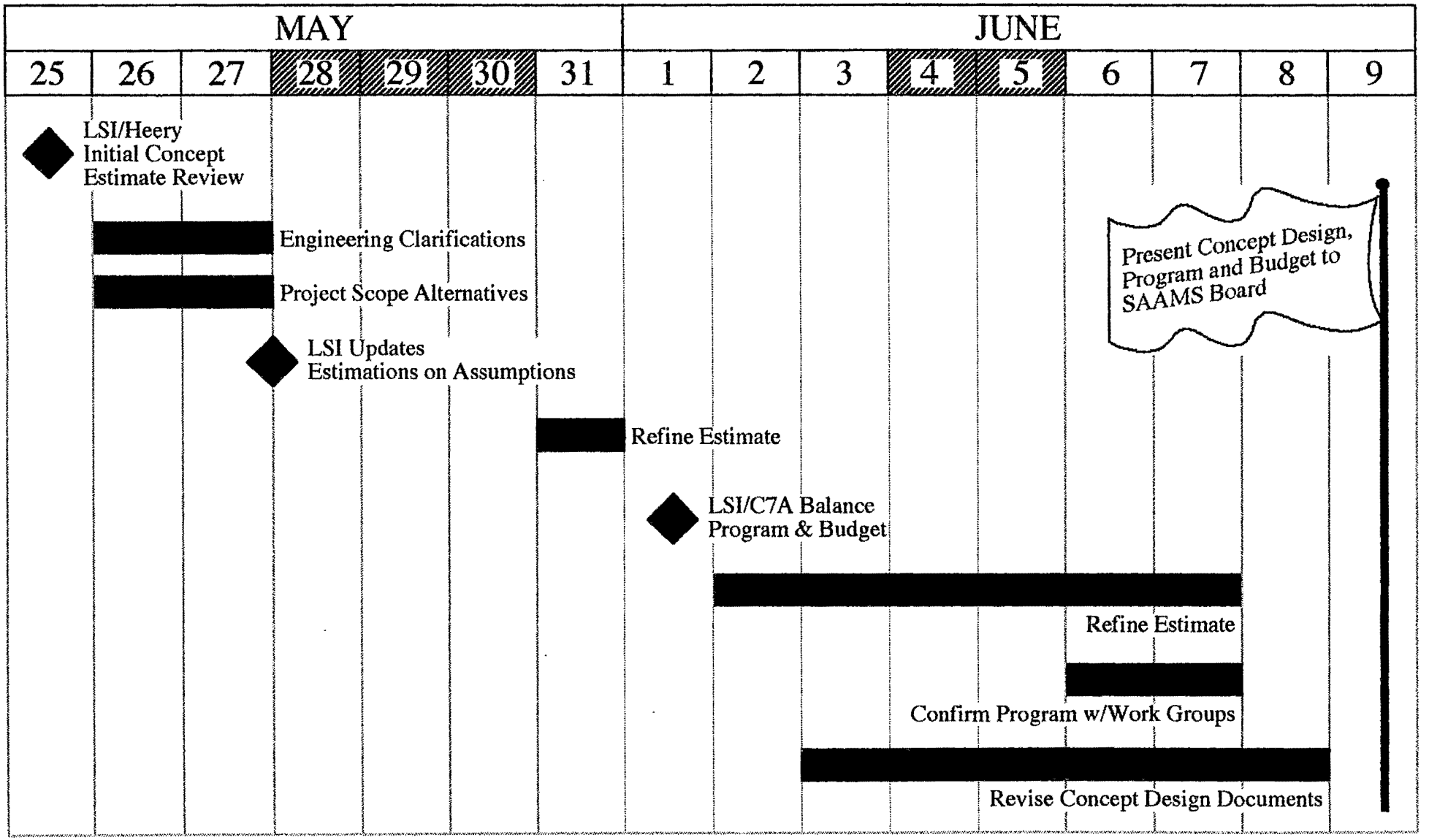
Ramp-up curatorial expenses are estimated to be $302,500.

Ramp up working capital required is estimated to be $320,000.

# Capital Budget

| | CONSTR. COST | DESIGN 15% | PA/PM 10% | CONT. 10% | EIS/PLAN 2% | TOTAL |
|---|---|---|---|---|---|---|
| ***RESEARCH COMPONENT*** | | | | | | |
| 1. MAIN BUILDING | $9,815,000 | $1,472,000 | $981,000 | $981,000 | $196,000 | $13,445,000 |
| 2. HABITAT | $8,204,000 | $1,230,000 | $820,000 | $820,000 | $164,000 | $11,238,000 |
| 3. LIFE SUPPORT | $4,108,000 | $616,000 | $411,000 | $411,000 | $82,000 | $5,628,000 |
| 4. SITE DEVELOPMENT | $2,319,000 | $348,000 | $232,000 | $232,000 | $47,000 | $3,178,000 |
| 5. FF & EQUIPMENT | $2,560,000 | $384,000 | $256,000 | $256,000 | $51,000 | $3,507,000 |
| Subtotal | $27,006,000 | $4,050,000 | $2,700,000 | $2,700,000 | $540,000 | $36,996,000 |
| ***EDUCATION COMPONENT*** | | | | | | |
| 1. MAIN BUILDING | $5,713,000 | $857,000 | $571,000 | $571,000 | $114,000 | $7,826,000 |
| 2. HABITAT | $1,017,000 | $153,000 | $102,000 | $102,000 | $20,000 | $1,394,000 |
| 3. LIFE SUPPORT | $175,000 | $26,000 | $18,000 | $18,000 | $4,000 | $241,000 |
| 4. SITE DEVELOPMENT | $420,000 | $63,000 | $42,000 | $42,000 | $8,000 | $575,000 |
| 5. FF & EQUIPMENT | $309,000 | $47,000 | $31,000 | $31,000 | $6,000 | $424,000 |
| Subtotal | $7,634,000 | $1,146,000 | $764,000 | $764,000 | $152,000 | $10,460,000 |
| **TOTAL PROJECT** | | | | | | |
| **1. MAIN BUILDING** | $15,528,000 | $2,329,000 | $1,553,000 | $1,553,000 | $310,000 | $21,273,000 |
| **2. HABITAT** | $9,221,000 | $1,383,000 | $922,000 | $922,000 | $184,000 | $12,632,000 |
| **3. LIFE SUPPORT** | $4,283,000 | $643,000 | $428,000 | $428,000 | $86,000 | $5,868,000 |
| **4. SITE DEVELOPMENT** | $2,739,000 | $411,000 | $274,000 | $274,000 | $55,000 | $3,753,000 |
| **5. FF & EQUIPMENT** | $2,869,000 | $430,000 | $287,000 | $287,000 | $57,000 | $3,930,000 |
| Total | $34,640,000 | $5,196,000 | $3,464,000 | $3,464,000 | $692,000 | $47,456,000 |

# Concept Design Construction Cost Estimate Reconciliation Process




***Concept Design Construction Cost Estimate***
***IMS Infrastructure Improvements***
***EVOS Trustee Council Project #94199***
***Draft - May 26, 1994***
***Figure 9-2***

# Annual Operating Budget

*Based on AIDEA Evaluation prepared by Public Financial Management, Inc.*
*Moderate Assumptions*

## EXPENSES

| | |
|---|---|
| Salaries | $ 1,965,600 |
| Administrative | 776,000 |
| Facilities | 720,000 |
| Curatorial | 375,000 |
| TOTAL | $ 3,836,600 |

## EXPENSES BACK-UP

### ADMINISTRATIVE EXPENSES

| | YEAR |
|---|---|
| Telephone/Postage | $ 60,000 |
| Professional Fees | 150,000 |
| Marketing | 200,000 |
| Equipment | 25,000 |
| Office Supplies | 36,000 |
| Insurance | 75,000 |
| Printing | 100,000 |
| Professional Development | 15,000 |
| Travel | 75,000 |
| Dues/Subscriptions | 15,000 |
| Miscellaneous | 25,000 |
| TOTAL | $ 776,000 |

### FACILITY OPERATIONS

| | |
|---|---|
| Utilities | |
| Electric | $ 284,402 |
| Water | 31,986 |
| Sewer | 44,366 |
| Oil | 159,000 |
| Supplies | 50,000 |
| Replacement | 50,000 |
| Equipment | 50,000 |
| Outside Services | 50,000 |
| TOTAL | $ 720,000 |

### CURATORIAL

| | |
|---|---|
| Specimen Food | $ 145,000 |
| Specimen Purchase | 30,000 |
| Collecting | 200,000 |
| TOTAL | $ 375,000 |

## REVENUE

| | |
|---|---|
| Admissions | $ 2,354,748 |
| Family Memberships | 260,000 |
| Corporate Memberships | 100,000 |
| Net Retail Sales | 603,238 |
| Research Contracts | 246,000 |
| *Rehabilitation | 150,000 |
| Grants & Donations | 150,000 |
| Miscellaneous | 20,000 |
| TOTAL | $ 3,883,986 |

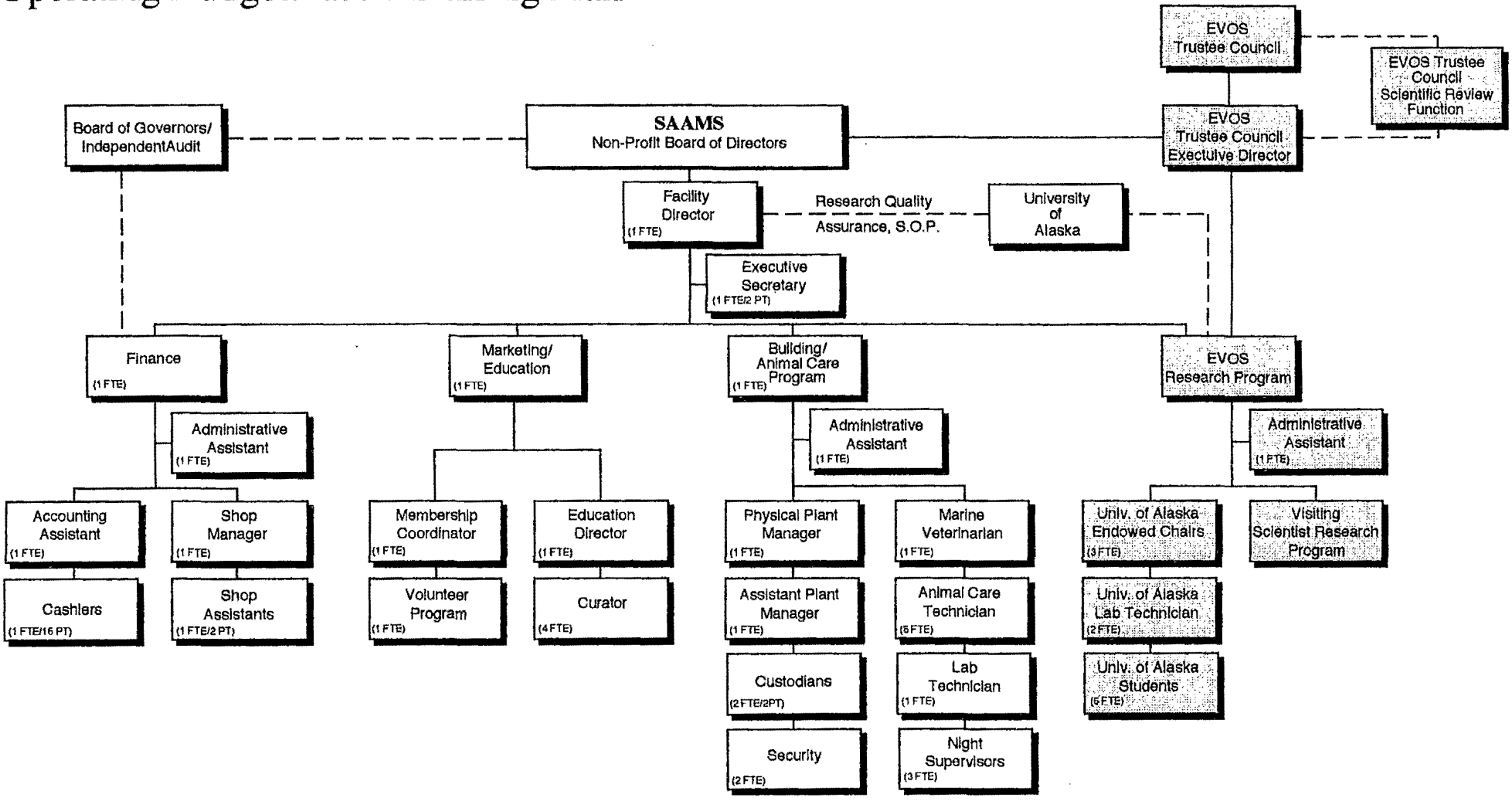
** Rehabilitation revenue has been shown below AIDEA projection due to speculative nature of funding.*

# Personnel Assumptions

| POSITION | FTE | 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 | $12,000 | $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 | | UofA/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 | |
| 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 | | |

* *Note: Assume $2,000,000 endowment cost per chair earning 5% per annum - $100,000. Endowded chairs come on line as fundraising campaign allows.*

# Operating Budget: 1997 Staffing Plan




***Operating Budget: 1997 Staffing Plan***
***IMS Infrastructure Improvements***
***EVOS Trustee Council Project #94199***
***Draft - September 15, 1994***
***Figure 9-5***

# Cost of Research
# Annual Overhead Cost Assumptions

| **Non-Research Grant Supported Personnel** | | **Annual Salary** |
|---|---|---|
| 1. Research Grant Coordinator | (1 FTE) | $ 39,500 |
| 2. Administrative Assistant | (1 FTE) | 20,000 |
| 3. Marine Veteranarian | (1 FTE) | 94,500 |
| 4. Animal Care Technicians | (3 FTE's) | 121,500 |
| 5. Night Supervisor | (1 FTE) | 27,000 |
| 6. Lab Manager | (1 FTE) | 40,500 |
| 7. Physical Plant Manager | (1 FTE) | 67,500 |
| 8. Assistant Plant Manager | (1 FTE) | 47,250 |
| 9. Custodians | (2 FTE's) | 50,500 |
| 10. Security | (2 FTE's) | 67,400 |
| | 14 FTE's | $ 585,650 |

| **Non-Research Grant Supported Expenses** | **Annual Salary** |
|---|---|
| 1. Administrative Expenses | $ 415,000 |
| 2. Facility Operations | 580,000 |
| 3. Curatorial | 345,000 |
| | $ 1,340,000 |
| **Total Annual Overhead Cost** | **$ 1,925,650** |

| | | |
|---|---|---|
| Total Research Overhead Cost per Year | | $ 1,925,650 |
| * Budgeted Research Funding Contribution | 13% | $ 250,000 |
| **Visitation Supported Research Overhead** | **87%** | **$ 1,675,650** |

*** Basis for Calculation of $250,000 Research Revenue**

- $250,000 calculation based on research grant applications inclusion of monthly sq. ft. charge to offset cost of utility consumption only.

  $250,000 ÷ 38,000 SF = $6.58/SF per year
  $6.58 ÷ 12 = .55¢/SF per month

  Example: ADF&G Fish Genetics Program
  6,000 SF x .55¢/mth x 12 = $39,600 per year
  Assume annual program $1M+ this utility charge represents 4% facility overhead cost to perform research.

