

Approved R 8-6-97

Kenai Habitat Restoration and Recreation Enhancement

Project Number: 98180
Restoration Category: General Restoration
Proposer: M. Kuwada/ADFG, A. Weiner/ADNR
Lead Trustee Agency: ADNR
Cooperating Agencies: ADFG, DOI, USFS
Alaska SeaLife Center: No
New or Continued: Cont'd
Duration: 3rd yr.
4 yr. project
Cost FY 98: \$491.9
Cost FY 99: \$306.6
Cost FY 2000: \$0.0
Cost FY 01: \$0.0
Cost FY 02: \$0.0
Geographic Area: Kenai Peninsula
Injured Resource/Service: Sockeye salmon, pink salmon, Dolly Varden, commercial fishing, subsistence, recreation and tourism

ABSTRACT

Adverse impacts to the banks of the Kenai River total approximately 19 miles of the river's 166-mile shoreline, including 5.4 river miles of public land. Riparian habitats have been impacted by trampling, vegetation loss and structural development. The project's objectives are to restore injured fish habitat, protect fish and wildlife habitat, enhance and direct recreation, and preserve the values and biophysical functions that the riparian habitat contributes to the watershed. Restoration/enhancement techniques will include revegetation, streambank restoration, elevated boardwalks, floating docks, access stairs, fencing, signs, and educational interpretive displays.

INTRODUCTION

This project is a continuation of the Kenai River Habitat Restoration and Recreation Enhancement Project that began in 1996. The objectives of this project are to:

1. Restore and protect fish habitat on the Kenai River,
2. Improve existing recreational access to the Kenai River watershed in a manner that restores and protects riparian fish and wildlife habitat,
3. Provide information to the public that promotes their understanding of the river's ecology and proper use of its resources.

Public lands on the Kenai Peninsula, including those soon to be acquired with *Exxon Valdez* oil spill joint settlement funds, contain important habitat for several species injured by the spill and provide recreation services for tens of thousands of Alaska residents and tourists. Kenai River fish support a large commercial fishery, a commercial sport fishing industry, a subsistence fishery, and a recreational sport fishery. In the aggregate, revenues generated by sportfishing, commercial fishing and river-based tourism represent a significant and growing proportion of the local economy.

The riparian zone, the transitional area that lies between the river's channel and the uplands, provides important fish and wildlife habitat and plays a major role in the hydrology of the watershed by helping to control floods and erosion. This vegetated area functions as a buffer and filter system between upland development and the river, thereby maintaining water quality by absorbing nutrients, accumulating and stabilizing sediments, and removing heavy metals and pollutants that are a result of urban development and which enter the river from surface runoff. It is also the area where a significant portion of the Kenai River's sportfishing and other recreational activities are concentrated.

Degradation of the river's streambanks, riparian vegetation and fish habitat has the potential of jeopardizing its long term productivity and degrading the quality of the recreational experience. This project proposes revegetation, streambank restoration, and public access improvements that will promote pink and sockeye salmon and Dolly Varden habitat protection and restoration, as well as enhancement of recreational services in the Kenai River watershed. The project also proposes to design and construct educational and interpretive displays that will inform the public of the proper manner in which to access and use the river's resources.

During 1996, the following project elements were accomplished:

1. Development of site assessment and nomination procedures,
2. Development of a digital database containing site assessment and nomination data,
3. Development of an evaluation and ranking process for nominated projects,

4. An Interdisciplinary Team (IDT) of biologists, resource managers and planners was selected to review evaluation procedures and nominated projects,
5. Review and evaluation, by the IDT, of 16 projects nominated by public landowners,
6. Public scoping meetings were held in Anchorage, Kenai and Cooper Landing to discuss the project,
7. Production and publication of an Environmental Assessment (EA) document,
8. Review and response to EA comments,
9. Development of Cooperative Agreements that will form the basis for funding projects carried out by public landowners,
10. Consummation of agreements between ADF&G/ADNR and public landowners for five projects will take place in 1997.

