

PROJECT MANAGEMENT PLAN
PUGET SOUND NEARSHORE ECOSYSTEM
RESTORATION STUDY

September 25, 2001

Table of Contents

List of Figures.....	3
List of Tables.....	3
PROJECT ACRONYMS.....	4
1.0 SCOPE.....	5
1.1 Introduction.....	5
1.2 Study Purpose.....	6
1.3 Reconnaissance Phase Study.....	7
1.4 Study Sponsorship and Cooperative Agencies.....	9
2.0 FEASIBILITY PHASE STUDY REQUIREMENTS.....	11
2.1 Basic Requirements.....	11
2.2 Specific Requirements.....	11
2.3 Feasibility Study Staging: Programmatic and Project Specific.....	12
2.3.1 Stage I Project Formulation.....	12
2.3.2 Stage II Refinement of Model, Selection criteria, Plan Formulation. ...	17
2.3.3 Stage III Project Specific Study.....	20
2.3.4 Washington Level Review and Support.....	20
2.3.5 Early Action Projects.....	20
2.4 Breakdown Structure.....	21
3.0 FISCAL YEAR FUNDING BREAKDOWN.....	28
4.0 STUDY TASK AND SUBTASK DESCRIPTIONS AND WBS CODES.....	28
5.0 STUDY MANAGEMENT AND COORDINATION.....	40
5.1 Coordination Mechanism.....	40
5.2 Review and Acceptance of Work.....	41
6.0 QUALITY CONTROL PLAN.....	41
6.1 Purpose.....	41
6.2 Methodology.....	42
6.3 Quality Control Responsibilities.....	44
6.4 Quality Control Process.....	45
6.5 Technical Review Documentation.....	46
6.6 Schedule.....	46

Table of Contents, cont.

List of Figures

Figure 1. Puget Sound and Adjacent Waters.....	8
Figure 2. Levels and Phases of Project Development	22

List of Tables

Table 1. Feasibility Cost Estimate Summary	23
Table 2. Feasibility Phase Project Delivery Team	42
Table 3. Proposed Independent Technical Review (ITR) Team	43
Table 4. Executive Committee.....	44
Table 5. Feasibility Phase Schedule and Milestones.....	47

Appendices

A: Gantt Chart.....	48
B: Cost Estimate Table	49
C: Sponsor’s Letter of Intent.....	52

PROJECT ACRONYMS

AFB	Alternative Formulation Briefing (see ER1105-2-100)
ASA (CW)	Assistant Secretary of the Army for Civil Work
BCO	Biddability / Constructability / Operability
CAP	Continuing Authority Program
CEFMS	Corps of Engineers Financial Management System
CR	Cultural Resources
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FCSA	Feasibility Cost Sharing Agreement
GI	General Investigation Program - A Federal funding appropriation for planning and design
HQUSACE	Headquarters United States Army Corps of Engineers
ITR	Independent Technical Review
MCACES	Micro-Computer Aided Cost Engineering System
NEPA	National Environmental Policy Act 1969
NMFS	National Marine Fisheries Service
NWD	Northwest Division USACE
NST	Nearshore Science Team
OMRR&R	Operation, Maintenance, Repair, Replacement & Rehabilitation
PDT	Project Delivery Team
PED	Pre-Construction Engineering and Design
PL	Public Law
PMP	Project Management Plan
QC	Quality Control
SEPA	State Environmental Policy Act
SHPO	State Historic Preservation Office
TRC	Technical Review Conference
USACOE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
VE	Value Engineering
WBS	Work Breakdown Schedule
WDFW	WA State Department of Fish and Wildlife
WRDA	Water Resources Development Act

1.0 SCOPE.

1.1 Introduction.

This Project Management Plan (PMP) is by reference hereby incorporated into the feasibility cost sharing agreement entitled “Agreement between the Department of the Army and Washington State Department of Fish and Wildlife (Washington State) for the Puget Sound Nearshore Ecosystem Restoration Study”. This PMP defines the Scope of Work, and documents the process for conducting the feasibility phase study and is a means for those involved in the study (i.e., Seattle District Army Corps of Engineers, Washington State Department of Fish and Wildlife (WDFW), Northwestern Division (NWD), and Corps of Engineers Headquarters (HQUSACE)) to formally agree to the conduct of the study before it is initiated. The PMP does not attempt to repeat project related details provided in the final reconnaissance report for this study, the reconnaissance studies, or related investigations conducted prior to initiating the feasibility phase of project development.