# Ramp-Up Costs Assumptions

| | Annual Budget | # of Months | TOTAL |
|---|---|---|---|
| **Administrative** | | | |
| 1. Telephone/Postage | 60,000 | 12 | 60,000 |
| 2. Prof. Fees | 150,000 | 12 | 150,000 |
| 3. Marketing | 200,000 | 12 | 200,000 |
| 4. Equipment | 25,000 | 12 | 25,000 |
| 5. Office Supplies | 36,000 | 12 | 36,000 |
| 6. Insurance | 75,000 | 12 | 75,000 |
| 7. Printing | 100,000 | 4 | 33,000 |
| 8. Prof. Development | 15,000 | 12 | 15,000 |
| 9. Travel | 75,000 | 4 | 25,000 |
| 10. Dues/Subscriptions | 15,000 | 12 | 15,000 |
| 11. Misc. | 25,000 | 12 | 25,000 |
| | $ 776,000 | | $659,000 |
| **Facility Operations** | **Annual Budget** | **# of Months** | **TOTAL** |
| 1. Electric | 284,400 | 4 | 94,800 |
| 2. Water | 32,000 | 4 | 10,700 |
| 3. Sewer | 44,400 | 4 | 14,800 |
| 4. Fuel Oil | 159,000 | 4 | 53,000 |
| 5. Supplies | 50,000 | 12 | 50,000 |
| 6. Replacement | 50,000 | 0 | 0 |
| 7. Equipment | 50,000 | 12 | 50,000 |
| 8. Outside Services | 50,000 | 4 | 16,700 |
| | $ 720,000 | | $290,000 |
| **Curatorial** | **Annual Budget** | **# of Months** | **TOTAL** |
| 1. Specimen Food | $ 145,000 | 6 | $ 72,500 |
| 2. Specimen Purchase | 30,000 | 12 | 30,000 |
| 3. Collecting | 200,000 | 12 | 200,000 |
| | $ 375,000 | | $302,500 |
| **Personnel** | | | |
| See Staffing Assumptions | $ 1,965,600 | | $792,150 |
| **Working Capital** | | | |
| Annual Operating Budget | $ 3,836,600 | | $320,000 |
| | 12 Months | | |
| **Total Ramp-Up Budget** | | | **$ 2,353,650** |

# Ramp-Up Staffing Assumptions

| | | Base Annual Salary | Benefits 35% Annual | Total Salary Annual | # of Months | TOTAL |
|---|---|---|---|---|---|---|
| Executive Director | 1 FTE | $100,000 | $35,000 | $135,000 | 18 | 202,500 |
| Executive Secretary | 1 FTE | $27,000 | $9,500 | $36,500 | 12 | 35,500 |
| Secretary Assistants | 2 PT | $10/Hr. | $0 | $20,000 | 4 | 6,700 |
| Finance Director | 1 FTE | $60,000 | $21,000 | $81,000 | 12 | 81,000 |
| Administrative Assistant | 1 FTE | $22,200 | $7,800 | $30,000 | 4 | 10,000 |
| Marketing Director | 1 FTE | $40,000 | $14,000 | $54,000 | 12 | 54,000 |
| Membership Coordinator | 1 FTE | $35,000 | $12,000 | $47,000 | 4 | 15,700 |
| Accounting Assistant | 1 FTE | $41,500 | $14,500 | $56,000 | 4 | 18,700 |
| Lead Cashier | 1 FTE | $18,900 | $6,600 | $25,500 | 0 | 0 |
| Cashiers | 16 PT | $10/Hr. | $0 | $62,600 | 0 | 0 |
| Shop Manager | 1 FTE | $30,000 | $10,500 | $40,500 | 4 | 13,500 |
| Shop Assistant | 1 FTE | $20,000 | $7,000 | $27,000 | 0 | 0 |
| Shop Assistant | 2 PT | $10/Hr. | $0 | $22,400 | 0 | 94,500 |
| Program Director | 1 FTE | $70,000 | $24,500 | $94,500 | 12 | 10,000 |
| Administrative Assistant | 1 FTE | $22,200 | $7,800 | $30,000 | 4 | 22,500 |
| Physical Plant Manager | 1 FTE | $50,000 | $17,500 | $67,500 | 4 | 15,700 |
| Assistant Plant Engineer | 1 FTE | $35,000 | $12,250 | $47,250 | 4 | 8,400 |
| Custodians | 2 FTE | $18,750 | $6,500 | $25,250 | 4 | 0 |
| | | $18,750 | $6,500 | $25,250 | 0 | 0 |
| Custodians | 2 PT | $10/Hr. | $0 | $25,200 | 0 | 47,250 |
| Education Director | 1 FTE | $35,000 | $12,250 | $47,250 | 12 | 15,750 |
| Curators | 4 FTE | $35,000 | $12,250 | $47,250 | 4 | 15,750 |
| | | $35,000 | $12,250 | $47,250 | 4 | 15,750 |
| | | $35,000 | $12,250 | $47,250 | 4 | 15,750 |
| | | $35,000 | $12,250 | $47,250 | 4 | 31,500 |
| Marine Veterinarian | 1 FTE | $70,000 | $24,500 | $94,500 | 4 | 13,500 |
| Animal Care Technicians | 5 FTE | $30,000 | $10,500 | $40,500 | 4 | 13,500 |
| | | $30,000 | $10,500 | $40,500 | 4 | 13,500 |
| | | $30,000 | $10,500 | $40,500 | 4 | 0 |
| | | $30,000 | $10,500 | $40,500 | 0 | 0 |
| | | $30,000 | $10,500 | $40,500 | 0 | 13,500 |
| Lab Technician | 1 FTE | $30,000 | $10,500 | $40,500 | 4 | 9 |
| Night Supervisors | 3 FTE | $20,000 | $7,000 | $27,000 | 4 | 9 |
| | | $20,000 | $7,000 | $27,000 | 4 | 9 |
| | | $20,000 | $7,000 | $27,000 | 4 | 11,200 |
| Security | 2 FTE | $25,000 | $8,700 | $33,700 | 4 | 0 |
| | | $25,000 | $8,700 | $33,700 | 0 | 0 |
| * Endowed Chair - Chief Scientist | 1 FTE | $0 | $0 | $0 | 0 | 0 |
| Administrative Assistant | 1 FTE | $22,200 | $7,800 | $30,000 | 0 | 0 |
| * Endowed Chair | 1 FTE | $0 | $0 | $0 | 0 | 0 |
| * Endowed Chair | 1 FTE | $0 | $0 | $0 | 0 | 0 |
| Lab Technicians | 2 FTE | $30,000 | $10,500 | $40,500 | 0 | 0 |
| | | $30,000 | $10,500 | $40,500 | 0 | 0 |
| University of Alaska Students | 6 FTE | $22,200 | $7,800 | $30,000 | 0 | 0 |
| | | $22,200 | $7,800 | $30,000 | 0 | 0 |
| | | $22,200 | $7,800 | $30,000 | 0 | 0 |
| | | $22,200 | $7,800 | $30,000 | 0 | 0 |
| | | $22,200 | $7,800 | $30,000 | 0 | 0 |
| | | $22,200 | $7,800 | $30,000 | 0 | 0 |
| Visiting Researchers (6 FTE) | | $0 | $0 | $0 | 0 | 0 |
| | 45 FTE/22 PT | | Subtotal | $1,965,600 | | $792,150 |

** Note: Assume $2,000,000 endowment cost per chair earning 5% per annum - $100,000*

**10. Project Schedule**

# PROJECT SCHEDULE

This project schedule responds to the urgent need to provide the infrastructure needed to carry out the research and monitoring component of the restoration of injured resources within the EVOS area. The facility is scheduled to be operational in June 1997.

## Trustee Council Actions

On January 31, 1994, the *Exxon Valdez* Oil Spill (EVOS) Trustee Council approved financial support for the Institute of Marine Science (IMS) Infrastructure Improvement Project (Project #94199). In its resolution approving the project the Trustee Council imposed four conditions which established the schedule for the initial phase of this project.

1. *Take necessary steps to secure NEPA compliance.* This condition initiated a 33-week EIS schedule culminating in an R.O.D. by 28 October, 1994.

2. *Consult with appropriate entities, including the University of Alaska, the City of Seward, the Seward Association for the Advancement of Marine Science, and appropriate trustee Agencies to review the assumptions relating to the proposed improvements and capital and operating budgets.* This condition initiated a comprehensive program process with both scientific and educational workgroups to review assumptions relating to the function and operations of the facility.

3. *Develop 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.* This condition initiated detailed discussions with both state and federal trustee legal staff supported by funding analysis provided by experts in visitation assumptions, fund raising and bridge financing.

4. *Prepare a recommendation of the appropriate level of funding for considerations by the Trustee council that would be legally permissible under the terms of the Memorandum of Agreement and Consent Decree.* This condition initiated the preparation of schematic design so that detailed cost estimates could be prepared and the allocation of costs to the research component of the project could be reviewed by Trustee Council legal staff for compliance with the Memorandum of Agreement and Consent Decree.

## Project Requirements

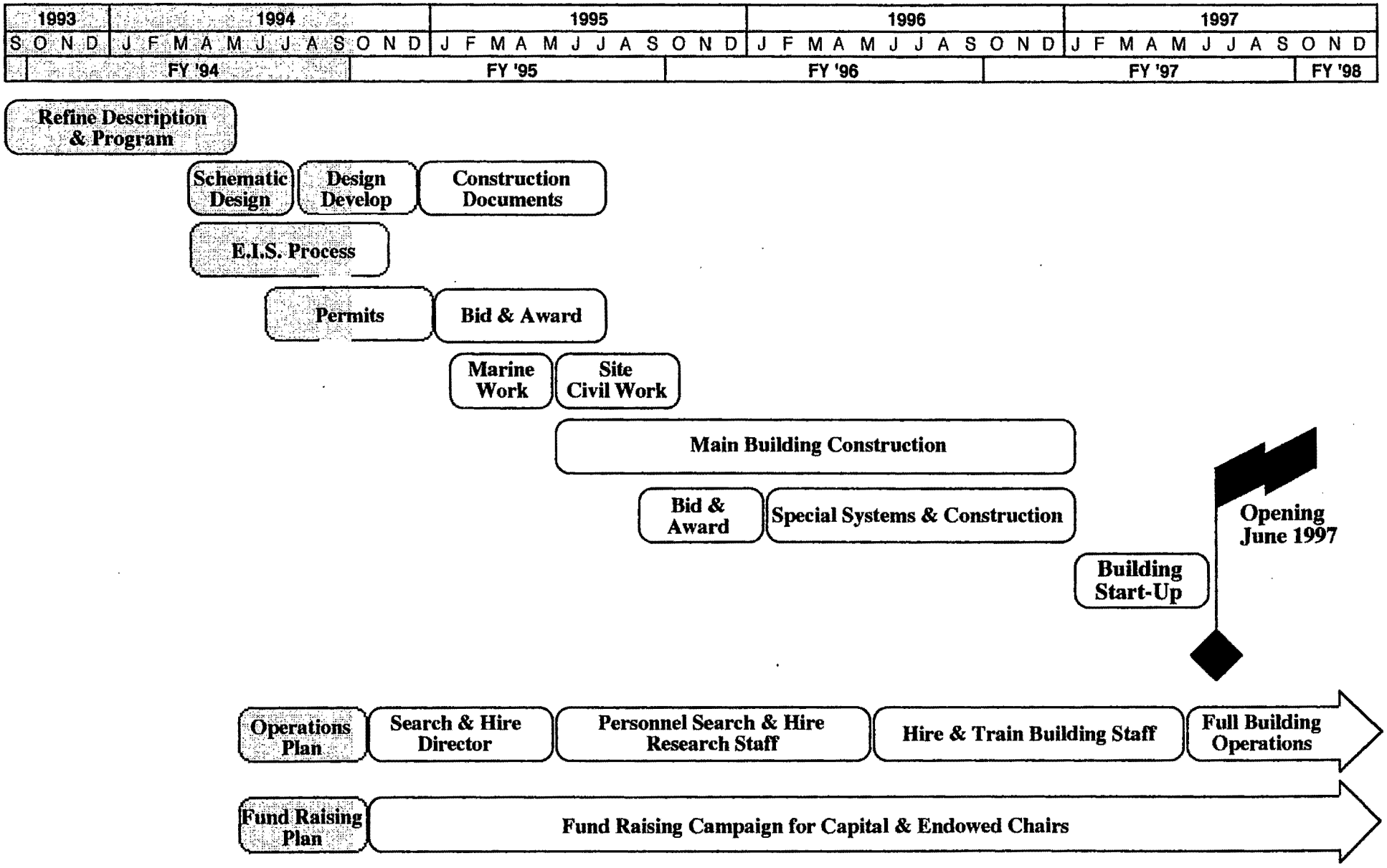
In parallel with addressing the requirements of the Trustee Council, the project team has proceeded with all of the necessary permitting and design activities to meet the June 1997 opening date. A detailed Master Schedule for the project has been developed and project milestones have been

established. The project is on schedule for the 1997 opening. (Figure 10-1).

The project design team has successfully completed programming and schematic design phases and is now ready to commence with design development and preparation of construction documents. All state, federal and borough permits have been initiated and are currently in the review and approval process with the various agencies. Construction is anticipated to begin in January 1995 with the marine works package and will continue until January of 1997, allowing a 6-month start-up period prior to the facility becoming fully operational in June 1997.

A detailed master schedule for the project identifying approximately 100 tasks for the E.I.S., design, project management, and construction process has been prepared and is continuously expanded and updated. (Figure 10-2).

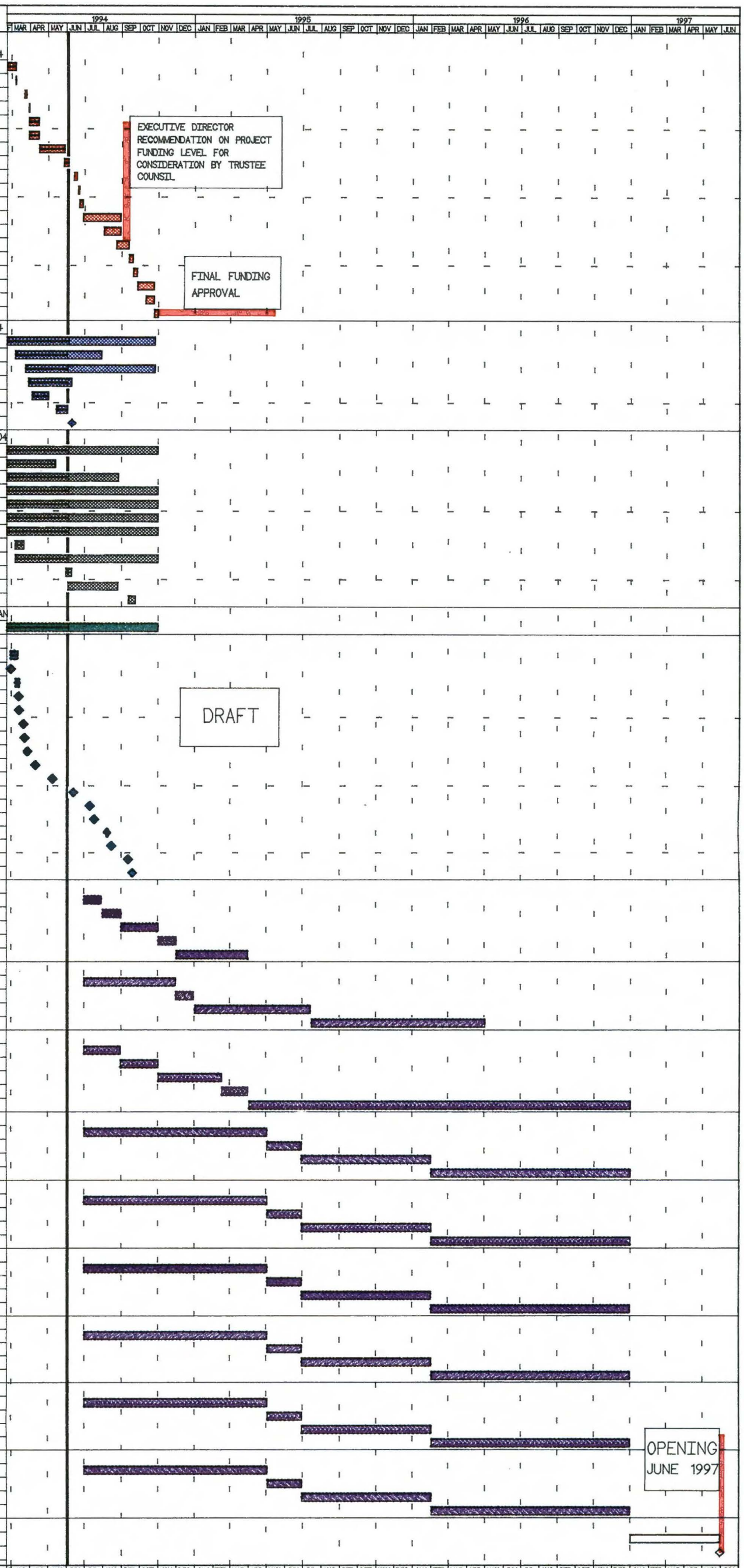
# PROJECT MANAGEMENT PLAN




*Project Management Plan*
*IMS Infrastructure Improvements*
*EVOS Trustee Council Project #94199*
*Draft - September 15, 1994*
*Figure 10-1*

◆ $5 Million Research Capital Campaign complete.
$5 Million Bridge Financing for Education Campaign in place.