During 1997, the following project elements were accomplished:

1. Review and evaluation, by the IDT, of 7 new projects nominated by public landowners,
2. Production and publication of an Environmental Assessment (EA) document for the 1997 projects,
3. Oversight and field inspections of Kenai Beach Dunes project.

Restoration and enhancement proposals on public lands extending from the outlet of Kenai Lake to the mouth of the Kenai River (Figure 1), were nominated by public landowners and evaluated by an Interdisciplinary Team (IDT) of biologists and resource managers using specific threshold and evaluation criteria (Table 1). The IDT designed the qualifying criteria used to evaluate and rank the proposals by considering a variety of factors, including the degree of damage at a site and the effects that each proposal will have on fish habitat, recreation, and the surrounding environment.

Conceptual restoration and enhancement plans were presented to the IDT for evaluation. Final engineered plans will be provided to ADFG/ADNR prior to construction. Choice of building materials and construction methods are the responsibility of the landowner (but subject to IDT review) and must employ restoration techniques permissible by regulatory agencies (ADFG, ADNR, and the Army Corps of Engineers).

The project was proposed to last for three years, beginning in 1996. The seven qualifying proposals initiated in 1996 will be completed in 1997. Construction was started on one in 1996 and construction will begin on the other six this spring. Projects approved for funding in 1997 will be completed in 1998. Monitoring of funded proposals will be carried out by ADFG/ADNR to ensure the proposals are constructed and function as designed.

Monitoring will also be used to gather information regarding effectiveness of restoration techniques.

Seven proposals (Table 2) were evaluated and scored according to threshold and evaluation criteria. One proposal, Kenai Mouth-South Side Access, was disqualified because it did not fulfill all threshold criteria. The majority of funding for the Centennial Park project will come from another source. If funding is approved, six sites will be restored in 1998.

Because all proposals had to meet threshold criteria before the evaluation criteria were applied, six proposals are eligible for funding. The scores are a method of ranking those proposals that best achieve the overall project's goals for habitat restoration, compatible recreation enhancement, and educational value. In an attempt to identify the most cost-effective proposals and obtain maximum benefits from available funds, it was decided to compare the relative restoration benefits of the proposals in terms of costs. To facilitate that determination, the results of the evaluation process, i.e. the scores, were plotted against the estimated costs. Figure 2 displays the relative or comparative restoration benefits of the 1997 proposals as a function of cost. Figure 3 is a composite plot of the 1996 and 1997 nominations.

Cooperative agreements or Reciprocal Service Agreements (RSA's) will be negotiated and signed for the projects identified in the Preferred Alternative of the EA. Construction should begin on these five proposals in 1997 and 1998.

Work proposed for 1998 includes:

1. Oversight and monitoring of on-going projects,
2. Finalizing cooperative agreements with public landowners for projects to be constructed in 1998,
3. Review and evaluation of new nominations for projects on other public lands,
4. Design and development of educational and interpretive materials,
5. Preparation of an annual report.

Table 1: Threshold and Evaluation Criteria

Threshold Criteria

1. The project will protect, restore or enhance the historic functional attributes of a site and the surrounding area.
2. The project is located on public land.
3. The managing agency agrees to endorse the project.
4. The managing agency agrees to future maintenance and management of the project in a manner that facilitates and is consistent with the restoration or enhancement endpoint (#1).
5. All elements of the project can be permitted.
6. The project is not a mitigation requirement.

Nomination must be in compliance with all Threshold Criteria.

Evaluation Criteria

1. **Potential Habitat Value**
What is the potential habitat value of the project? [Score = $(20/10/5) \times 3.5$]
2. **Potential Recreation Value**
What is the potential recreation value of the project? [Score = $(20/10/5) \times 2.5$]
3. **Disturbance Level**
What is the level of disturbance (human impact) in relation to habitat/recreation values?
[Score = $(20/10/5) \times 2.0$]
4. **Rate**
To what extent will the project decrease the amount of time needed for riparian habitat to recover? [Score = $(20/10/5) \times 1.0$]
5. **Collateral Impacts**
What is the potential for adverse impacts to natural or cultural resources or to the nearby human community resulting from this project?
[Inverse relationship: Score = $(5/10/20) \times 3.0$]
6. **Design/Effectiveness**
How would you rate the project's design to its expected effectiveness?
[Score = $(20/10/5) \times 2.0$]
7. **Vulnerability**
Is the protected, restored or enhanced site vulnerable to natural or human-induced degradation. [Inverse relationship: Score = $(5/10/20) \times 2.0$]