The feasibility report will be a complete decision document in sufficient detail to form the basis for the sponsor, Corps of Engineers, and ultimately the U.S. Congress, to consider approving authorization and construction of the recommended plan. The feasibility report will provide a complete presentation of the study analyses and results, including those developed in the reconnaissance report. The feasibility report will also document compliance of the design with all applicable guidance, statutes, Executive Orders, and policies, and provide a sound basis for decision makers to judge the recommended plan.

The PMP has been developed to plan, define, and control the development and delivery of the products to be completed during the feasibility phase. With clearly defined work tasks, the PMP will provide management with a basis for cost and schedule control of the feasibility study as well as minimize communication and review comments and/or problems. The PMP will be updated and/or revised as needed throughout the planning process using traditional methods. Scoping for Stage II of the study will be performed during Stage I of the process after further knowledge of the nearshore environment is determined. Similarly, scoping for Stage III will take place during Stage II. The PMP addresses the following:

- Study tasks and responsibility for their accomplishment.
- The estimated cost of individual study tasks and total study cost, including the negotiated cost of work items to be accomplished by sponsor as in-kind services.
- Corps of Engineers and other professional criteria to assess the adequacy of the completed work effort, including references to regulations and other guidance that will be followed in performing and evaluating tasks.
- The schedule of performance and milestones (i.e., key decision points, in-progress reviews, issue resolution conference, etc.).
- The specific coordination mechanism between parties to this agreement.

- Procedures for reviewing and accepting the work of the parties to this agreement.

The PMP is a working document, and expected to be revised and modified as needed throughout the study process. All changes in the PMP will be coordinated with the Project Delivery Team, the local sponsor, Steering Committee, and the Executive Committee. Any schedule or cost changes require written agreement and approval from both the local sponsor and the NWD.

The work shall generally be performed in accordance with established criteria and guidance including the following:

- a. ER 1105-2-100, "Planning Guidance Notebook", U.S. Army Corps of Engineers, April 22, 2000.
- b. ER 1110-2-1150, "Engineering and Design for Civil Works Projects," U.S. Army Corps of Engineers, August 31, 1999.
- c. ER 5-1-11 (FR), "Program and Project Management," U.S. Army Corps of Engineers, February 27, 1998.
- d. "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies," U.S. Water Resources Council, March 10, 1983.
- e. ER 200-2-2, "Procedures for Implementing NEPA," U.S. Army Corps of Engineers, March 4, 1988.
- f. ER 405-1-12, "Real Estate Handbook," U.S. Army Corps of Engineers.
- g. ER 1165-2-501, "Civil Works Ecosystem Restoration Policy," Corps of Engineers, 30 September 1999.
- h. ER 1165-2-502, "Ecosystem Restoration – Supporting Policy Information," Corps of Engineers, 30 September 1999.

Reference: ER 1110-2-1407, Hydraulic Design for Coastal Shore Protection Projects.

1.2. Study Purpose

The purpose of the feasibility study is to evaluate significant ecosystem degradation in the Puget Sound Basin; to formulate, evaluate, and screen potential solutions to these problems; and to recommend a series of actions and projects that have a federal interest and are supported by a local entity willing to provide the necessary items of local cooperation. The recommended plan must significantly contribute to the identified restoration objectives of restoring nearshore habitat of Puget Sound for the benefit of the biological resources and the integrity of the ecosystem, including the functions and natural processes of the basin; additionally the plan must be both technically viable and economically sound. This PMP defines the scope of and documents the process, schedule and cost for performing the feasibility study necessary to meet the purpose.

1.3 Reconnaissance Phase Study.

The Puget Sound Nearshore 905(b) Reconnaissance Report, dated 18 December 2000, and approved by Corps headquarters on 22 January 2001 finds that there is a federal interest in pursuing a feasibility phase study to plan for the restoration of the Puget Sound Basin. Puget Sound is bounded on the east by the Cascade Range and on the west by the Olympic Mountains. Its northern part reaches the artificial boundary between the United States and Canada, and it ends at the base of the low hills of the Coast Range near Olympia (Figure 1). Innumerable bays, inlets, promontories, mud flats, and gravelly or sandy beaches form the intricate contours of the shore. In addition, a myriad of islands of all sizes are found throughout the basin. The variety and extent of the shoreline totals 2,000 miles (3,220 kilometers). The total surface area of water contained by the Sound is 768 square nautical miles. Some call Puget Sound a “miniature ocean”; others portray it as one of the largest systems of estuaries in the world. Biologically, it is one of the most productive bodies of water in the world. Whatever you choose to call it, Puget Sound is the most distinctive feature of the landscape in western Washington.