| ACTIVITY ID | ACTIVITY DESCRIPTION | ORIG DUR |
|---|---|---|
| ENVIRONMENTAL IMPACT STATEMENT = $250,000 TRUSTEE RESOLUTION TASK #1 STATE OF ALASKA GRANT 7/94-004 | | |
| 10 | ASSEMBLE E.I.S. CONSULTANTS | 11 |
| 20 | FEDERAL REGISTER NOTICE OF INTENT | 1 |
| 40 | PUBLIC SCOPING MEETING | 3 |
| 30 | AGENCY SCOPING MEETING | 1 |
| 45 | SCOPING REPORT | 13 |
| 50 | IDENTIFY ISSUES AND ALTERNATIVES | 13 |
| 60 | PREPARE PRELIMINARY DRAFT E.I.S | 32 |
| 70 | REV BY WASH D.C. & INCORP COMMENTS | 9 |
| 72 | TRANSMITTAL PKG & DELIVER TO EPA | 5 |
| 74 | PRINT DRAFT PRELIMINARY E.I.S. | 2 |
| 76 | PUBLISH NOTICE OF AVAILABILITY IN FED REGISTER | 4 |
| 80 | PUBLISH D.E.I.S.,60 DAY REVIEW,PUBLIC HEARINGS | 45 |
| 90 | INCORPORATE PUBLIC COMMENT | 20 |
| 100 | PREPARE FINAL E.I.S. | 15 |
| 105 | DEPT OF INTERIOR INTERNAL REVIEW | 5 |
| 110 | PUBLISH F.E.I.S. | 5 |
| 120 | THIRTY DAY COOLING OFF PERIOD | 20 |
| 130 | PREPARE R.O.D. | 10 |
| 135 | PUBLISH R.O.D. | 5 |
| CONCEPTUAL DESIGN=$290,000 STATE OF ALASKA GRANT 7/94-004 | | |
| 140 | EIS TECHNICAL SUPPORT | 180 |
| 220 | AS-BUILTS/SITE SURVEY-U OF A & CITY FACILITIES | 90 |
| 180 | DESIGN PROGRAM : FINALIZE PROGRAM | 155 |
| 210 | CONCEPTUAL DESIGN | 59 |
| 150 | REFINE PROGRAM FOR E.I.S. | 25 |
| 190 | DESIGN PROGRAM : APPROVE PROGRAM | 118 |
| 215 | APPROVE CONCEPTUAL DESIGN | 0 |
| PROJECT MANAGEMENT=$300,060 STATE OF ALASKA GRANT 7/94-004 | | |
| 421 | PROJECT ADMINISTRATION | 181 |
| 422 | DRAFT OPERATIONS PLAN | 78 |
| 423 | INTEGRATED FUNDING APPROACH | 136 |
| 424 | DOCUMENT/INFORMATION CONTROL | 181 |
| 428 | SCHEDULE MONITORING & UPDATING | 181 |
| 430 | PROPERTY TRANSFER | 181 |
| 432 | MEETING COORDINATION | 181 |
| 427 | MASTER SCHEDULE | 10 |
| 431 | PERMITTING | 171 |
| 425 | PROVISIONAL COST MODEL | 10 |
| 429 | PROCEDURES MANUAL | 67 |
| 426 | CHECK ESTIMATE | 10 |
| AGENCY COORDINATION=$50,000 AUTHORIZED UNDER FY94 WORKPLAN | | |
| 459 | AGENCY COORDINATION | 181 |
| PROJECT REVIEW MEETINGS=N/A TRUSTEE RESOLUTION TASK #2 | | |
| 549 | ESTABLISH WORK GROUPS | 10 |
| 499 | UNIVERSITY OF ALASKA | 0 |
| 498 | AGENCY SCOPING MEETING | 5 |
| 500 | SAAMS BOARD MEETING | 0 |
| 550 | WORK GROUP MEETING | 0 |
| 590 | PUBLIC SCOPING MEETING (SEWARD) | 0 |
| 600 | PUBLIC SCOPING MEETING (ANCHORAGE) | 0 |
| 610 | AGENCY SCOPING MEETING (ANCHORAGE | 0 |
| 501 | SAAMS BOARD MEETING | 0 |
| 502 | SAAMS BOARD MEETING | 0 |
| 503 | SAAMS BOARD MEETING | 0 |
| 504 | SAAMS BOARD MEETING | 0 |
| 560 | WORK GROUP MEETING | 0 |
| 505 | SAAMS BOARD MEETING | 1 |
| 570 | WORK GROUP MEETING | 0 |
| 506 | SAAMS BOARD MEETING | 1 |
| 580 | WORK GROUP MEETING | 0 |
| BID PACKAGE #1 - SITE DEVELOPMENT/SEA WALL | | |
| BP1.1 | SCHEMATIC DESIGN | 21 |
| BP1.2 | DESIGN DEVELOPMENT | 23 |
| BP1.3 | CONSTRUCTION DOCUMENTS | 44 |
| BP1.4 | BID AND AWARD | 22 |
| BP1.5 | CONSTRUCTION | 86 |
| BID PACKAGE #2 - ACRYLIC PANEL PROCURE/INSTALL | | |
| BP2.1 | DESIGN | 109 |
| BP2.2 | BID AND AWARD | 22 |
| BP2.3 | SHOP DRAWINGS/FABRICATION | 140 |
| BP2.4 | INSTALLATION | 209 |
| BID PACKAGE #3 - SITE PREP AND MAIN BUILDING | | |
| BP3.1 | SCHEMATIC DESIGN | 43 |
| BP3.2 | DESIGN DEVELOPMENT | 45 |
| BP3.3 | CONSTRUCTION DOCUMENTS | 76 |
| BP3.4 | BID AND AWARD | 32 |
| BP3.5 | CONSTRUCTION | 457 |
| BID PACKAGE #4 - ARTIFICIAL HABITATS | | |
| BP4.1 | DESIGN | 218 |
| BP4.2 | BID AND AWARD | 42 |
| BP4.3 | SHOP DRAWINGS/FABRICATION | 155 |
| BP4.4 | INSTALLATION | 238 |
| BID PACKAGE #5 - ENVIRONMENTAL SOUND | | |
| BP5.1 | DESIGN | 218 |
| BP5.2 | BID AND AWARD | 42 |
| BP5.3 | SHOP DRAWINGS/FABRICATION | 155 |
| BP5.4 | INSTALLATION | 238 |
| BID PACKAGE #6 - VIDEO SYSTEMS | | |
| BP6.1 | DESIGN | 218 |
| BP6.2 | BID AND AWARD | 42 |
| BP6.3 | SHOP DRAWINGS/FABRICATION | 155 |
| BP6.4 | INSTALLATION | 238 |
| BID PACKAGE #7 - GRAPHICS/PHOTOGRAPHY | | |
| BP7.1 | DESIGN | 218 |
| BP7.2 | BID AND AWARD | 42 |
| BP7.3 | SHOP DRAWINGS/FABRICATION | 155 |
| BP7.4 | INSTALLATION | 238 |
| BID PACKAGE #8 - EXHIBIT FILM | | |
| BP8.1 | DESIGN | 218 |
| BP8.2 | BID AND AWARD | 42 |
| BP8.3 | SHOP DRAWINGS/FABRICATION | 155 |
| BP8.4 | INSTALLATION | 238 |
| BID PACKAGE #9 - FILM SYSTEM | | |
| BP9.1 | DESIGN | 218 |
| BP9.2 | BID AND AWARD | 42 |
| BP9.3 | SHOP DRAWINGS/FABRICATION | 155 |
| BP9.4 | INSTALLATION | 238 |
| BUILDING COMPLETION | | |
| 1000 | BUILDING START-UP | 108 |
| 1100 | BUILDING OPENING | 0 |




Activity Classification: RESPONSIBILITY

- ENVIRONMENTAL IMPACT STATEMENT
- CONCEPTUAL DESIGN
- BID PACKAGE #2 - ACRYLIC PANEL PROCURE/INSTALL
- BID PACKAGE #4 - ARTIFICIAL HABITATS
- PROJECT REVIEW MEETINGS
- BID PACKAGE #8 - EXHIBIT FILM
- AGENCY COORDINATION
- BID PACKAGE #6 - VIDEO SYSTEMS
- BID PACKAGE #3 - SITE PREP AND MAIN BUILDING
- PROJECT MANAGEMENT
- BID PACKAGE #1 - SITE DEVELOPMENT/SEA WALL
- BID PACKAGE #9 - FILM SYSTEM
- BID PACKAGE #5 - ENVIRONMENTAL SOUND
- BID PACKAGE #7 - GRAPHICS/PHOTOGRAPHY

| | |
|---|---|
| Plot Date | 6JUN94 |
| Data Date | 3JUN94 |
| Project Start | 21FEB94 |
| Project Finish | 30MAY97 |

(c) Primavera Systems, Inc.

Activity Bar/Early Dates
Critical Activity
Progress Bar
◇/◆ Milestone/Flag Activity

SAIC

Sheet 1 of 1

INSTITUTE OF MARINE SCIENCE
INFRASTRUCTURE IMPROVEMENTS
PROJECT #94199

PROJECT SCHEDULE

| Date | Revision | Checked | Approved |
|---|---|---|---|
| | | | |

Figure 10-2

**11. Vessel and Submersible**

# VESSEL AND SUBMERSIBLE

The proposed facility would accommodate the basing of a dedicated research vessel and submersible for work in the EVOS area. Currently, restoration projects utilize a mix of private and agency vessels for carrying out marine research and monitoring programs. The UAF SMC operates the only oceanographic vessel in Alaska, the R/V *Alpha Helix*. This vessel is owned by the National Science Foundation and is home ported in Seward. The *Alpha Helix* is part of the University National Oceanographic Laboratory System (UNOLS) and is obligated by NSF for much of the time for work outside of the EVOS area. The *Alpha Helix* is not designed nor equipped to function as a submersible tender. Most submersible work in the EVOS area and elsewhere on the Pacific coast is coordinated by the West Coast National Undersea Research Center (WCNURC) at UAF. At present, WCNURC contracts with a California-based vendor to provide both submersible and tender services to Alaska. A vessel committee comprised of representatives from UAF and ADF&G has considered the acquisition of a research vessel and submersible for the EVOS area:

- There are anticipated needs for a dedicated research vessel and submersible to carry out long-term restoration research and monitoring in the EVOS area. These needs have been expressed by NOAA/NMFS, ADF&G, and UAF.

- No one vessel can serve all EVOS needs. Oceanographic sampling, forage fish sampling, submersible tending, etc. all have specific requirements with respect to vessel design and equipment.

- A converted "mud boat" could serve as a multipurpose vessel for submersible tending, forage fish trawling, and oceanographic sampling in Prince William Sound and during summer months in the Gulf of Alaska. However, a mud boat has sea keeping and stability constraints that make it ill-suited for all-weather use in the Gulf of Alaska (e.g. offshore oceanographic sampling during winter months). A review of available mud boat and seismic vessel hulls and conversion costs indicates that a multipurpose research vessel could be acquired and equipped for approximately $2.3 million. Annual operation costs are estimated a $1.02 million.

- The DELTA class submersible is an appropriate submersible for anticipated work in the EVOS area. Although the Delta organization will not sell their submersible because of liability and maintenance concerns, a submersible of this design could be constructed and equipped for priority use in Alaska for approximately $450 thousand. Annual operation costs are estimated at $600 thousand.

- In 1993, the WCNURC chartered the DELTA and tender for 93 days of work in Alaskan waters (including 36 days in the EVOS area plus 10 days in port and transit). In 1994, WCNURC has scheduled 77 days of DELTA charter (including approximately 32 days in

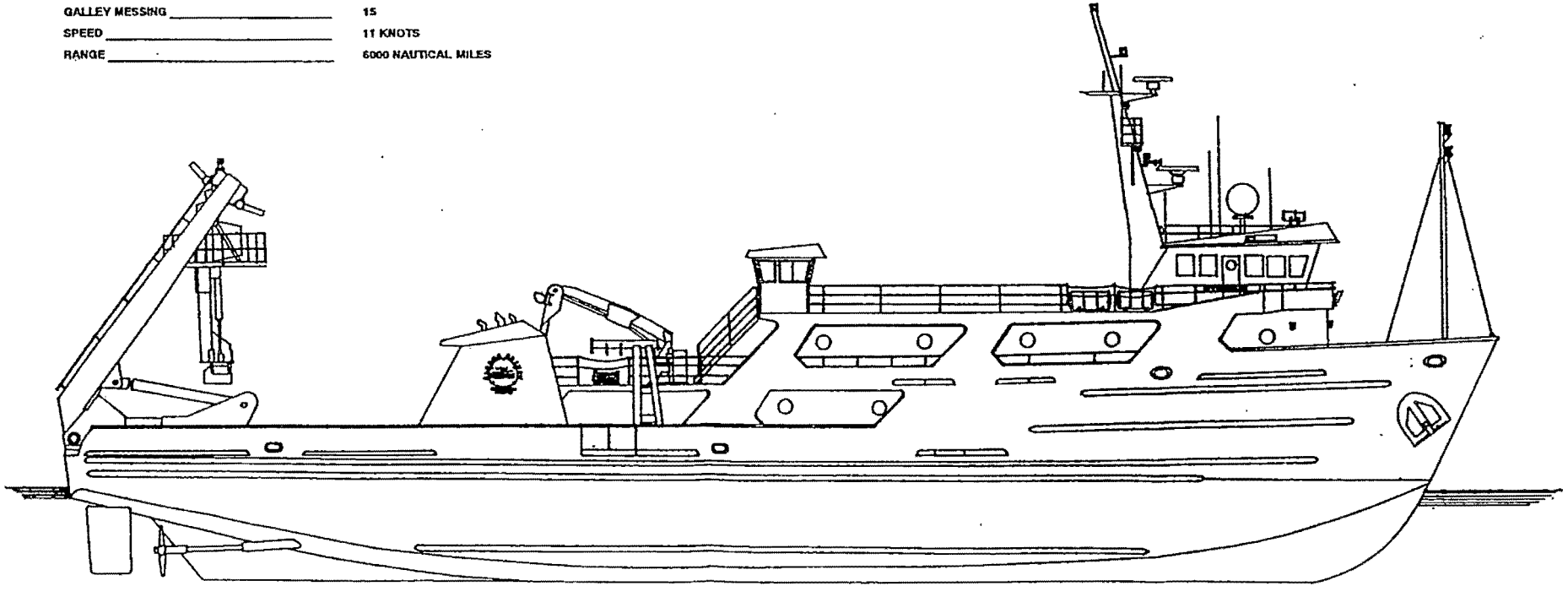
the EVOS area plus 10 days in port and transit). The DELTA rents for $3,500 per day without a tender. With a tender, the charter rate is $6,700 per day.

- Vessels in the UNOLS and NOAA fleets are available for all-weather sampling in the EVOS area. Charter rates for these vessels are normally $10,000 per day and up. However, the current over capacity in these fleets and shrinking budgets may provide opportunities for reduced rates if a long-term commitment were made to use one of these vessels for EVOS work.

## Conclusion

The potential role and use of a research vessel/tender and submersible in the EVOS area is a matter that requires further attention. It has been estimated that a multipurpose research vessel/tender could be acquired and equipped for approximately $2.3 million; annual operations would cost approximately $1.02 million. It has been estimated that a submersible could be acquired and equipped for approximately $450,000; annual operations would cost approximately $600,000.