Table 2: 1997 Project Evaluation Summary

<u>Project ID</u>	<u>Project Name</u>	<u>Project Score</u>
K 17	Cone	222
K 18	Kobylarz	253
K 19	Russian River Phase 2	241
K 20	Centennial Park 97	294
K 21	Slikok Creek	300
K 22	Bing's Landing	261

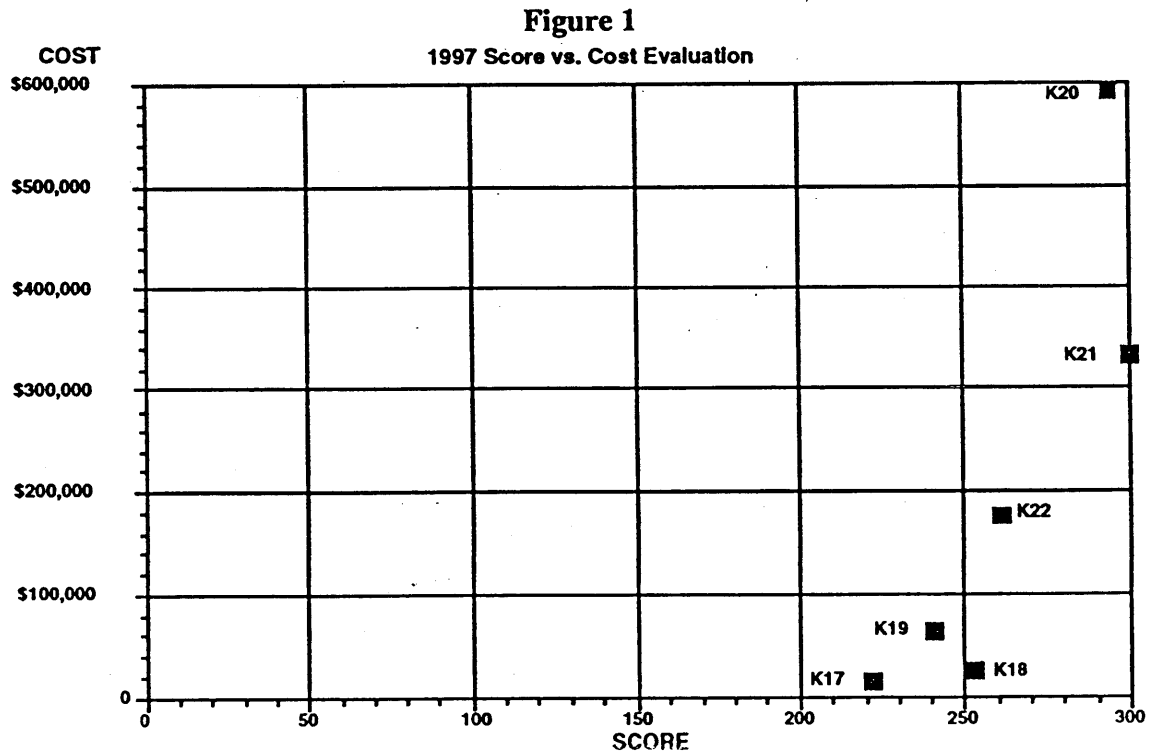
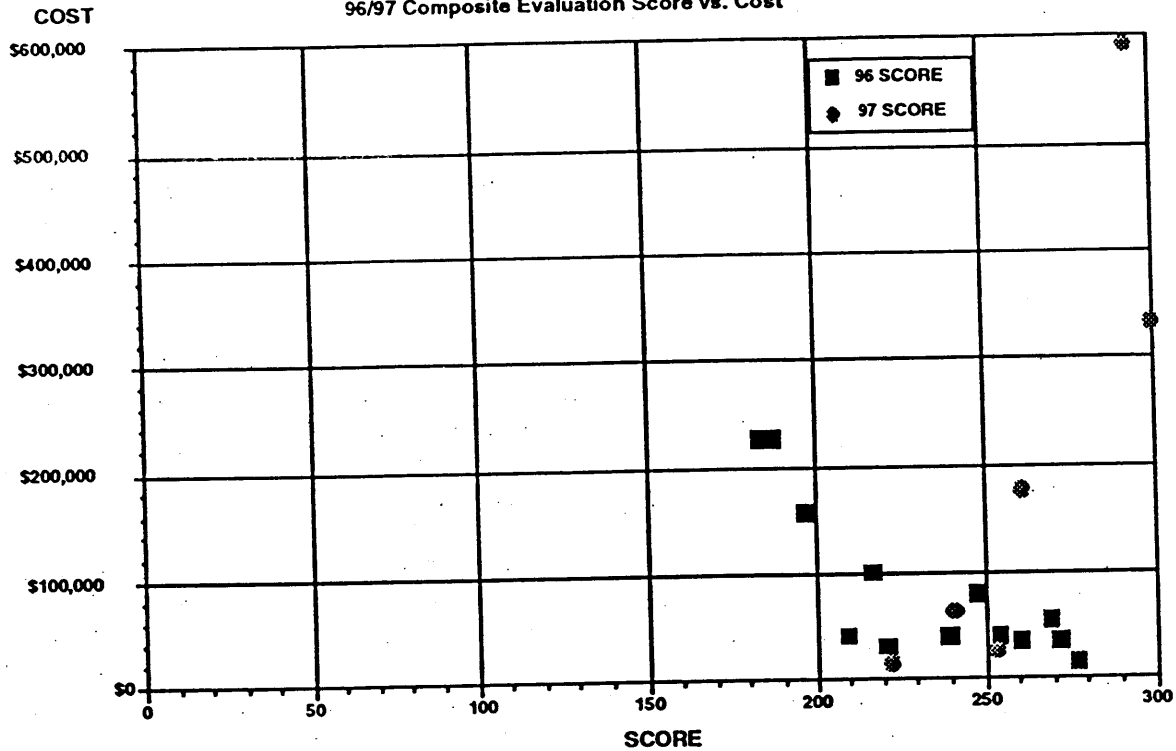