During the reconnaissance study, it was found that major human modifications along the Puget Sound shoreline have resulted in a significant loss in estuarine and nearshore habitats. Changes in the physical structure of the shorelines have resulted in losses that limit terrestrial food sources and nutrient inputs for marine life; lowering of the beach profile, coarsening of beach sediment, filling of intertidal areas; and alterations of surface and groundwater flows. The direct link between physical conditions and habitat, and habitat and biological resources have resulted in significant impacts to critical fish and wildlife resources, including habitat that supports all species of salmonids. Stream alterations, lands use, and construction of infrastructure within the intertidal areas have also degraded aquatic and riparian ecosystems within the basin. In addition, three salmonid species has been listed as threatened under the Endangered Species Act (ESA) (chum, chinook, and bull trout). The feasibility phase study will develop an overall plan for the restoration of the ecosystem within the nearshore environment of the Puget Sound Basin.

The problems identified in the 905(b) report include:

1. Direct loss of nearshore habitat and processes as a result of human modifications such as construction of bulkheads and docks, filling of intertidal areas, and removal of shoreline vegetation;
2. Indirect loss of nearshore functions and processes (i.e., sediment sources, drift patterns, marine vegetation, fresh water inputs);
3. Remnant habitat patches have now become critical support features for fish and wildlife populations, including three threatened species of salmonids; and
4. Thirteen species or groups of organisms whose regional populations have declined substantially in recent years include six species of fish, three seabirds, marine invertebrates, Olympia oysters and harbor porpoises. Habitat for spawning, rearing, and sustaining other life cycle processes has been identified as a major limiting factor in population declines of these species. Salmonids are

Insert Figure 1. Puget Sound and Adjacent Waters.

thought to be indicator species. The fact that salmonids are in decline indicates other marine species are likely to follow unless intervention reverses the current trends.

The types of restoration actions listed in the 905(b) report include:

- Restoration of historic shoreline processes
- Beach nourishment
- Removal of armoring or structure setbacks
- Alternative ‘processes friendly’ erosion protection measures
- Sustainable measures

The reconnaissance report will be used as a base from which to continue the required planning studies. The purpose of this reconnaissance study was to identify ecosystem restoration opportunities in the nearshore environment of the Puget Sound Basin, develop conceptual measures to address the identified problems and opportunities, and work with local governments to determine which measures and/or projects warranted further study. This effort is intended to be complementary with the numerous salmon recovery efforts taking place within Washington State [i.e., Shared Salmon Strategy; Salmon Recovery Funding Board (SRFB)]. While the reconnaissance phase considered only central Puget Sound, the Feasibility Study will include all of Puget Sound, including Hood Canal and the Straits of Juan de Fuca, Haro, Rosario, and Georgia. This is being done to ensure the functions and processes of Puget Sound are considered in a holistic and comprehensive fashion, which will augment the project and lend credibility to the overall effort.

The study of the Puget Sound Basin was initiated as a Corps of Engineers – Civil, Title I general investigation study under Public Law 106-60, dated September 29, 1999. This authority states: “The following appropriations shall be expended under the direction of the Secretary of Army and the supervision of the Chief of Engineers for authorized civil functions of the Department of Army pertaining to rivers and harbors, flood control, beach erosion, and related purposes.”

Information from the reconnaissance report will be expanded and updated as required to reflect current problems and opportunities and the desires of the public to establish final planning objectives and criteria to be used to identify and formulate plans for all viable alternatives.

1.4 Study Sponsorship and Cooperative Agencies

Washington State Department of Fish and Wildlife (WDFW) is the non-federal study sponsor. The following agencies may also be partners in the project and contribute financially to the feasibility study:

- Puget Sound Member Tribes of Northwest Indian Fish Commission
- Governor’s Salmon Recovery Office

- Washington State Legislature
- Washington State Department of Ecology (WDOE)
- Washington State Department of Natural Resources (WDNR)
- Washington State Department of Transportation (WSDOT)
- WA State Noxious Weed Control Board
- WA Parks and Recreation Commission
- Puget Sound Water Quality Authority
- WA State Historic Preservation Office
- Conservation Commission
- WA Sea Grant Program
- Puget Sound Regional Council