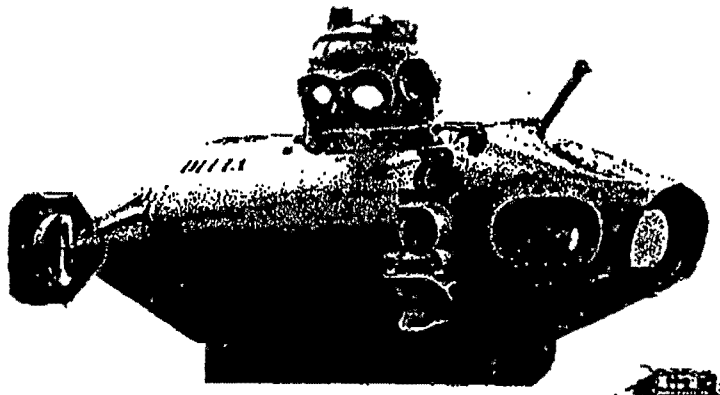
| | |
|---|---|
| LENGTH OVERALL | 168 FEET |
| LENGTH BETWEEN PERPENDICULARS | 156 FEET |
| BEAM OVERALL | 38 FEET |
| DRAFT | 12 FEET |
| DISPLACEMENT (WEIGHT) | 781 SHORT TONS |
| GROSS TONNAGE | 288.19 REGISTERED TONS |
| FUEL CAPACITY | 62,000 GALLONS |
| POTABLE WATER | 37,000 GALLONS (WITH REVERSE OSMOSIS UNIT, 50 GALLONS/HOUR) |
| BERTHING ACCOMMODATIONS | 30 BERTHS |
| GALLEY MESSING | 15 |
| SPEED | 11 KNOTS |
| RANGE | 6000 NAUTICAL MILES |



**Example of Research Vessel / Submersible Tender** *Firgure 11-1*

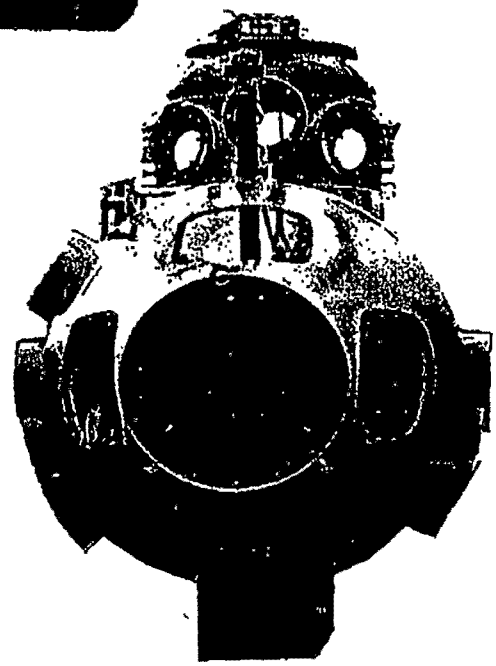
**SPECIFICATIONS**

ABS Classed
Length Overall - 15'6"
Height Overall - 6'
Hull Diameter - 3'6"
Operating Depth - 1200'(355m)
Tested Depth - 1750'(534m)
Weight - 5000 lbs
Viewports - 19
Top Speed - 3.5 knots
Cruising Speed - 1.5 knots
Life Support - 144 man-hours



**EQUIPMENT**

Manipulators - Mechanical and Hydraulic Arms
Sampling Devices - Slurp Gun, Corers, Grabs, Water Samplers
Continuous Data Collector - Salinity, pH, Temperature Diss. O2, Depth, Direction, Altitude
Navigation - Trackpoint II, GPS, Flux-gate Compass Computer Track Plotting Program, Gyro Transponders, Pingers, Fathometer, Altimeter, (2) Sonars (Visual & Audio)
Communication - VHF Radio, Underwater Telephone, EPIRB
Photographic - External Bulk Loaded 35mm Camera
- Internal Hand-Held 35mm Camera
- Two External Strobes - Developing Lab
- External Hi-8mm Video System w/data logger
- Internal Hi-8mm Video System - Laser Scale



## 12. References

November 1993 Wave Analysis, Peratrovich, Nottingham & Drage, Inc.

November 1993 Master Plan Evaluation Study, Cambridge 7 Associates

September 1993 Analysis of Resurrection Bay Water, Chemical Testing and Engineering Company

September 1993 Alaska SeaLife Center Feasibility Study Evaluation, Public Finance Management, Inc.

September 1993 Amended and Restated Articles of Incorporation of Seward Association for the Advancement of Marine Science, SAAMS Board of Directors

August 1993 Geotechnical & Utility Study, Cambridge 7 Associates; Peratrovich, Nottingham, & Drage, Inc.; Altieri; & Enartec

August 1993 Feasibility Study for the Alaska SeaLife Center, Thomas J. Martin

July 1993 Population and Marketing Analysis, Fox Practical Marking and Management

January 1993 Project Concept Development, Cambridge 7 Associates

August 1993 Bathymetric Site Survey, Peratrovich, Nottingham, & Drage, Inc.

August 1990 City of Seward 2010 Comprehensive Plan, Seward Planning and Zoning Commission

February 1975 Preliminary Master Plan for University of Alaska Seward Marine Station, Kramer Chin and Mayo, Inc.

# REFERENCES

(in reverse chronological order)


| | |
|---|---|
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| September 1994 | Schematic Cost Estimate, Estimations |
| September 1994 | Schematic Design Submittal, Livingston Slone, Inc. |
| September 1994 | Fund Raising Plan, J. Donovan Associates |
| September 1994 | Conditional Use Permit Amended, Seward Planning and Zoning Commission |
| August 1994 | Market Demand Analysis Update, Fox Practical Marketing & Management |
| August 1994 | Design Program Workbook, Livingston Slone, Inc. |
| August 1994 | Ordinance No. 94-35 City of Seward, Amending the Law Use Plan and Rezoning Waterfront Tract Sites of the Proposed Alaska Sea Life Center to Commercial Business District, Seward City Council |
| July 1994 | Construction Cost Budget Review, Livingston Slone, Inc. |
| June 1994 | Concept Cost Estimate, Estimations |
| June 1994 | Concept Design Submittal, Livingston Slone, Inc. |
| May 1994 | Cost Analysis for the Acquisition, Conversion and Operation of a Research Vessel and Submersible to Operate in the EXXON VALDEZ Oil Spill Area, Capt. Thomas D. Smith USCG (Ret) Marine Superintendent, University of Alaska, Fairbanks, School of Fisheries and Ocean Sciences |
| January 1994 | Project Description and Supplemental Materials Project #94199, Exxon Valdez Oil Spill Trustee Council Staff |
| 1993 and 1994 | SAAMS Board Meeting Minutes |
| November 1993 | Geotechnical Field Work, Peratrovich, Nottingham, & Drage, Inc. |
| November 1993 | Site Environmental Assessment, Peratrovich, Nottingham & Drage, Inc. |

## 13. Appendices

Jerome B. Komisar
President

UNIVERSITY OF ALASKA STATEWIDE SYSTEM

202 BUTROVICH BLDG.
P.O. BOX 755000
FAIRBANKS, ALASKA 99775-5000
PHONE: (907) 474-7311
FAX: (907) 474-6342



September 8, 1994

via fax c/o 3429 1723

Jim Ayers
Executive Director
Exxon Valdez Oil Spill Trustee Council
645 G Street, Suite 401
Anchorage, Alaska 99501 7178

Dear Jim:

Many thanks for joining with me and the Board of Regents in Homer. It was a busy Board meeting, as all of them have been lately, full of good things to debate and do and even better things to think about accomplishing in the future. However, your presentation (and responses to questions) was the highlight of the two days.

As you noticed, the Board is very enthusiastic about the developing research reserve and the building of the Seward institute. The reserve would permit researchers, from Alaska and elsewhere, to explore the environmental and ecological questions that have to be answered if the quality of the EVOS area is to be protected. These questions can't be answered in half a decade, or a decade or even two. Long periods of time, intervals that mirror the biological rhythms of the coast, need to be invested if the research is to have lasting meaning and impact. A reserve fund that will outlive the settlement's payment schedule is essential if we expect to support such intellectual work.

The Board of Regents' support of the Seward project is clear. Right now there is no facility within the University of Alaska or the State that can even approach accomplishing the research that must be done to ensure the restoration and rehabilitation of the marine mammals and bird species damaged by the spill. Indeed, I don't think there is a facility in the northwest that can even approach the work. Without the research capacity projected by the Seward project, it will be impossible to gather the information and knowledge needed to understand the ecosystems impacted by the spill to the degree needed to protect them. A number of faculty from the University have been working on the project from the beginning and the scientific mission of the Seward facility is very much the product of University of Alaska's scientists. They look forward to continuing to guide the research program of the institute.

Between the reserve fund and the Seward facility, the EVOS Trustees will have gone a long way to ensure the knowledge that will be needed to meet their overall charge. Without knowing more than we know now, the restoration and rehabilitation of the EVOS area must remain incomplete. And the only way to greater knowledge is through research. The reserve can support research on all significant spill related questions; the Seward facility will bring to the scientific community research instruments that will enable it (and all of us) to learn how to renew the vitality of the marine mammal and sea bird populations and their habitat.

Again, thank you for giving the University your time and sharing your talent.

Sincerely,

Jerome B. Komisar
President

JBK:dm

STATE OF ALASKA
DEPARTMENT OF FISH AND GAME
OFFICE OF THE COMMISSIONER

WALTER J. HICKEL, GOVERNOR

P.O. BOX 25526
JUNEAU, ALASKA 99802-5526
PHONE: (907) 465-4100

September 9, 1994

RECEIVED
SEP 14 1994
STATE OF ALASKA
FISH & GAME
HABITAT & RESTORATION

Mr. Jim Ayers
Executive Director
Exxon Valdez Oil Spill Trustee Council
645 G Street
Anchorage, AK 99501

Dear Mr. Ayers:

The Alaska Department of Fish and Game anticipates the need to use the infrastructure improvements approved by the Exxon Valdez Oil Spill (EVOS) Trustee Council for the Institute of Marine Science (IMS) at Seward. The IMS project, 94-199, provides the opportunity for the department and others to carry out research associated with restoring EVOS injured mammal, bird, fish, and invertebrate resources that cannot be conducted at currently available facilities. Specifically, the department sees a direct use of the facility for its fish genetics program, headed by Dr. Jim Seeb. Dr. Seeb and his staff are investigating whether EVOS induced genetic damage is affecting the reproductive success of wild pink salmon. This research is yielding promising insights into mechanisms that may be affecting the recovery of salmon stocks in Prince William Sound. Potentially, genetics studies to investigate mechanisms affecting recovery of herring stocks could also be initiated if adequate facilities to hold and study live herring were available.

Dr. Seeb believes that the department's EVOS genetics program would greatly benefit from locating at the proposed Seward facility. This work is currently being conducted at makeshift facilities in Anchorage and Little Port Walter. However, the studies are hampered by the lack of sufficient quality and quantity of both freshwater and seawater, and this, coupled with disease and logistics problems, are affecting our ability to conduct the comprehensive suite of genetics studies on all life stages of pink salmon and herring (egg to adult) that are needed. Given continuing levels of EVOS funding, the department anticipates that its genetics projects would occupy approximately 4,000 square feet of interior space and 2,000 square feet of exterior space at the proposed facility consisting of wet labs, dry labs, offices, tanks and raceways, and supporting areas. This space would be utilized by approximately ten full-time equivalent fishery biologists and fishery technicians to carry out the department's anticipated fish genetics projects associated with EVOS restoration.

Additionally, it is expected that department wildlife biologists would collaborate with University of Alaska faculty and other researchers at the proposed facility for studies on marine mammals. This would include periodic use of the research habitats, laboratories, and offices at the proposed facility for development and testing of telemetry instrument packages for marine mammals, testing immobilizing drugs for marine mammals, and conducting disease, physiological, and nutritional studies on marine mammals. The department also anticipates direct and collaborative use of the proposed research vessel and submersible for fisheries and oceanography studies.

After reviewing the public comments, I support the proposed infrastructure improvements in Seward and believe that this project will provide needed facilities and programs to improve our capabilities to conduct research and monitoring in the EVOS area and speed the recovery of injured resources. My department is looking forward to making use of this facility at its anticipated opening in June 1997.

Sincerely,

Carl L. Rosier
Commissioner

cc: Vera Alexander, UAF/SFOS
Steven Pennoyer, NMFS
John Sandor, DEC
Phil Janik, USFS
George T. Frampton, DOI
Bruce Botelho, DOL
Darryl Schaefermeyer, SAAMS

Office of the Dean

UNIVERSITY OF ALASKA FAIRBANKS

School of Fisheries and Ocean Sciences



September 6, 1994

Jim Ayers
Executive Director
Exxon Valdez Oil Spill Trustee Council
645 G Street, Suite 401
Anchorage, AK 99501-7178

Dear Mr. Ayers:

I am following up on our recent discussion, in which you invited me to articulate our position vis-a-vis the proposed infrastructure improvements at Seward (Project #94199). We see an urgent need for a marine coastal facility designed to support research relating to the restoration and rehabilitation of marine mammal and bird species and their supporting ecosystems damaged by the Exxon Valdez Oil Spill. There is at present no facility in Alaska, or in the northwest part of the United States for that matter, which can support some of the work needed. Seward is in many respects that ideal location to site such a facility, given that we (the University of Alaska Fairbanks) already have a marine research establishment in place there and also have a background of information on the oceanographic conditions in the area. The additional capabilities would complement those already existing, and make possible a new level of cooperation among the University, agency personnel, and others involved in the EVOS restoration program.

Historically, the University has long expressed a need for enhanced facilities at Seward. In the 1970s the University's plans for a marine science campus at Seward were far more substantial than the facility in place today. Now, with facility development led by the community-based SAAMS organization, the University of Alaska has been able to share in the planning for this new research complex and thereby hopefully will carry out the intentions shared by the university and community decades ago.

Thus this facility will serve as an incremental addition to the marine research infrastructure for the University of Alaska, supporting SFOS's significant focus on the injured marine mammal and bird resources of the Exxon Valdez oil spill area. This will benefit the University, the Center and the community, as well as the marine research field itself. The work conducted under this cooperation does have great potential for benefiting the injured resources.

The University of Alaska Fairbanks is very interested in playing a major role in developing this scientific program. We have discussed the possibility of faculty positions to be funded from private sources as an endowment through the University of Alaska Foundation. There are a number of ways in which such relationships could be handled. A need has been identified for an ecologist, a marine mammal specialist and a marine bird specialist. These faculty could be tenure-track faculty, recruited by the School of Fisheries and Ocean Sciences following regular University of Alaska procedures. Alternatively, they could hold

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research faculty positions. In either case, hiring and employment would be through the School of Fisheries and Ocean Sciences. Another option is the possibility for already-employed faculty to compete for the endowed funds. The details will need to be worked out. One of these scientists can serve as the chief scientist for the facility. Each of the positions will need technical support, and the present thinking is that each will have the equivalent of one technical staff position and two graduate research assistantships supported by the facility. Other scientists who successfully compete for EVOS funded projects would also be able to use the facility.

The involvement of UAF faculty in the research program will help assure quality, given the annual evaluation process, the promotion evaluation process and, in the case of tenure-track faculty, the additional tenure evaluation. The Board of Directors and their scientific review committee will ensure that all research is responsive to EVOS restoration mandates.

In accord with our strong interest in being involved in the scientific and education aspects of the new facility, we expect that UAF will hold a position on the Board of Directors of the non-profit entity that will own and operate the facility, i.e. the Seward Association for the Advancement of Marine Science, and also on the scientific review committee which will review research proposals to use the facility. We would be interested in a major role in the development of the scientific initiatives on a short and long-term basis.

For the community of Seward this project represents many significant changes. In the context of the fairly narrow community-University relationship, it takes on an new dimension with regard to the level and effectiveness of marine research, student training and public education within the region. All of this will focus on the injured resources of the Exxon Valdez oil spill area. This will be a major asset to Alaska as a whole. It will provide a facility within the state for the conduct of work which is a high priority and which must be done at a site close to the resources. The University of Alaska is committed to performing research which is of benefit to the state and the coastal communities, and the new Center in Seward will broaden our options and deepen that commitment.

Yours sincerely,

Vera Alexander
Dean

cc. J. Keating, Provost, UAF
D. M. Schell, Director, IMS

# United States Department of the Interior

NATIONAL BIOLOGICAL SURVEY
Washington, DC 20240

MEMORANDUM

AUG 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.

Sponsored by: Crane

CITY OF SEWARD, ALASKA
RESOLUTION NO. 94-173

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SEWARD, ALASKA, SUPPORTING THE INSTITUTE OF MARINE SCIENCE INFRASTRUCTURE IMPROVEMENT PROJECT

WHEREAS, on January 31, 1994, the Exxon Valdez Oil Spill Trustees Council (EVOSTC) approved financial support for the Institute of Marine Science (IMS) Infrastructure Improvement Project to provide a needed facility for long-term research and monitoring of the ecosystem affected by the Exxon Valdez oil spill with the goal of benefitting the long-term health and restoration of affected resources such as the common murres, harbor seals, harlequin ducks, marbled murrelets, pigeon guillemots, sea otters, intertidal and subtidal ecosystems, pink salmon, sockeye salmon and Pacific herring; and

WHEREAS, the EVOSTC financial support was contingent upon, among other requirements, consultation with the City of Seward to review the assumptions relating to the proposed improvements and capital and operating budgets; and

WHEREAS, the City of Seward has been an integral participant in the development of this project and its pledge of land as a site for the facility as well as past appropriations for the purpose of advancing this project; and

WHEREAS, previous City Councils have gone on record with expressions of strong support and commitment for this project; and

WHEREAS, this project will greatly improve marine research capabilities within Seward and throughout Alaska and the Nation, while providing a significant public educational opportunity, increased employment opportunities, additional payroll dollars to be spent in the Seward community, revenues to the City from utility service to the facility, and enhancement of very visible waterfront property;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SEWARD, ALASKA, that:

Section 1. The City Council hereby reaffirms its support of the Institute of Marine Science Required Infrastructure Improvements Project.