Figure 2:

96/97 Composite Evaluation Score vs. Cost



NEED FOR THE PROJECT

A. Statement of Problem

Use of the Kenai River watershed is degrading fish habitat along the riparian zone of the mainstem and, to a lesser degree, the tributaries of the river. Streambanks that provide essential fish habitat are being trampled and denuded of vegetation leading to increasing rates of erosion and sedimentation. Both commercial and residential developments are altering shorelines, changing patterns of runoff and creating the potential for the discharge of non-point source pollutants into the river. Federal and state resource agencies have limited ability to manage these problems that have the potential of threatening the productivity and world class recreational value of this river system.

Commercial fishing, subsistence, recreation and tourism (including sport fishing) are services that were reduced or lost because of the spill. Within the Kenai River watershed, the resources that support these services that were injured by the *Exxon Valdez* oil spill include pink and sockeye salmon and Dolly Varden. Chinook and coho salmon also contribute significantly to these services. The *Exxon Valdez* Oil Spill Restoration Plan states that the Kenai River sockeye salmon population is not recovering and that: *With regard to sockeye salmon, the objective of habitat protection is to ensure maintenance of adequate water quality, riparian habitat, and intertidal habitat.*

The restoration strategy articulated in the restoration plan for recreation and tourism focuses on the: *Preservation and improvement of the recreational and tourism values of the spill area.* The Plan goes on to discuss strategies for promoting recovery of commercial fishing, recreation and tourism by: *...increasing the availability, reliability, or quality of the resource on which the service depends.*

What is needed within the Kenai River watershed is an integrated approach that protects resource habitats, restores degraded streambanks and riparian vegetation, maintains productivity and promotes appropriate, sustained human use of the river.