- All affected cities along Puget Sound, including, but not limited to:
 Point Roberts, Maple Beach, Blaine, Birch Bay, Bellingham, Marietta, Lummi Island, Doe Bay, Eastsound, Olga, Orcas, Deer harbor, Roche Harbor, Friday Harbor, Lopez, Anacortes, Guemes, Edison, LaConnor, Stanwood, Utsalady, Camano, Coupeville, Keystone, Port Townsend, Greenbank, Irondale, Gardiner, Discovery Bay, Sequim, Dungeness, Agnew, Port Angeles, Joyce, Clallam Bay, Sekiu, Neah Bay, Irondale, Port Hadlock, Chimacum, Port Ludlow, Port Gamble, Edmonds, Kingston, Poulsbo, Suquamish, Keyport, Bangor, Seabeck, Quilcene, Brinnon, Eldon, Lilliwaup, Hoodspout, Potlatch, Union, Tahuya, Belfair, Allyn, Grapeview, Vaughn, Key Center, Holly, Seabeck, Silverdale, Bainbridge Island, Bremerton, Port Orchard, Southworth, Vashon, Freeland, Langley, Clinton, Everett, Mukilteo, Lynnwood, Edmonds, Seattle, Tukwila, Seatac, Des Moines, Burien, Federal Way, Tacoma, Puyallup, Lakewood, Steilacoom, Nisqually, Olympia, Tumwater, Kamilche, Shelton, Home, Lakebay, Longbranch,

- All affected counties along Puget Sound, including, but not limited to:
 San Juan, Island, Whatcom, Skagit, Snohomish, King, Pierce, Thurston, Mason, Kitsap, Jefferson, Clallam

- Port Authorities

Other Stakeholders may include:

- Universities, community colleges, continuing education centers, high schools, middle schools, elementary schools

- Non-Governmental Organizations such as: Audubon Society, Nature Conservancy, Northwest Straits Commission, People for Puget Sound, Hood Canal Coordinating Council, Burlington Northern & Sante Fe Railway

- Pacific Coast Shellfish Growers
- The Oyster Growers Association
- National Marine Fisheries Service (NMFS)

- U.S. Fish and Wildlife Service (USFWS)
- U.S. Environmental Protection Agency (EPA)
- U.S. Geological Survey (USGS)
- Federal Emergency Management Agency (FEMA)
- Natural Resource Conservation Service (NRCS)
- US National Park Service (USNPS)
- US Forest Service (USFS)
- Advisory Council on Historic Preservation
- Bureau of Indian Affairs
- US Coast Guard
- BC Environment, Lands & Parks
- Canadian Consulate General
- Environment Canada

2.0 FEASIBILITY PHASE STUDY REQUIREMENTS.

2.1 Basic Requirements.

The feasibility study will consist of the development of alternative plans to address ecosystem restoration and the selection of a recommended plan. Due to the complex nature of the ecosystem process affected and the significant geographic boundaries of the project, a significant proportion of the early stages of the feasibility study will be devoted to compiling information on past and ongoing studies, identifying and filling data gaps, developing a conceptual model of the Puget Sound ecosystem, and creating a methodology for selecting projects.

Other basic requirements of the feasibility study include: 1) developing plans and designs; 2) preparing construction as well as operation and maintenance cost estimates for each viable alternative, 3) computing average annual benefits and costs; 4) evaluating technical and economic feasibility of the plan; 5) assessing environmental impacts, including impacts on biological resources, cultural resources, and recreation; 6) addressing the views of the public through workshops and public meetings; 7) formulating plan mitigation measures; and 8) preparing the draft and final feasibility report and environmental impact statement (EIS) with required documentation to present the investigations and evaluations which support the recommended plan.

The end products will be a feasibility report and a combined National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) EIS. These documents will describe the identified problems and opportunities, plans formulated, engineering and economic feasibility and public acceptability of each alternative, the social and environmental constraints and impacts for each alternative, and the plan recommended for implementation.

2.2 Specific Requirements.

The specific requirement of the feasibility phase is to identify a plan that is:

- Technically feasible from an engineering standpoint (i.e., sound engineering design).
- Economically justified. Ecosystem restoration benefits (monetary and non-monetary) exceed their project related costs over the 50-year economic life of the project, and contribute significantly to restoring key functions, processes and habitat.
- Environmentally and socially acceptable (able to meet permitting and regulatory requirements).
- Supported by the project sponsor.

The PMP defines and limits the work to that necessary to meet the above requirements for a complete feasibility report. There will be close coordination between the Corps of Engineers and the project sponsor throughout the study.