Section 2. The City Council further authorizes the Mayor to communicate the city's support of the project to the Exxon Valdez Oil Spill Trustees Council and others as may be appropriate and necessary to assist in assuring its funding and construction.

Section 3. This resolution shall take effect immediately upon its adoption.

CITY OF SEWARD, ALASKA
RESOLUTION NO. 94-173

**PASSED AND APPROVED** by the City Council of the city of Seward, Alaska, this 12th day of September, 1994.

**THE CITY OF SEWARD, ALASKA**

Dave W. Crane

**Dave W. Crane, Mayor**

AYES: Anderson, Bencardino, Crane, Darling, Krasnansky, O'Brien, Sieminski
NOES: None
ABSENT: None
ABSTAIN: None

**ATTEST:**

**APPROVED AS TO FORM:**

Wohlforth, Argetsinger, Johnson & Brecht, Attorneys for the city of Seward, Alaska

Patricia Jones for

Linda S. Murphy, CMC/AAE
City Clerk

City Attorney

(City Seal)

United States Department of the Interior

NATIONAL PARK SERVICE
Kenai Fjords National Park
P.O. Box 1727
Seward, Alaska 99664



IN REPLY REFER TO:

September 20, 1994

Mr. Jim Ayers
Executive Director
Exxon Valdez Oil Spill Trustee Council
645 G Street
Anchorage, AK 99501

Dear Mr. Ayers:

Kenai Fjords National Park supports the Institute of Marine Science Project, 94-199. Our resource management staff and researchers working on park projects will be able to utilize the research facilities and capabilities of the improved facility. Currently, we are lacking laboratory space and equipment to support the monitoring and research work needed to understand the complex ecological relationships shaping this coastal park. We also anticipate sharing resource data with IMS researchers, and hope to utilize IMS personnel to help us on projects in the park.

National Park-initiated studies frequently overlap our boundaries, and other agency initiated studies done along the coast frequently include park lands, waters immediately adjacent to the park and other park resources. The enhanced IMS will be the perfect vehicle to coordinate scientific research in the area, thus avoiding duplication of efforts and saving time and money. For example, we are in the process of building a PC-based geographic information system to help us manage the large data sets we anticipate collecting. Baseline data on resource themes will be the same for most projects, those conducted by the park and those conducted by the IMS or outside researchers. Sharing data on these common themes that have already been digitized will benefit all parties.

Likewise, the enabling legislation of Kenai Fjords National Park states,

> Kenai Fjords National Park shall be managed for the following purposes, among others: "To maintain unimpaired the scenic and environmental integrity of the Harding Icefield, its outflowing glaciers, and coastal fjords and islands in their natural state; and to protect seals, sea lions, other marine mammals, and marine and other birds and to maintain their hauling and breeding areas in their natural state, free of human activity which is disruptive to their natural processes." (ANILCA 1980)

To meet this mandate the park staff must rely on cooperation with agencies sharing jurisdiction over these resources. The task is complex and sometimes difficult. We believe the improved IMS facilities will increase the opportunity for co-management of the fjord ecosystem.

Kenai Fjords National Park is an integral part of the Seward/Kenai Peninsula Area. We enjoy good community relations and work diligently to cooperate with the State and other Federal Agencies operating in the area. The Institute of Marine Science, as proposed in project 94-199, will enhance our ability to preserve and protect the Kenai Fjords as mandated by Congress, and help to restore those resources impacted by the 1989 Oil Spill. We look forward to the completion of the infrastructure improvements at the Institute of Marine Science in Seward.

Sincerely,

Thomas J. Troutman

Thomas J. Troutman
Acting Superintendent
Kenai Fjords National Park

# SAAMS BOARD MEMBERS

## Board of Directors:

**Chairman - Willard E. Dunham**
Willard E. Dunham, retired manager of the Seward Job Services Office, Alaska Department of Labor. Mr. Dunham is active in various local civic activities and is currently serving as Vice-Chairman of the Seward Port & Commerce Advisory Board. He is a member of the Alaska State Chamber of Commerce, served as co-chairman of the Spring Creek Correctional Center Location Task Forces, is Chairman of the Seward Fish and Game Advisory Board and a member of the Kenai peninsula Borough Vocational Education Committee. Mr. Dunham if the owner of the Print Shop and Seward Secretarial Service and a Partner in DLK Enterprises, owners of commercial rental property.

**Vice Chairman - Karen Swartz**
Karen Swartz, retired Managing Editor of the Seward Phoenix Log and a former member of the Seward City Council, where she served for ten years. She was formerly the Director of the Mount Marathon outreach office, a member of the Alaska Presswomen Association and a member of the Seward Harbor Commission.

**Secretary - Carol Ann Lindsey**
Carol Ann Lindsey, secretary/treasurer of Harbor Enterprises. Harbor Enterprises is on of Alaska's largest companies by sales activity and earnings.

**Treasurer - Sharon E. Anderson**
Sharon Anderson, secretary/treasurer of Anderson Tug and Barge Company. Mrs. Anderson is active in may local and civic organizations and is a former member of the Seward Port & Commerce Board. She is currently a member of the Resource Development Council of Alaska, the director of the Defense Orientation Conference Association, and a life member of the Naby League.

## Board Members:

**William C. (Bill) Noll**
Vice President, Sea International, Inc.
Former Vice President, Major International, inc.
Former Deputy Commissioner, Alaska Department of Commerce, Office of International Trade
Former Vice President, Sunell Alaska Corporation
Former Mayor City of Seward

**Tyler Jones**
City Manager, City of Seward
Former Transportation 2 Projects Director, Anchorage Economic Development Corporation
Former Port Director, Port of Anchorage
Former Staff Assistance, US Senator Mike Gravel

**Jack Scoby**
Commercial Fisherman
Former Principal, Kenai Fjords Tours, inc.
Member, Seward Port & Commerce Advisory Board

**Darryl Schaefermeyer**
Project Administrator, Seward Association for the Advancement of Marine Science
Former City Manager, City of Seward
Former Staff Assistant, US Senator Ted Stevens
Former member, Kenai Peninsula Borough Assembly
Member, International City Managers Association
Member, Troop Committee, Troop 586, Boy Scouts of America
Founding member, Seward Rotary Club, Club President, 1986-87

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# Executive Summary

## Feasibility Study Findings — The Alaska SeaLife Center

This executive summary represents the findings, conclusions and recommendations of J. Donovan Associates, Inc. relative to a campaign feasibility study conducted by the firm, on behalf of the Seward Association of Marine Science (SAAMS), for the Alaska SeaLife Center Project. Specifically, the study examined the feasibility of :

1. A $10 million capital campaign goal to support the Visitorship/Education component of the Alaska SeaLife Center.

2. A $6 million endowment campaign goal to fund three university faculty research chairs at the facility.

## Methodology

The study was designed to elicit responses in three areas critical to a successful campaign:

1. **Public Awareness and Public Support** — The institutional image of the Alaska SeaLife Center as seen through the eyes of identified leaders of the giving community. Awareness of the need for a marine research, rehabilitation and education center in the State of Alaska, the project's appropriateness and its priority among respondents' charitable interests.



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2. **Strength of Leadership** — Fund-raising influence of the volunteer leadership of the Alaska SeaLife Center; personal willingness to work for a SeaLife Center campaign; and potential key leadership within the community.

3. **Feasible Goal and Campaign Timing** — test the $10 million capital goal and the $6 million endowment goal, alternative goals, lead gift sources, willingness to make personal and/or corporate contributions, realistic time-frame within which the goal might be achieved.

Fieldwork for the study was conducted during the weeks of July 18 and July 25, 1994 and included:

- Personal meetings or telephone conferences with local, state-wide and regional leaders and board members of the Alaska SeaLife Center. A total of 26 carefully selected individuals/corporations were interviewed during the course of the study.
- A survey of potential foundation funding sources.
- An analysis of direct-mail potential.
- A review of established on-going aquarium and research development programs throughout the United States.

## Findings

**Public Awareness and Public Support** — In one respect, the SeaLife Center is in an ideal position with regard to institutional image. As a new venture, the SeaLife Center is in an exciting stage of development. Groundbreaking projects such as the Center can inspire significant philanthropic interest if sufficiently promoted through public relations and leadership involvement. In addition, the

Center has no negative past history to overcome and the opportunity, with careful planning and single-minded purpose and effort, to create its image as it sees fit. Conversely, as a new institution, the Center must work aggressively to establish its credibility within the eyes of community, Alaskan and National leaders and to form relationships with potential donors as it positions itself as an institution worthy of significant philanthropic support.

**Strength of Leadership** — The Board of Directors of SAAMS was not developed with fund-raising in mind. Not surprisingly, therefore, interviewees generally rated the Board of Directors of SAAMS as weak in terms of its fund-raising ability. There are a few members of the board who could provide some leadership in the area of fund-raising. Nevertheless, augmenting the Board of Directors with additional leadership (either through new board appointments or the establishment of an appropriate advisory board) is essential if the Alaska SeaLife Center is to successfully undertake any fundraising activities of significance.

It is the opinion of counsel that sufficient leadership and public support will be created to advance the SeaLife Center's capital and endowment goals if SAAMS:

**Feasible Goal and Campaign Timing (Capital Campaign) —** Initially, counsel was asked to test a $10 million capital campaign goal to support only the visitation/education component of the proposed Alaska SeaLife Center. Certain difficulties are presented by limiting the fund-raising objective only to the visitation/education component of the Center. In the case of the Alaska SeaLife Center, foundations represent an important block of potential donors. Foundations are , however, more inclined to support research and wildlife

rehabilitation efforts than a capital project for visitorship and informal education.

Findings with regard to 1) indicated giving by interviewees, 2) direct-mail potential, and 3) foundation funding, suggests the following breakdown of funding potential.

| Source | Year | Objective | Potential |
|---|---|---|---|
| Foundation & Corporate Giving | (1994) For 15 Months | In support of research and rehabilitation | $ 5,000,000 |
| Individual Giving | (1996-2000) | In support of visitation (facilities) | $ 5,000,000 |
| | | **Total** | **$10,000,000** |

It is the opinion of Counsel that if SAAMS and the Alaska SeaLife Center identifies and recruits an appropriate campaign chairperson along with additional leaders to its cause, that it can meet its capital and endowment goals by the year 2006. During the course of the study, a number of interviewees with significant leadership potential did express interest in participating. The Sealife Center must recruit this leadership and build upon it.

## Recommendations

A $10 million goal to support the creation of the Sealife Center is realistic and achievable by the year 2000 if SAAMS:

- Can recruit a national recognized campaign chairperson is identified and recruited by January 1995.
- Initiates a $5 million campaign rooted in research and rehabilitation seeking support from Foundations/Corporations, and beginning on or about November 1994.
- Enlists the support and participation of the University of Alaska in the Center's development efforts.
- Establishes campaign momentum by securing a proportionate philanthropic commitment from the SAAMS board, Seward leaders and residents prior to approaching a broader donor audience.
- Hires a qualified Director of Development by January 1996.
- Initiates a $5 million campaign rooted in visitation/construction (i.e., support by membership) by April 1996.
- Undertakes an intensive leadership cultivation program to develop the institution's volunteer leader base on a local, state-wide, national and international level.
- Undertakes an intensive, multi-media public relations effort targeted at local, state-wide, regional and national audiences to explain the mission, goals and activities of the Sealife Center.
- Creates a comprehensive development program utilizing a wide range of giving programs to target specific donor audiences (e.g. supporting membership, national mail or phone mail program).
- Provides potential donors with tangible evidence of progress on the Center's building project (e.g., ground-breaking or construction).

- Makes a significant effort to address the questions and concerns articulated about the project by potential leaders and donors.

**Feasible goal and Campaign Timing (Endowed Chairs)** – Counsel also tested a $6 million campaign goal to endow three university faculty research chairs for the SeaLife Center ($2 million per chair). The majority of interviewees were supportive of the principle underlying the endowment and understood its importance to the SeaLife Center's long-term operation and service.

Counsel recommends that the SeaLife center take a serious, intensive, yet long-term approach to endowment development. In the opinion of J. Donovan Associates, this is the most realistic strategy available to SAAMS based on the competing interest of the SeaLife Center's capital campaign, the fact that foundations rarely support endowment efforts, and the present lack of donor prospects likely to make a $2 million commitment to fund a chair, outright. This is the usual approach toward endowment development taken by most well-established development programs. In this scenario, J. Donovan Associates believes that the following funding timeline is realistic and achievable:

| Objective | Year of Funding |
|---|---|
| First Research Chair | 2000 |
| Second Research Chair | 2003 |
| Third Research Chair | 2006 |

**Recommendations Regarding Endowed Chairs**

In the opinion of counsel, SAAMS and the SeaLife Center could realistically build a $6 million endowment for 3 chairs by the year 2006 if they undertake the following work:

- Begins an endowment effort by 1996
- Focuses the endowment effort through special appeals and a comprehensive planned giving program. The planned giving program would include a wills program and the use of traditional gift annuities. Planned giving vehicles can provide additional opportunities for donors to make more significant gifts than would otherwise be possible were they to commit to an "outright" gift of cash or securities.
- Dedicates all annual giving revenues (not including capital campaign dollars) to endowment development.

## In Conclusion

If SAAMS and the Alaska SeaLife Center implement the above outlined recommendations, a $10 million capital goal met by the year 2000 and a $6 million endowment goal completed by the year 2006 are realistic and achievable. Furthermore, J. Donovan Associates recommends that SAAMS and the Alaska SeaLife Center move ahead immediately to advance a capital campaign and endowment program.

# Update & Expansion of
# MARKET DEMAND ANALYSIS
## for the
# ALASKA SEALIFE CENTER

**AUGUST, 1994**

**Prepared by:**


## FOX PRACTICAL MARKETING & MANAGEMENT
4030 Galactica Drive
Anchorage, AK 99517
(907) 248-5345

# ACKNOWLEDGMENTS

Fox Practical Marketing and Management (FPMM) wishes to recognize the following individuals, organizations and publications for their invaluable assistance in the completion of this project:

Alaska Railroad
Alaska Sightseeing/Cruise West executives
Alaska State Dept. of Transportation/Public Facilities
Alaska State Division of Tourism
Alaska Tourism Marketing Council
Anchorage Indicators, 1993
Anchorage Convention & Visitors Bureau
Cruise Line Industry Association (CLIA)
Cunard Cruise Line executives
Dittman Research
Holland America Line/Westours executives
National Park Service
Institute for Social and Economic Research
Ogden Beeman Port Consultants
Princess Cruises and Tours executives
Regency Cruise Lines executives
Royal Cruise Lines executives
Seward Assoc. for the Advancement of Marine Science board & staff
City of Seward
Southeast Stevedoring
City of Whittier
Whittier Redevelopment and Urban Design Plan
World Explorer Cruises executives

In addition, FPMM appreciates the assistance of many individuals in the Alaska travel industry, too numerous to name, for their generous contributions of information and perspective.

UPDATE AND EXPANSION OF

# MARKET DEMAND ANALYSIS
## FOR THE ALASKA SEALIFE CENTER

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# EXECUTIVE SUMMARY

## UPDATE & EXPANSION OF MARKET DEMAND ANALYSIS for the ALASKA SEALIFE CENTER

**AUGUST, 1994**

**PREPARED BY:**

**FOX PRACTICAL MARKETING & MANAGEMENT**
4030 Galactica Drive
Anchorage, AK 99517
(907) 248-5345

# 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** |

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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.

# CONDITIONS AND LIMITATIONS OF THIS REPORT:

The conclusions of this study have been generated from currently available published data, consultations with Alaska travel industry representatives and assumptions developed by Fox Practical Marketing & Management (FPMM). Many assumptions are based on FPMM independent research and general knowledge of the travel industry market as it exists today.

Every reasonable effort has been made within the scope of work defining this project and within time and budget limitations to compile the most timely and accurate information possible. While this data is considered to be reliable, none of the estimates or projections provided in this report are guaranteed by Fox Practical Marketing and Management.