B. Rationale

The work proposed by this project is needed to protect and restore fishery resources. Continuing loss of habitat will exacerbate the injury caused by the spill to both resources and services and lead to diminished productivity. This, in turn, diminishes the value of the commercial, subsistence and sport fisheries and the quality of recreation on the river with significant, adverse implications for the local economy.

Based on a review of historic recreation use patterns and habitat impacts, the project will protect, restore, stabilize, or rehabilitate streambanks where resource damage is occurring; enhance or close existing access points and movement corridors; or re-direct users to other areas of the river on a temporary or long term basis. These actions will be based on the need to facilitate human use of the river in a way that protects fish habitat and minimizes degradation of other sensitive and/or pristine habitats.

This project is designed to promote streambank stability, increase vegetative cover, and mitigate accelerated erosion and sedimentation for the benefit of pink salmon, sockeye salmon, Dolly Varden and other fish species that migrate and rear along the river's banks. Techniques used to achieve these goals may include the use of elevated, grated boardwalks, river access stairs, fishing platforms, spruce tree revetments and other riparian habitat improvement and protection techniques. These techniques will, at the same time, restore and enhance sportfishing. One example is elevated, grated boardwalks, constructed to protect revegetating streambanks, that will provide river access to anglers with a minimum of impact to the recovering habitat. Post-construction monitoring will examine the effects of the method and the amount of recreational use that occurs in the area.

The education component of the project will produce user information and interpretive displays at strategically located access points along the river. These displays will provide users with information on the natural history of the river's fish, their habitats, ecology of the river system and the best methods that they can use to maximize their recreational experience with a minimum of impact to the watershed and its resources. Signs placed adjacent to work sites will describe the on-going restoration effort and direct the public away from recovering vegetation.

Each site under consideration for a restoration, enhancement or education project will be evaluated in terms of the condition of its habitats, character of adjacent lands, and historic public use. Improvements to access will reflect patterns of use as well as on-site and adjacent upland environmental sensitivities.

C. Location

All construction, maintenance and monitoring components of the project will be located within the Kenai River watershed. Planning and coordination will be based in Anchorage. Primary ecological benefits from the project will be realized by the natural systems within the watershed. Secondary benefits will affect the economy of the communities of the Kenai Peninsula and the commercial fishing industry. Improved and enhanced recreation benefits will affect users from southcentral Alaska as well as tourists from outside of the state. Communities that may be affected by the project include: Kenai, Soldotna, Homer, Sterling, Cooper Landing, Anchorage and the unincorporated communities on the Kenai Peninsula.

COMMUNITY INVOLVEMENT

It is intended that the project be fully integrated with on-going agency recreation management, permitting and regional planning activities affecting the Kenai River watershed. This includes coordination with the Kenai Peninsula Borough, City of Kenai, Kenai City Council, City of Soldotna, Soldotna City Council, Kenai Peninsula Borough Assembly, and local interest groups.

PROJECT DESIGN

A. Objectives

1. Solicit restoration project nominations from public land managers on the Kenai River.
2. Evaluate and rank projects on the basis of their restoration benefit and cost effectiveness.
3. Review detailed design plans and develop cooperative agreements for construction of the projects.
4. Verify compliance with restoration designs and evaluate construction.
5. Implement a monitoring program to assess restoration and use of project sites.
6. Design and construct educational and interpretive signs and displays.

B. Methods

The present condition of North America's native fish fauna is attributable, in part, to the degradation of aquatic ecosystems and habitat (FEMAT Report, 1993). Loss and degradation of freshwater habitats are the most frequent factors responsible for the decline of anadromous salmonid stocks (Nehlsen, et. al. 1991). Along with habitat modification

or loss, changes in water quality and quantity are often cited as causative factors for degradation of aquatic systems and declines in anadromous fish populations.

The Kenai River Cumulative Impacts Assessment of Development Impacts on Fish Habitat (Liepitz, 1994) was designed to identify and evaluate the cumulative impacts of development actions including public and private land use impacts on Kenai River fish habitat. The study documented that : 11.1 percent to 12.4 percent (18.4 to 20.6 miles) of the river's 134 miles of upland and 32 miles of island shoreline and nearshore habitats have been impacted by bank trampling, vegetation denuding, and structural development along the river's banks. Degraded public land along the Kenai River includes 5.4 miles of trampled riparian habitat and 3.5 miles of developed shoreline.

Site specific project designs will reflect site characteristics including: topography, hydrologic variables, vegetation, soils, extent and type of degradation and historic use patterns. Designs may include elements that restore or enhance specific habitat values. For example, instream structures may be used to enhance fish habitat and/or angler access. Plant propagation and streambank restoration techniques will be selected on the basis of site characteristics, constraints and cost. Revegetation designs will attempt to re-establish the native, riparian plant communities. Grasses that have been successfully used for riparian and saltmarsh revegetation in Alaska include: bluejoint reedgrass (*Calamagrostis canadensis*), Bering hairgrass (*Deschamsia beringensa*), sloughgrass (*Beckmannia syzigachne*), sedges (*Carex* spp.) and beach wildrye (*Elymus mollis*).

Successful revegetation requires control of site impacts. Consequently, fences and/or signed closures may be required to protect undamaged sites from human impact or to prevent additional damage to recovering sites. Project areas will either be closed and posted during the course of revegetation, or environmental engineering techniques will be used that allow public access but protect the recovering habitat from additional adverse impacts. Habitat improvement and protection techniques to be considered include:

On-site Revegetation/Restoration	Signage
Exclosures	Elevated Grating/Boardwalks
Spruce Tree Revetments	Access Stairs Ladder
Access Trails	Floating Docks

The number of sites selected for revegetation or enhancement in a given year will be dependent upon the time necessary for completion, i.e., permitting, construction and installation, and the availability of funding.

Educational/interpretive displays will be designed, constructed and placed in strategic locations along the river. Signs will also be designed and located to prevent bank trampling in areas where revegetation efforts are occurring.

A monitoring program will be used to evaluate the degree of success of each project. The purpose of the monitoring program is to:

1. Determine if the project is in compliance with the Cooperative Agreement.
2. Evaluate whether the project was been successful in meeting the restoration goals set forth in the project description, and
3. Provide data that will help in design of future restoration projects and in the establishment of performance standards.

Monitoring parameters will be chosen that reflect site-specific restoration/enhancement objectives and may include habitat, vegetation and public use measurements. The assessment of the existing condition of each site will serve as the baseline for monitoring. Monitoring measurements will be obtained frequently early in the project and could be used to amend the design if necessary. Wherever possible, photo plots will be installed and photos taken biannually. Once the project is successfully constructed and it is determined that restoration/enhancement is proceeding on an acceptable course and rate, monitoring measurements will be taken less frequently. Projects that are initially monitored monthly during the early stages of vegetation growth and establishment will be monitored biannually thereafter. Habitat and population monitoring parameters may include: vegetation diversity and cover, fish utilization and stream stability. Public use of the sites and impacts to adjacent areas will also be monitored. Site visitation shall be based on counts of individual people by field staff and project personnel.

Observations may be made during winter months to evaluate the effects of ice scouring. The period that a project is monitored will be based upon the amount of time required for achievement of objectives.

C. Cooperating Agencies, Contracts and Other Agency Assistance

All components of the project will be carried out by personnel from ADF&G and ADNR. Volunteers supervised by agency staff will assist in the installation of prefabricated structures and in routine maintenance. Cooperating agencies will participate in IDT evaluations and development of a supplement EA. Coordination will occur with agencies through contract administration and oversight.

SCHEDULE

A. Measurable Project Tasks for FY 98

October 1 to December 1: Contract administration.
 Project monitoring.
 Preparation of annual report.