# ASSIGNMENT & METHODOLOGY

## ASSIGNMENT:

The Seward Association for the Advancement of Marine Science selected Fox Practical Marketing and Management (FPMM) as the firm most qualified to update and expand its original analysis for the Alaska SeaLife Center.

The work assigned was to update and expand the Resident and Non-Resident Demand Study prepared for the Seward Association for the Advancement of Marine Science in July, 1993. FPMM was asked to look at new developments in the industry and report on how those changes would impact market demand for the Alaska SeaLife Center.

With its assumptions and limitations, the 1993 report provides the foundation for this report. In this report, we outline new conditions as assumptions where needed.

## METHODOLOGY:

To meet its contractual obligations, FPMM performed the following actions:

- gathered market data and updated market analysis.
- interviewed key tourism officials, particularly those from leading cruise lines.
- developed visitor projections based on all data gathered and analyzed.
- developed this report.

# Alaska SeaLife Center
# Feasibility Study Evaluation

## Undertaken for the
## Alaska Industrial Finance and Export Authority

D

**September 23, 1993**

**Public Financial Management, Inc.**
**1000 SW Broadway, Suite 1500**
**Portland, Oregon 97205-3067**

b

# Alaska SeaLife Center
# PFM Feasibility Study Evaluation

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## I. Executive Summary

The Alaska SeaLife Center (ASLC) is a complex project entailing the skillful integration of sophisticated management, marketing, scientific, construction, and fundraising expertise. To successfully bring this project to fruition the Seward Association for the Advancement of Marine Science (SAAMS) will have to marshal significant resources in all of these areas. In this review of the SeaLife Center Feasibility Study undertaken by Thomas J. Martin and the Market Demand Study by Fox Practical Marketing and Management, PFM evaluates only the very preliminary market, financial, and fundraising data provided by SAAMS to AIDEA.

Overall, the SeaLife Center appears to be a project which can succeed under reasonable projected economic and market scenarios. The assumptions and projections presented by Fox and Martin are, with the exceptions noted in this report, valid. Taken as a whole, the projections of the financial performance the of project indicate the SeaLife Center can be successful if constructed and managed as envisioned. It cannot be stressed enough, however, that the success of the project relies very heavily upon the assumption that the SeaLife Center will be a very high quality, "must-see" attraction. It must be recognized there are scenarios in which the ASLC does not work. One such scenario in which the Center will not be successful is if resources are short, corners are cut and the project is scaled back. Competition for tourist dollars--and especially time--is fierce in the Alaska market. The SeaLife Center must have the advantage of a strong reputation as a quality attraction if it is to be assured success in this market.

From the preliminary information available, PFM has identified three areas of concern which SAAMS must address before unqualified support can be given to the project:

1. The project is likely to be more expensive than originally planned by the sponsors. Construction costs have been estimated by Cambridge Seven based upon a preliminary design. The current working estimate for total costs is $46.3 million. This construction estimate underestimates the additional cost of construction in Seward over Anchorage and the potential for more overtime labor costs. Given the greater costs and uncertainties of working in Seward, a 20% contingency would be prudent. PFM estimates that a conservative projection of total construction costs may be as high as $55.6 million.

   The architectural and engineering plans developed for the SeaLife Center are preliminary and incomplete. Before a real cost of the proposed project can be assigned, and the quality of the project can be assured, detailed A & E plans must be developed to the extent that a detailed construction estimate is possible. PFM recommends that AIDEA require development of these plans and make a determination that the project is of the high quality necessary for it to be successful.

2. A full professional fundraising plan has not yet been developed for the SeaLife Center. The fundraising plan submitted by SAAMS is preliminary and does not address the feasibility of securing the resources necessary to make the project a true world class attraction. PFM recommends AIDEA require a professional fundraising study be undertaken and review the plan's assessment of the potential for raising the necessary funds before authorizing full funding for the ASLC.

3. While the above tasks are being undertaken, PFM recommends that SAAMS monitor the results of the upcoming Alaska State Visitor Program Survey due out sometime next year. Many of the market projections made by Dale Fox in his market survey are based upon 1989 ASVP data which may be outdated. While PFM has no reason to doubt the overall validity of Fox's data or conclusions, it would be wise to double check these conclusions with updated survey data when it becomes available.

With the procurement of the above additional information and the comfort it will provide, AIDEA can be confident that the SeaLife Center will have the greatest possible chance of success. If constructed as envisioned, the ASLC has the potential to become a widely recognized leader in the field of sea life research and rescue, as well as an economic asset to the City of Seward and the entire State of Alaska.

OFFICE OF THOMAS J. MARTIN
Economic Research and Management Consultants
Suite 200 North, 124 Mount Auburn Street, Cambridge, Massachusetts 02138

# *FEASIBILITY STUDY FOR THE ALASKA SEALIFE CENTER*

**Prepared for:**
**SEWARD ASSOCIATION FOR THE ADVANCEMENT OF MARINE SCIENCE**

**Prepared by:**
**THE OFFICE OF THOMAS J. MARTIN**
**Economic Research and Management Consultants**

**August 1993**

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# GENERAL LIMITING CONDITIONS

Every reasonable effort has been made in order that the data contained in this study reflect the most accurate and timely information possible, and it is believed to be reliable. This study is based on estimates, assumptions, and other information developed by The Office of Thomas J. Martin from its independent research effort, general knowledge of the industry, and consultations with representatives of the client. No responsibility is assumed for inaccuracies in reporting by the client, its agents and representatives, or any other data source used in preparing this study. No warranty or representation is made by The Office of Thomas J. Martin that any of the projected values or results contained in this study will actually be achieved.

Possession of this report does not carry with it the right of publication. This report will be presented to third parties in its entirety and no abstracting of the report will be made without first obtaining permission of The Office of Thomas J. Martin.

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This study is qualified in its entirety by, and should be considered in light of, these limitations and considerations.

Section I

# INTRODUCTION AND EXECUTIVE SUMMARY

## *THE STUDY*

This study evaluates the feasibility of the Alaska Sea Life Center proposed to be developed in Seward, Alaska. The study was commissioned by the Seward Association for the Advancement of Marine Science (SAAMS) to test the feasibility of the proposed project. A companion study was commissioned by SAAMS to evaluate the market demand for the project. That study, prepared by Fox Practical Marketing and Management, is included in its entirety as an appendix to this report. This feasibility study is solely the work of the Office of Thomas J. Martin. Cambridge Seven Associates and International Design for the Environment Associates, Inc. (IDEA) provided input to this study regarding our understanding of the concept development and physical plan and operating costs. The work of Cambridge Seven Associates had been substantially completed before the feasibility study was undertaken, and is presented in a report published in 1992. For a description of the objectives and proposed organizational structure of the project we relied on descriptions in the preliminary business plan for the project and discussions with SAAMS.

## *THE PROJECT*

The Alaska Sea Life Center has been developed over the last several years by the Seward Association for the Advancement of Marine Science (SAAMS). The City of Seward donated 10.5 acres of waterfront property for use of the Center, and a preliminary project concept was prepared by Cambridge Seven Associates. When the project is completed, a Board of Directors will oversee the operation of the Center. SAAMS will retain a single seat on the Board, which will consist of business leaders, local, state and federal officials, and University scientists.

The proposed Alaska Sea Life Center, as illustrated in the conceptual plan study, will be a unique facility in that it is conceived as a project that will be a marine mammal rehabilitation center, research facility, and a public attraction. Because of the unique profile, the facility will have drawing power similar to the larger aquariums, but will have operating profiles similar to

a smaller project. The project will have tanks with an estimated 2 million gallons, which makes it a large facility in the current aquarium world, but the public attraction component will be 84,800 square feet of indoor (55,840 sq.ft.) and outdoor (29,000 sq.ft.) space, or just over half of the indoor and outdoor space of the total project. Because the research and rehabilitation aspects of the project will be visible to the public, the actual nature of the visitor experience will be enhanced. This is a true research center, as opposed to virtually all current aquariums which have grafted small research programs onto their public attraction programs. The allocation of the facility space program is approximately 60 percent for the public attraction, and 40 percent for research and rehabilitation.

## *MARKET ACCEPTANCE OF AQUARIUMS*

During the last two decades, aquariums have shown that they have significant market appeal. Aquariums have high market penetration rates for both residents and visitors, and are often the leading attraction in their respective markets. They are broad-based attractions that respond to a wide range of markets, from young children to mature adults and senior citizens. The project outlined in the preliminary conceptual report will result in the development of a major attraction for both Seward and the State of Alaska. The development team for the Alaska Sea Life Center has successfully developed a series of aquariums over the last 25 years, including the New England Aquarium; National Aquarium; Tennessee Aquarium; and the Ring of Fire Aquarium in Osaka, all of which have been enthusiastically accepted by the general public. Given its environmental theme, the Alaska Sea Life Aquarium will become a "must-see" attraction for both visitors and residents.

## *COMPARABLE PROJECTS*

The attendance at aquariums is dependent on a range of factors including the size and quality of exhibitry, location and accessibility, market size, tourist population, competition for leisure time and dollars and the pricing of the aquarium. The experience of the comparable aquariums suggests that the makeup of attendance at an aquarium can vary widely from heavily tourist oriented to largely resident. The newest generation of aquariums have been for the most part well accepted in their marketplaces - even when these are smaller markets. The most recent

example of this is the Oregon Coast Aquarium, located in a small coastal tourist community which had 841,000 visitors in its first year of operation.

Our findings indicate that, for the most part, earned revenue and aquarium operating expenses are typically similar in magnitude, and that excess revenue often subsidizes research and education programs or is used to support capital improvements. Most aquariums have shown an ability to adapt their operating and capital programs to the size of their audience and their financial circumstances, while continuing to be a significant community resource.

## *CURRENT ATTRACTIONS*

Because of the nature of tourism in Alaska, the major current man-made visitor attractions tend to receive high penetration rates of visitors, as compared with many attractions in the lower 48 states. Portage Glacier, which is located on the road halfway between Anchorage and Seward, and is the biggest attraction in the state, had a visitation of 660,000 in 1992. The visitor center recorded 400,000 visitors and had an estimated 65 percent market penetration of the south central visitor market. The Kenai Peninsula is the top destination area for visitors to south central Alaska after the Anchorage area.

## *PROJECTED MARKET SUPPORT*

The market support study for the project was independently developed by Fox Practical Marketing and Management of Anchorage, and is included herewith as Appendix A to this report. This study concludes that the Center could attract 264,200 visitors in its first year of operation, rising to 301,500 in its fifth year of operation. The composition of these visitors is estimated to be made up of the many market segments evaluated including Alaska residents and visitors to Alaska. These numbers are used in the feasibility analysis in this report. The financial projections in this report also rely on the market segments and support from each market segment, as outlined in the Market Demand Study.

## *FACILITY SIZING*

Based on the evaluation of expected visitation to the Alaska Sea Life Center, the project will require approximately 70,500 square feet of space to support the visitor program. The currently allocated space for the visitor component of the project is 84,840 square feet made up of interior (55,840 square feet) and exterior (29,000 square feet) of space. The Alaska Sea Life Center is scaled to the projected visitor load with some room to spare. This is appropriate, given the intense peaking characteristics of visitation, as well as the potential need to handle large numbers of visitors in tour groups.

## *OPERATIONAL ANALYSIS*

Based on the evaluation in this report, the Alaska Sea Life Center in its first full year of operations will have an income of $4.1 million, and operating cost of $3.8 million, with excess income of $.3 million.

## *ALTERNATIVE SCENARIOS*

To test the sensitivity of the assumptions used in the feasibility study, a number of alternative scenarios were developed, including:

Alternative 1. Break-even Attendance Level
Alternative 2. Lower Attendance Level
Alternative 3. No Income from Rehabilitation or Research Activities
Alternative 4. Higher Operating Costs
Alternative 5. Higher Attendance Levels
Alternative 6. Lower Per Capita Retail Sales

These scenarios suggest that the project should be able to adjust to contingencies such as lower attendance, higher operating costs, or lower revenues from various program elements within relative range of contingencies.

## *PROJECT FEASIBILITY*

Based on the analysis in this report, the project is capable of covering its operating costs and generating a small operating surplus.

# SAAMS
# IMS Infrastructure Improvements
# Alaska Sealife Center
# Seward, Alaska

## Schematic Cost Estimate

**September 1, 1994**


ESTIMATIONS Inc
1205 E. Int'l. Airport Rd., #207 Anchorage, Alaska 99518


**Prepared for:**

**Livingston Slone, Architects**
3900 Arctic Boulevard, Suite 301
Anchorage, Alaska
(907) 562-2058

Summary

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**TOTAL PROJECT SUMMARY - BY ELEMENTS**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** **SEPTEMBER 1, 1994**

| SUMMARY | | | TOTAL COST | |
|---|---|---|---|---|
| 1 | MAIN BUILDING | | $15,528,316 | 1 |
| 1A | MAIN CONSTRUCTION | $14,778,279 | | 1A |
| 1B | EDUCATION EXIBITRY | $750,038 | | 1B |
| 2 | HABITAT | | $9,221,215 | 2 |
| 2A | HABITAT CONSTRUCTION | $3,193,853 | | 2A |
| 2B | HABITAT SPECIAL CONSTRUCTION | $6,027,362 | | 2B |
| 3 | LIFE SUPPORT | | $4,283,136 | 3 |
| 4 | SITE DEVELOPMENT | | $2,739,485 | 4 |
| 4A | SITE DEVELOPMENT, CIVIL | $1,897,969 | | 4A |
| 4B | SITE DEVELOPMENT, MARINE | $841,516 | | 4B |
| 5 | F F & E | | $2,868,912 | 5 |
| **TOTAL ESTIMATED COST** | | | **$34,641,064** | << |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**BUILDING CONSTRUCTION**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** **SEPTEMBER 1, 1994**

| **SUMMARY (LEVEL 1)** | | | **TOTAL COST** | |
|---|---|---|---|---|
| 01 | SITEWORK | | | 01 |
| 02 | SUBSTRUCTURE | | $864,032 | 02 |
| 03 | SUPERSTRUCTURE | | $1,922,232 | 03 |
| 04 | EXTERIOR CLOSURE | | $707,318 | 04 |
| 05 | ROOF SYSTEM | | $662,488 | 05 |
| 06 | INTERIOR CONSTRUCTION | | $1,624,537 | 06 |
| 07 | CONVEYING SYSTEM | | $425,917 | 07 |
| 08 | MECHANICAL | | $2,719,677 | 08 |
| 09 | ELECTRICAL | | $1,532,076 | 09 |
| 10 | EQUIPMENT | | $28,135 | 10 |
| 11 | SPECIAL CONSTRUCTION | | | 11 |
| 12 | GENERAL REQUIREMENTS | | $2,827,317 | 12 |
| 13 | CONTINGENCIES | | $1,464,549 | 13 |
| **TOTAL ESTIMATED COST** | | | **$14,778,279** | << |
| COST PER SQUARE FOOT | | $198.78 /SF | | |
| GROSS FLOOR AREA | | 74,345 GSF | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**BUILDING CONSTRUCTION**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** **SEPTEMBER 1, 1994**

| | SUMMARY (LEVEL 2) | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF FLOOR AREA |
|---|---|---|---|---|---|---|---|
| 01 | SITEWORK | | | | | | |
| | 011 | Site Preparation | | | | | |
| | 012 | Site Improvements | | | | | |
| | 013 | Site Utilities | | | | | |
| 02 | SUBSTRUCTURE | | | | | $864,032 | $11.62 |
| | 021 | Standard Foundation | $34,252 | $29,944 | $64,196 | | |
| | 022 | Slab on Grade | $84,443 | $67,093 | $151,536 | | |
| | 023 | Basement | $162,785 | $177,677 | $340,462 | | |
| | 024 | Special Foundations | $210,127 | $97,711 | $307,838 | | |
| 03 | SUPERSTRUCTURE | | | | | $1,922,232 | $25.86 |
| | 031 | Floor Construction | $623,033 | $577,906 | $1,200,939 | | |
| | 032 | Roof Construction | $465,914 | $224,850 | $690,764 | | |
| | 033 | Stairs | $23,968 | $6,561 | $30,529 | | |
| 04 | EXTERIOR CLOSURE | | | | | $707,318 | $9.51 |
| | 041 | Exterior Walls | $249,306 | $304,592 | $553,898 | | |
| | 042 | Exterior Doors & Windows | $129,500 | $23,920 | $153,420 | | |
| 05 | ROOF SYSTEM | | | | | $662,488 | $8.91 |
| | 051 | Roofing | $305,997 | $134,664 | $440,662 | | |
| | 052 | Skylights | $181,045 | $40,781 | $221,826 | | |
| 06 | INTERIOR CONSTRUCTION | | | | | $1,624,537 | $21.85 |
| | 061 | Partitions & Doors | $262,886 | $376,389 | $639,275 | | |
| | 062 | Interior Finishes | $351,216 | $391,869 | $743,085 | | |
| | 063 | Specialties | $200,445 | $41,732 | $242,177 | | |
| 07 | CONVEYING SYSTEM | | $347,581 | $78,336 | $425,917 | $425,917 | $5.73 |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**BUILDING CONSTRUCTION**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** **SEPTEMBER 1, 1994**