- December 1 to May 15: Review detailed design plans.
Design and produce educational materials and signs.
Establish cooperative agreements with public landowners for second round.
- May 15 to July 15: Management and oversight of project construction.
Contract administration.
Put up signs and information displays.
- July 15 to August 15: Inspect all project sites to check for compliance with design parameters.
Monitor revegetation sites.
Monitor public use of completed project and proposed sites for next year.
- August 15 to Sept. 30: Continue monitoring.
Contract administration.

B. Project Milestones and Endpoints

- Oct. 1--Nov.1: Complete construction on all projects.
Inspect the projects to check for compliance with design and construction parameters
Close-out completed cooperative agreements
- Feb1--May 15: Publish supplemental EA
Consummate cooperative agreements with public landowners for third round projects
- July 15 to Sept. 30: Complete summer monitoring and project compliance inspections

NORMAL AGENCY MANAGEMENT

The impacts affecting the Kenai River are occurring at a rate and magnitude far in excess of the management resources that are available to mitigate or restore habitat damage. The proposed project supplements existing efforts to reverse this trend. Moreover, none of the riparian habitat on small parcels that the Trustee Council is acquiring on the Kenai River has been surveyed or evaluated for restoration work. Additional issues relevant to state agency management of the Kenai River are to be found in the following section.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

Coordination will occur with agency staffs in DNR, ADF&G and the Kenai National Wildlife Refuge. Their expertise will be used in defining management objectives, developing criteria, evaluating and ranking potential project sites, conducting archaeological and historical reviews and clearances, performing design to include preparing plans and specifications, bidding construction projects, oversight of project construction, permitting, monitoring public use, and enforcing site restrictions.

The project will build upon pilot efforts that have been implemented or are being developed for the river. In 1994, boardwalks were installed near the Soldotna airport and on numerous private parcels; exclosures have been used with a high degree of success along portions of the Russian River and in units of the state park system. State permitting procedures have also resulted in numerous bank stabilization projects that maintain or enhance fish habitat by using spruce tree revetments, root wads, live willow cuttings, and other protective measures.

The state and federal governments have already committed funds to accomplish several of the objectives identified by this project. Fish and Game *Exxon Valdez* criminal settlement funds (\$3 million) have been dedicated for the construction of habitat protection demonstration projects and land acquisition on the Kenai River. The U.S. Fish and Wildlife Service has provided challenge grant funding to assist the ADF&G demonstration projects. The National Marine Fisheries Service will provide the ADF&G with an additional one million dollars for streambank improvements under an appropriation requested by Senator Stevens. ADNR restitution funds (\$7 million) will be used, in part, to construct boardwalks and access platforms that protect streambanks at heavily used state park units at Morgan's Landing, Bing's Landing, and Slikok Creek. Dingle-Johnson funds are being used to provide recreational access, streambank revegetation, and streambank protection structures at The Pillars project site.

The intense public use pressures and development activities on the Kenai River threaten to overwhelm the limited budgets available to resource agencies attempting to manage the river for resource protection and sustained recreational use. That is why supplementary funding is so important. The proposed project, along with those utilizing other available funds, provides a cost-effective method to protect streambanks and minimize further habitat degradation.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

The project design and schedule described in the DPD approved by the Trustee Council for FY96 and FY 97 are unchanged.

PERSONNEL

Project Leader

Mark Kuwada - Habitat Biologist with the Alaska Department of Fish and Game for 15 years. Extensive experience in coordinating departmental policy and mitigating major project impacts; Project Manager for Federal OCS Oil and Gas Leasing Program; Susitna Hydroelectric Project; Bradley Lake Hydroelectric Project; Diamond Chitna Coal Project; ADF&G Response Coordinator, *Exxon Valdez* oil spill. ADF&G Title 16 permitter for southcentral Alaska and the Kenai River.

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Project Leader

Art Weiner, Ph.D - Natural Resources Manager with the Alaska Department of Natural Resources for seven years. B.S., M.S. and Ph.D in biology. Extensive experience in field biology, permitting, design and construction of restoration projects and in coordinating department policy with other state and federal resource agencies.

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