| SUMMARY (LEVEL 2) | | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF FLOOR AREA |
|---|---|---|---|---|---|---|---|
| 08 | MECHANICAL | | | | | $2,719,677 | $36.58 |
| | 081 | Plumbing | $165,061 | $121,622 | $286,682 | | |
| | 082 | HVAC | $1,309,727 | $526,472 | $1,836,199 | | |
| | 083 | Fire Protection | $109,830 | $102,076 | $211,905 | | |
| | 084 | Special Mechanical Systems | $64,359 | $320,532 | $384,891 | | |
| 09 | ELECTRICAL | | | | | $1,532,076 | $20.61 |
| | 091 | Service & Distribution | $230,846 | $57,640 | $288,486 | | |
| | 092 | Lighting & Power | $330,746 | $153,119 | $483,865 | | |
| | 093 | Special Electrical Systems | $294,201 | $104,551 | $398,751 | | |
| | 094 | Site Electrical | $40,442 | $320,532 | $360,974 | | |
| 10 | EQUIPMENT | | | | | $28,135 | $0.38 |
| | 101 | Fixed & Movable Equipment | $18,000 | $10,135 | $28,135 | | |
| | 102 | Furnishings | | | | | |
| 11 | SPECIAL CONSTRUCTION | | | | | | |
| SUBTOTAL | | | $6,195,708 | $4,290,704 | | $10,486,412 | $141.05 |
| 12 | GENERAL REQUIREMENTS | | | | | $2,827,317 | $38.03 |
| | 121 | Mobilization | $162,958 | $26,491 | $189,449 | | |
| | 122 | Operation Costs | $977,201 | $861,843 | $1,839,044 | | |
| | 123 | Profit | $798,824 | | $798,824 | | |
| 13 | CONTINGENCIES | | | | | $1,464,549 | $19.70 |
| | 131 | Estimator | | | $932,000 | | |
| | 132 | Escalation | | | $532,549 | | |
| **TOTAL ESTIMATED COST** | | | | | | $14,778,279 | $198.78 |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**EDUCATION EXHIBITRY**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** **SEPTEMBER 1, 1994**

| **SUMMARY (LEVEL 1)** | | | **TOTAL COST** | |
|---|---|---|---|---|
| 01 | SITEWORK | | | 01 |
| 02 | SUBSTRUCTURE | | | 02 |
| 03 | SUPERSTRUCTURE | | | 03 |
| 04 | EXTERIOR CLOSURE | | | 04 |
| 05 | ROOF SYSTEM | | | 05 |
| 06 | INTERIOR CONSTRUCTION | | | 06 |
| 07 | CONVEYING SYSTEM | | | 07 |
| 08 | MECHANICAL | | | 08 |
| 09 | ELECTRICAL | | | 09 |
| 10 | EQUIPMENT | | | 10 |
| 11 | SPECIAL CONSTRUCTION | | $630,375 | 11 |
| 12 | GENERAL REQUIREMENTS | | $25,215 | 12 |
| 13 | CONTINGENCIES | | $94,448 | 13 |
| **TOTAL ESTIMATED COST** | | | **$750,038** | << |
| COST PER SQUARE FOOT | | $35.78 /SF | | |
| GROSS AREA | | 20,960 GSF | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**EDUCATION EXHIBITRY**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** **SEPTEMBER 1, 1994**

| SUMMARY (LEVEL 2) | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF AREA |
|---|---|---|---|---|---|---|
| 01 | SITEWORK | | | | | |
| | 011 Site Preparation | | | | | |
| | 012 Site Improvements | | | | | |
| | 013 Site Utilities | | | | | |
| 02 | SUBSTRUCTURE | | | | | |
| | 021 Standard Foundation | | | | | |
| | 022 Slab on Grade | | | | | |
| | 023 Basement | | | | | |
| | 024 Special Foundations | | | | | |
| 03 | SUPERSTRUCTURE | | | | | |
| | 031 Floor Construction | | | | | |
| | 032 Roof Construction | | | | | |
| | 033 Stairs | | | | | |
| 04 | EXTERIOR CLOSURE | | | | | |
| | 041 Exterior Walls | | | | | |
| | 042 Exterior Doors & Windows | | | | | |
| 05 | ROOF SYSTEM | | | | | |
| | 051 Roofing | | | | | |
| | [1] 052 Skylights | | | | | |
| 06 | INTERIOR CONSTRUCTION | | | | | |
| | 061 Partitions & Doors | | | | | |
| | 062 Interior Finishes | | | | | |
| | 063 Specialties | | | | | |
| 07 | CONVEYING SYSTEM | | | | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**EDUCATION EXHIBITRY**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** **SEPTEMBER 1, 1994**

| SUMMARY (LEVEL 2) | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF AREA |
|---|---|---|---|---|---|---|
| 08 | MECHANICAL | | | | | |
| 081 | Plumbing | | | | | |
| 082 | HVAC | | | | | |
| 083 | Fire Protection | | | | | |
| 084 | Special Mechanical Syste | | | | | |
| 09 | ELECTRICAL | | | | | |
| 091 | Service & Distribution | | | | | |
| 092 | Lighting & Power | | | | | |
| 093 | Special Electrical Systems | | | | | |
| 094 | Site Electrical | | | | | |
| 10 | EQUIPMENT | | | | | |
| 101 | Fixed & Movable Equip | | | | | |
| 102 | Furnishings | | | | | |
| 11 | SPECIAL CONSTRUCTION | $630,375 | | $630,375 | $630,375 | $30.08 |
| SUBTOTAL | | $630,375 | | $630,375 | $630,375 | $30.08 |
| 12 | GENERAL REQUIREMENTS | | | | $25,215 | $1.20 |
| 121 | Mobilization | | | | | |
| 122 | Operation Costs | | | | | |
| 123 | Profit | $25,215 | | $25,215 | | |
| 13 | CONTINGENCIES | | | | $94,448 | $4.51 |
| 131 | Estimator | | | $65,600 | | |
| 132 | Escalation | | | $28,848 | | |
| **TOTAL ESTIMATED COST** | | | | | $750,038 | $35.78 |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER HABITAT CONSTRUCTION**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.**

**SCHEMATIC ESTIMATE**

**SEPTEMBER 1, 1994**

| **SUMMARY (LEVEL 1)** | | | **TOTAL COST** | |
|---|---|---|---|---|
| 01 | SITEWORK | | | 01 |
| 02 | SUBSTRUCTURE | | $1,838,080 | 02 |
| 03 | SUPERSTRUCTURE | | | 03 |
| 04 | EXTERIOR CLOSURE | | | 04 |
| 05 | ROOF SYSTEM | | | 05 |
| 06 | INTERIOR CONSTRUCTION | | $20,187 | 06 |
| 07 | CONVEYING SYSTEM | | | 07 |
| 08 | MECHANICAL | | $51,215 | 08 |
| 09 | ELECTRICAL | | $100,364 | 09 |
| 10 | EQUIPMENT | | | 10 |
| 11 | SPECIAL CONSTRUCTION | | $160,432 | 11 |
| 12 | GENERAL REQUIREMENTS | | $621,534 | 12 |
| 13 | CONTINGENCIES | | $402,040 | 13 |
| **TOTAL ESTIMATED COST** | | | **$3,193,853** | << |
| COST PER SQUARE FOOT | | $152.38 /SF | | |
| GROSS AREA | | 20,960 GSF | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER HABITAT CONSTRUCTION**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.**

**SCHEMATIC ESTIMATE**

**SEPTEMBER 1, 1994**

| | SUMMARY (LEVEL 2) | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF AREA |
|---|---|---|---|---|---|---|---|
| 01 | SITEWORK | | | | | | |
| | 011 | Site Preparation | | | | | |
| | 012 | Site Improvements | | | | | |
| | 013 | Site Utilities | | | | | |
| 02 | SUBSTRUCTURE | | | | | $1,838,080 | $87.69 |
| | 021 | Standard Foundation | | | | | |
| | 022 | Slab on Grade | | | | | |
| | 023 | Basement | | | | | |
| | 024 | Special Foundations | $1,024,530 | $813,550 | $1,838,080 | | |
| 03 | SUPERSTRUCTURE | | | | | | |
| | 031 | Floor Construction | | | | | |
| | 032 | Roof Construction | | | | | |
| | 033 | Stairs | | | | | |
| 04 | EXTERIOR CLOSURE | | | | | | |
| | 041 | Exterior Walls | | | | | |
| | 042 | Exterior Doors & Windows | | | | | |
| 05 | ROOF SYSTEM | | | | | | |
| | 051 | Roofing | | | | | |
| | 052 | Skylights | | | | | |
| 06 | INTERIOR CONSTRUCTION | | | | | $20,187 | $0.96 |
| | 061 | Partitions & Doors | | | | | |
| | 062 | Interior Finishes | $6,619 | $13,568 | $20,187 | | |
| | 063 | Specialties | | | | | |
| 07 | CONVEYING SYSTEM | | | | | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER HABITAT CONSTRUCTION**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.**

**SCHEMATIC ESTIMATE**

**SEPTEMBER 1, 1994**

| SUMMARY (LEVEL 2) | | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF AREA |
|---|---|---|---|---|---|---|---|
| 08 | MECHANICAL | | | | | $51,215 | $2.44 |
| | 081 | Plumbing | $6,210 | $10,880 | $17,090 | | |
| | 082 | HVAC | $24,950 | $9,175 | $34,125 | | |
| | 083 | Fire Protection | | | | | |
| | 084 | Special Mechanical Syste | | | | | |
| 09 | ELECTRICAL | | | | | $100,364 | $4.79 |
| | 091 | Service & Distribution | | | | | |
| | 092 | Lighting & Power | $19,205 | $11,876 | $31,081 | | |
| | 093 | Special Electrical Systems | $56,552 | $12,731 | $69,283 | | |
| | 094 | Site Electrical | | | | | |
| 10 | EQUIPMENT | | | | | | |
| | 101 | Fixed & Movable Equip | | | | | |
| | 102 | Furnishings | | | | | |
| 11 | SPECIAL CONSTRUCTION | | $150,971 | $9,461 | $160,432 | $160,432 | $7.65 |
| SUBTOTAL | | | $1,289,038 | $881,240 | $2,170,278 | $2,170,278 | $103.54 |
| 12 | GENERAL REQUIREMENTS | | | | | $621,534 | $29.65 |
| | 121 | Mobilization | $29,332 | $6,413 | $35,745 | | |
| | 122 | Operation Costs | $303,778 | $28,210 | $331,988 | | |
| | 123 | Profit | $253,801 | | $253,801 | | |
| 13 | CONTINGENCIES | | | | | $402,040 | $19.18 |
| | 131 | Estimator | | | $279,200 | | |
| | 132 | Escalation | | | $122,840 | | |
| **TOTAL ESTIMATED COST** | | | | | | $3,193,853 | $152.38 |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**HABITAT SPECIAL CONSTRUCTION**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** **SEPTEMBER 1, 1994**

| **SUMMARY (LEVEL 1)** | | | **TOTAL COST** | |
|---|---|---|---|---|
| 01 | SITEWORK | | | 01 |
| 02 | SUBSTRUCTURE | | | 02 |
| 03 | SUPERSTRUCTURE | | | 03 |
| 04 | EXTERIOR CLOSURE | | | 04 |
| 05 | ROOF SYSTEM | | | 05 |
| 06 | INTERIOR CONSTRUCTION | | | 06 |
| 07 | CONVEYING SYSTEM | | | 07 |
| 08 | MECHANICAL | | | 08 |
| 09 | ELECTRICAL | | | 09 |
| 10 | EQUIPMENT | | | 10 |
| 11 | SPECIAL CONSTRUCTION | | $5,066,000 | 11 |
| 12 | GENERAL REQUIREMENTS | | $202,640 | 12 |
| 13 | CONTINGENCIES | | $758,722 | 13 |
| **TOTAL ESTIMATED COST** | | | **$6,027,362** | << |
| COST PER SQUARE FOOT | | $221.15 /SF | | |
| GROSS AREA | | 27,255 GSF | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**HABITAT SPECIAL CONSTRUCTION**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** **SEPTEMBER 1, 1994**

| SUMMARY (LEVEL 2) | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF AREA |
|---|---|---|---|---|---|---|
| 01 | SITEWORK | | | | | |
| | 011 Site Preparation | | | | | |
| | 012 Site Improvements | | | | | |
| | 013 Site Utilities | | | | | |
| 02 | SUBSTRUCTURE | | | | | |
| | 021 Standard Foundation | | | | | |
| | 022 Slab on Grade | | | | | |
| | 023 Basement | | | | | |
| | 024 Special Foundations | | | | | |
| 03 | SUPERSTRUCTURE | | | | | |
| | 031 Floor Construction | | | | | |
| | 032 Roof Construction | | | | | |
| | 033 Stairs | | | | | |
| 04 | EXTERIOR CLOSURE | | | | | |
| | 041 Exterior Walls | | | | | |
| | 042 Exterior Doors & Windows | | | | | |
| 05 | ROOF SYSTEM | | | | | |
| | 051 Roofing | | | | | |
| | 052 Skylights | | | | | |
| 06 | INTERIOR CONSTRUCTION | | | | | |
| | 061 Partitions & Doors | | | | | |
| | 062 Interior Finishes | | | | | |
| | 063 Specialties | | | | | |
| 07 | CONVEYING SYSTEM | | | | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**HABITAT SPECIAL CONSTRUCTION**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** **SEPTEMBER 1, 1994**

| SUMMARY (LEVEL 2) | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF AREA |
|---|---|---|---|---|---|---|
| 08 | MECHANICAL | | | | | |
| 081 | Plumbing | | | | | |
| 082 | HVAC | | | | | |
| 083 | Fire Protection | | | | | |
| 084 | Special Mechanical Syste | | | | | |
| 09 | ELECTRICAL | | | | | |
| 091 | Service & Distribution | | | | | |
| 092 | Lighting & Power | | | | | |
| 093 | Special Electrical Systems | | | | | |
| 094 | Site Electrical | | | | | |
| 10 | EQUIPMENT | | | | | |
| 101 | Fixed & Movable Equipme | | | | | |
| 102 | Furnishings | | | | | |
| 11 | SPECIAL CONSTRUCTION | $5,066,000 | | $5,066,000 | $5,066,000 | $185.87 |
| SUBTOTAL | | $5,066,000 | | $5,066,000 | $5,066,000 | $185.87 |
| 12 | GENERAL REQUIREMENTS | | | | $202,640 | $7.43 |
| 121 | Mobilization | | | | | |
| 122 | Operation Costs | | | | | |
| 123 | Profit | $202,640 | | $202,640 | | |
| 13 | CONTINGENCIES | | | | $758,722 | $27.84 |
| 131 | Estimator | | | $526,900 | | |
| 132 | Escalation | | | $231,822 | | |
| **TOTAL ESTIMATED COST** | | | | | $6,027,362 | $221.15 |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**LIFE SUPPORT**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** SEPTEMBER 1, 1994

| **SUMMARY (LEVEL 1)** | | | **TOTAL COST** | |
|---|---|---|---|---|
| 01 | SITEWORK | | | 01 |
| 02 | SUBSTRUCTURE | | | 02 |
| 03 | SUPERSTRUCTURE | | | 03 |
| 04 | EXTERIOR CLOSURE | | | 04 |
| 05 | ROOF SYSTEM | | | 05 |
| 06 | INTERIOR CONSTRUCTION | | | 06 |
| 07 | CONVEYING SYSTEM | | | 07 |
| 08 | MECHANICAL | | | 08 |
| 09 | ELECTRICAL | | | 09 |
| 10 | EQUIPMENT | | | 10 |
| 11 | SPECIAL CONSTRUCTION | | $3,600,000 | 11 |
| 12 | GENERAL REQUIREMENTS | | $144,000 | 12 |
| 13 | CONTINGENCIES | | $539,136 | 13 |
| **TOTAL ESTIMATED COST** | | | **$4,283,136** | << |
| COST PER SQUARE FOOT | | $49.24 /SF | | |
| GROSS AREA | | 86,990 GSF | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**LIFE SUPPORT**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** SEPTEMBER 1, 1994

| | SUMMARY (LEVEL 2) | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF AREA |
|---|---|---|---|---|---|---|---|
| 01 | SITEWORK | | | | | | |
| | 011 | Site Preparation | | | | | |
| | 012 | Site Improvements | | | | | |
| | 013 | Site Utilities | | | | | |
| 02 | SUBSTRUCTURE | | | | | | |
| | 021 | Standard Foundation | | | | | |
| | 022 | Slab on Grade | | | | | |
| | 023 | Basement | | | | | |
| | 024 | Special Foundations | | | | | |
| 03 | SUPERSTRUCTURE | | | | | | |
| | 031 | Floor Construction | | | | | |
| | 032 | Roof Construction | | | | | |
| | 033 | Stairs | | | | | |
| 04 | EXTERIOR CLOSURE | | | | | | |
| | 041 | Exterior Walls | | | | | |
| | 042 | Exterior Doors & Windows | | | | | |
| 05 | ROOF SYSTEM | | | | | | |
| | 051 | Roofing | | | | | |
| | 052 | Skylights | | | | | |
| 06 | INTERIOR CONSTRUCTION | | | | | | |
| | 061 | Partitions & Doors | | | | | |
| | 062 | Interior Finishes | | | | | |
| | 063 | Specialties | | | | | |
| 07 | CONVEYING SYSTEM | | | | | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**LIFE SUPPORT**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** SEPTEMBER 1, 1994

| | SUMMARY (LEVEL 2) | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF AREA |
|---|---|---|---|---|---|---|---|
| 08 | MECHANICAL | | | | | | |
| | 081 | Plumbing | | | | | |
| | 082 | HVAC | | | | | |
| | 083 | Fire Protection | | | | | |
| | 084 | Special Mechanical Syste | | | | | |
| 09 | ELECTRICAL | | | | | | |
| | 091 | Service & Distribution | | | | | |
| | 092 | Lighting & Power | | | | | |
| | 093 | Special Electrical Systems | | | | | |
| | 094 | Site Electrical | | | | | |
| 10 | EQUIPMENT | | | | | | |
| | 101 | Fixed & Movable Equipme | | | | | |
| | 102 | Furnishings | | | | | |
| 11 | SPECIAL CONSTRUCTION | | $3,600,000 | | $3,600,000 | $3,600,000 | $41.38 |
| SUBTOTAL | | | $3,600,000 | | $3,600,000 | $3,600,000 | $41.38 |
| 12 | GENERAL REQUIREMENTS | | | | | $144,000 | $1.66 |
| | 121 | Mobilization | | | | | |
| | 122 | Operation Costs | | | | | |
| | 123 | Profit | $144,000 | | $144,000 | | |
| 13 | CONTINGENCIES | | | | | $539,136 | $6.20 |
| | 131 | Estimator | | | $374,400 | | |
| | 132 | Escalation | | | $164,736 | | |
| **TOTAL ESTIMATED COST** | | | | | | $4,283,136 | $49.24 |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**SITE DEVELOPMENT, CIVIL**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** **SEPTEMBER 1, 1994**

| **SUMMARY (LEVEL 1)** | | | **TOTAL COST** | |
|---|---|---|---|---|
| 01 | SITEWORK | | $1,352,531 | 01 |
| 02 | SUBSTRUCTURE | | | 02 |
| 03 | SUPERSTRUCTURE | | | 03 |
| 04 | EXTERIOR CLOSURE | | | 04 |
| 05 | ROOF SYSTEM | | | 05 |
| 06 | INTERIOR CONSTRUCTION | | | 06 |
| 07 | CONVEYING SYSTEM | | | 07 |
| 08 | MECHANICAL | | | 08 |
| 09 | ELECTRICAL | | $61,218 | 09 |
| 10 | EQUIPMENT | | | 10 |
| 11 | SPECIAL CONSTRUCTION | | | 11 |
| 12 | GENERAL REQUIREMENTS | | $262,073 | 12 |
| 13 | CONTINGENCIES | | $222,147 | 13 |
| **TOTAL ESTIMATED COST** | | | **$1,897,969** | << |
| COST PER SQUARE FOOT | | $25.53 /SF | | |
| GROSS AREA DEVELOPED | | 74,345 GSF | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**SITE DEVELOPMENT, CIVIL**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** **SEPTEMBER 1, 1994**

| SUMMARY (LEVEL 2) | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF AREA |
|---|---|---|---|---|---|---|
| 01 | SITEWORK | | | | $1,352,531 | $18.19 |
| 011 | Site Preparation | $311,407 | $127,346 | $438,753 | | |
| 012 | Site Improvements | $474,641 | $90,456 | $565,097 | | |
| 013 | Site Utilities | $296,078 | $52,603 | $348,681 | | |
| 02 | SUBSTRUCTURE | | | | | |
| 021 | Standard Foundation | | | | | |
| 022 | Slab on Grade | | | | | |
| 023 | Basement | | | | | |
| 024 | Special Foundations | | | | | |
| 03 | SUPERSTRUCTURE | | | | | |
| 031 | Floor Construction | | | | | |
| 032 | Roof Construction | | | | | |
| 033 | Stairs | | | | | |
| 04 | EXTERIOR CLOSURE | | | | | |
| 041 | Exterior Walls | | | | | |
| 042 | Exterior Doors & Windows | | | | | |
| 05 | ROOF SYSTEM | | | | | |
| 051 | Roofing | | | | | |
| 052 | Skylights | | | | | |
| 06 | INTERIOR CONSTRUCTION | | | | | |
| 061 | Partitions & Doors | | | | | |
| 062 | Interior Finishes | | | | | |
| 063 | Specialties | | | | | |
| 07 | CONVEYING SYSTEM | | | | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**SITE DEVELOPMENT, CIVIL**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** **SEPTEMBER 1, 1994**

| SUMMARY (LEVEL 2) | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF AREA |
|---|---|---|---|---|---|---|
| 08 | MECHANICAL | | | | | |
| 081 | Plumbing | | | | | |
| 082 | HVAC | | | | | |
| 083 | Fire Protection | | | | | |
| 084 | Special Mechanical Systems | | | | | |
| 09 | ELECTRICAL | | | | $61,218 | $0.82 |
| 091 | Service & Distribution | | | | | |
| 092 | Lighting & Power | | | | | |
| 093 | Special Electrical Systems | | | | | |
| 094 | Site Electrical | $40,356 | $20,862 | $61,218 | | |
| 10 | EQUIPMENT | | | | | |
| 101 | Fixed & Movable Equipment | | | | | |
| 102 | Furnishings | | | | | |
| 11 | SPECIAL CONSTRUCTION | | | | | |
| SUBTOTAL | | $1,122,482 | $291,267 | $1,413,749 | $1,413,749 | $19.02 |
| 12 | GENERAL REQUIREMENTS | | | | $262,073 | $3.53 |
| 121 | Mobilization | $13,517 | $6,908 | $20,425 | | |
| 122 | Operation Costs | $93,425 | $24,088 | $117,513 | | |
| 123 | Profit | $124,135 | | $124,135 | | |
| 13 | CONTINGENCIES | | | | $222,147 | $2.99 |
| 131 | Estimator | | | $157,500 | | |
| 132 | Escalation | | | $64,647 | | |
| **TOTAL ESTIMATED COST** | | | | | $1,897,969 | $25.53 |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER**
**SITE DEVELOPMENT, MARINE**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.**

**SCHEMATIC ESTIMATE**
**SITE DEVELOPMENT, MARINE**
**SEPTEMBER 1, 1994**

| **SUMMARY (LEVEL 1)** | | | **TOTAL COST** | |
|---|---|---|---|---|
| 01 | SITEWORK | | $610,247 | 01 |
| 02 | SUBSTRUCTURE | | | 02 |
| 03 | SUPERSTRUCTURE | | | 03 |
| 04 | EXTERIOR CLOSURE | | | 04 |
| 05 | ROOF SYSTEM | | | 05 |
| 06 | INTERIOR CONSTRUCTION | | | 06 |
| 07 | CONVEYING SYSTEM | | | 07 |
| 08 | MECHANICAL | | | 08 |
| 09 | ELECTRICAL | | | 09 |
| 10 | EQUIPMENT | | | 10 |
| 11 | SPECIAL CONSTRUCTION | | | 11 |
| 12 | GENERAL REQUIREMENTS | | $139,767 | 12 |
| 13 | CONTINGENCIES | | $91,502 | 13 |
| **TOTAL ESTIMATED COST** | | | **$841,516** | << |
| COST PER SQUARE FOOT | | $9.67 /SF | | |
| GROSS AREA DEVELOPED | | 86,990 GSF | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER**
**SITE DEVELOPMENT, MARINE**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.**

**SCHEMATIC ESTIMATE**
**SITE DEVELOPMENT, MARINE**
**SEPTEMBER 1, 1994**

| SUMMARY (LEVEL 2) | | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF AREA |
|---|---|---|---|---|---|---|---|
| 01 | SITEWORK | | | | | $610,247 | $7.02 |
| | 011 | Site Preparation | $531,245 | $79,002 | $610,247 | | |
| | 012 | Site Improvements | | | | | |
| | 013 | Site Utilities | | | | | |
| 02 | SUBSTRUCTURE | | | | | | |
| | 021 | Standard Foundation | | | | | |
| | 022 | Slab on Grade | | | | | |
| | 023 | Basement | | | | | |
| | 024 | Special Foundations | | | | | |
| 03 | SUPERSTRUCTURE | | | | | | |
| | 031 | Floor Construction | | | | | |
| | 032 | Roof Construction | | | | | |
| | 033 | Stairs | | | | | |
| 04 | EXTERIOR CLOSURE | | | | | | |
| | 041 | Exterior Walls | | | | | |
| | 042 | Exterior Doors & Windows | | | | | |
| 05 | ROOF SYSTEM | | | | | | |
| | 051 | Roofing | | | | | |
| | 052 | Skylights | | | | | |
| 06 | INTERIOR CONSTRUCTION | | | | | | |
| | 061 | Partitions & Doors | | | | | |
| | 062 | Interior Finishes | | | | | |
| | 063 | Specialties | | | | | |
| 07 | CONVEYING SYSTEM | | | | | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER**
**SITE DEVELOPMENT, MARINE**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.**

**SCHEMATIC ESTIMATE**
**SITE DEVELOPMENT, MARINE**
**SEPTEMBER 1, 1994**

| SUMMARY (LEVEL 2) | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF AREA |
|---|---|---|---|---|---|---|
| 08 | MECHANICAL | | | | | |
| 081 | Plumbing | | | | | |
| 082 | HVAC | | | | | |
| 083 | Fire Protection | | | | | |
| 084 | Special Mechanical System | | | | | |
| 09 | ELECTRICAL | | | | | |
| 091 | Service & Distribution | | | | | |
| 092 | Lighting & Power | | | | | |
| 093 | Special Electrical Systems | | | | | |
| 094 | Site Electrical | | | | | |
| 10 | EQUIPMENT | | | | | |
| 101 | Fixed & Movable Equipme | | | | | |
| 102 | Furnishings | | | | | |
| 11 | SPECIAL CONSTRUCTION | | | | | |
| SUBTOTAL | | $531,245 | $79,002 | | $610,247 | $7.02 |
| 12 | GENERAL REQUIREMENTS | | | | $139,767 | $1.61 |
| 121 | Mobilization | $4,520 | $1,258 | $5,778 | | |
| 122 | Operation Costs | $17,930 | $3,557 | $21,487 | | |
| 123 | Profit | $112,502 | | $112,502 | | |
| 13 | CONTINGENCIES | | | | $91,502 | $1.05 |
| 131 | Estimator | | | $75,001 | | |
| 132 | Escalation | | | $16,500 | | |
| **TOTAL ESTIMATED COST** | | | | | $841,516 | $9.67 |

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**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**FF&E ITEMS**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** SEPTEMBER 1, 1994

| **SUMMARY (LEVEL 1)** | | | **TOTAL COST** | |
|---|---|---|---|---|
| 01 | SITEWORK | | | 01 |
| 02 | SUBSTRUCTURE | | | 02 |
| 03 | SUPERSTRUCTURE | | | 03 |
| 04 | EXTERIOR CLOSURE | | | 04 |
| 05 | ROOF SYSTEM | | | 05 |
| 06 | INTERIOR CONSTRUCTION | | | 06 |
| 07 | CONVEYING SYSTEM | | | 07 |
| 08 | MECHANICAL | | | 08 |
| 09 | ELECTRICAL | | | 09 |
| 10 | EQUIPMENT | | $1,976,092 | 10 |
| 11 | SPECIAL CONSTRUCTION | | $274,873 | 11 |
| 12 | GENERAL REQUIREMENTS | | $255,844 | 12 |
| 13 | CONTINGENCIES | | $362,103 | 13 |
| **TOTAL ESTIMATED COST** | | | **$2,868,912** | << |
| COST PER SQUARE FOOT | | $32.98 /SF | | |
| GROSS AREA | | 86,990 GSF | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**FF&E ITEMS**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** SEPTEMBER 1, 1994

| SUMMARY (LEVEL 2) | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF AREA |
|---|---|---|---|---|---|---|
| 01 | SITEWORK | | | | | |
| 011 | Site Preparation | | | | | |
| 012 | Site Improvements | | | | | |
| 013 | Site Utilities | | | | | |
| 02 | SUBSTRUCTURE | | | | | |
| 021 | Standard Foundation | | | | | |
| 022 | Slab on Grade | | | | | |
| 023 | Basement | | | | | |
| 024 | Special Foundations | | | | | |
| 03 | SUPERSTRUCTURE | | | | | |
| 031 | Floor Construction | | | | | |
| 032 | Roof Construction | | | | | |
| 033 | Stairs | | | | | |
| 04 | EXTERIOR CLOSURE | | | | | |
| 041 | Exterior Walls | | | | | |
| 042 | Exterior Doors & Windows | | | | | |
| 05 | ROOF SYSTEM | | | | | |
| 051 | Roofing | | | | | |
| 052 | Skylights | | | | | |
| 06 | INTERIOR CONSTRUCTION | | | | | |
| 061 | Partitions & Doors | | | | | |
| 062 | Interior Finishes | | | | | |
| 063 | Specialties | | | | | |
| 07 | CONVEYING SYSTEM | | | | | |

**IMS INFRASTRUCTURE IMPROVEMENTS/ALASKA SEALIFE CENTER** **SCHEMATIC ESTIMATE**
**FF&E ITEMS**
**Prepared for LIVINGSTON SLONE, INC. by Estimations, Inc.** SEPTEMBER 1, 1994

| SUMMARY (LEVEL 2) | | Material | Labor | Total Matl/Labor | TOTAL COST | RATE $/SF AREA |
|---|---|---|---|---|---|---|
| 08 MECHANICAL | | | | | | |
| 081 | Plumbing | | | | | |
| 082 | HVAC | | | | | |
| 083 | Fire Protection | | | | | |
| 084 | Special Mechanical Syste | | | | | |
| 09 ELECTRICAL | | | | | | |
| 091 | Service & Distribution | | | | | |
| 092 | Lighting & Power | | | | | |
| 093 | Special Electrical Systems | | | | | |
| 094 | Site Electrical | | | | | |
| 10 EQUIPMENT | | | | | $1,976,092 | $22.72 |
| 101 | Fixed & Movable Equipme | $14,500 | $237 | $14,737 | | |
| 102 | Furnishings | $1,961,355 | | $1,961,355 | | |
| 11 SPECIAL CONSTRUCTION | | $226,528 | $48,345 | $274,873 | $274,873 | $3.16 |
| SUBTOTAL | | $2,202,383 | $48,582 | $2,250,965 | $2,250,965 | $25.88 |
| 12 GENERAL REQUIREMENTS | | | | | $255,844 | $2.94 |
| 121 | Mobilization | $84 | $12 | $96 | | |
| 122 | Operation Costs | $78,514 | $13,237 | $91,751 | | |
| 123 | Profit | $163,997 | | $163,997 | | |
| 13 CONTINGENCIES | | | | | $362,103 | $4.16 |
| 131 | Estimator | | | $250,700 | | |
| 132 | Escalation | | | $111,403 | | |
| **TOTAL ESTIMATED COST** | | | | | $2,868,912 | $32.98 |