2.3 Feasibility Study Staging: Programmatic and Project Specific.

The feasibility study will be conducted in three stages: programmatic (Stages I and II) and site-specific (Stage III), as summarized below. Stage one, programmatic stage, will involve the formulation, identification and screening of existing data, including identification of data gaps, and the development of project selection criteria and a conceptual model of Puget Sound. These products will be used to select potential restoration alternatives, which will be carried into Stage III. Stage II will focus on refining the conceptual model and project selection criteria using the new information identified as critical (i.e., data gaps) during Stage I. This new information will be used to augment and refine the list of potential restoration project alternatives. Stage III, the project specific stage, will involve detailed study of the selected project alternatives using the products developed during Stages I and II, and further refinement as needed of the additional information, leading to a feasibility report and EIS containing a recommendation for Federal involvement in project implementation. This approach is designed to increase the likelihood of public acceptance of a plan, which recommends development of ecosystem restoration project alternatives throughout the nearshore habitat of the Puget Sound Basin.

For the purposes of this PMP, an estimate of 30 ecosystem project alternatives was used to develop the scope and cost of investigations and design necessary. This estimate of 30 project alternatives is not intended to limit this effort, only to aid in identifying a management plan and cost estimate, and is subject to change if study conclusions warrant. The strategy calls for a staged environmental review, with a programmatic EIS, followed by project specific EIS supplements developed and refined as the project alternatives are implemented over a 10 to 15 year period.

2.3.1 Stage I – Project Formulation (Programmatic).

The project selection stage will result in a ‘short list’ of project alternatives to be carried forward to Stage III (nominally 30). The following is a summation of the technical elements of Stage I followed by a summation of Stage II:

Stage I will be comprised of two major technical efforts designed to lay the foundation for subsequent stages. The first effort will focus on adopting a technical framework needed to guide program research needs. The second effort will focus on immediate research needs, from which future data collections will be based including monitoring and assessment of existing restoration projects to document lessons learned, improve planning efficiency and gather relevant information will be included in Stage II activities.

Technical Framework

This task represents the organizational component to Stage I. It will involve review of existing and ongoing efforts to characterize Puget Sound's nearshore environment and adoption by the interim Nearshore Science Team of agreed upon next steps as identified by those efforts. The technical framework will organize and guide technical program work directly related to program goals and objectives.

Assemble and convene a Nearshore Science Team (NST)

The NST will consist of regional experts and members of relevant scientific disciplines for the purpose of providing broad scientific guidance to The Nearshore Study. Representatives from the USACOE and Sponsor or their designees will be considered program facilitators to the NST responsible for completing all administrative tasks including meeting coordination, meeting notes, set-up and execution of scientific workshops. The NST will identify additional expertise in the community for project-specific purposes and maintain communications with the larger group on the overall direction of The Nearshore Study and likely next steps that would require their expertise. Team make-up will include -- a mix of disciplines; a group of seven (7) technical members will be considered the "core" members (for maximum team effectiveness; and each core member must represent a body of knowledge (within a discipline or organization) that can be used to network or carry communications to a broader scientific audience.

Adopt a set of Guiding Ecological Principles The NST will adopt and modify as appropriate a set of guiding ecological principals which set the geographical and ecological sideboards for the program tasks and scope as agreed upon from the outcomes of existing nearshore characterization and assessment reports. An objective set of Guiding Ecological Principles will be required to both frame and evaluate restoration activities. They will be designed to guide all phases of habitat restoration, including the context, planning, design, implementation and monitoring and assessment. These Principles will be restricted to ecological concepts, with the primary purpose of identifying attributes of restoration planning and projects that are most likely to achieve maximum contribution to marine resource recovery of a natural ecosystem within the constrains of the developed Puget Sound Basin.

Written Framework The NST will produce a written framework including detailed objectives; description of guiding ecological principles, initial data gaps and research

needs, and list of potential partner projects describing specific tasks and schedule for deliverables.

Coordination of Technical Aspects of Project. The function of the NST will be to identify and continue tracking related, ongoing Puget Sound nearshore studies and programs, and develop mechanisms and agreements to coordinate and collaborate on nearshore work that forwards the goals and objectives of The Nearshore Study (partnered projects). The ultimate goal of this task will be to assure that The Nearshore Study adds to and supports, rather than duplicates or competes with ongoing studies and projects. Work items for the NST include identification of studies and programs that are closely related to The Nearshore Study, and development and implementation of mechanisms to track, coordinate with and collaborate on nearshore work to facilitate efficient use of institutional and human resources. Primary duties include recommendations to the steering committee. 5r NST core membership and non-federal lead responsibilities will carry a time requirement, for which some members may require compensation. Dispersement guidelines for compensation will be a Steering Committee responsibility.

Technical Components for Stage I

These efforts are designed to scope and implement efforts related to nearshore characterization and assessment that will be built upon in later stages. Where possible, deliverables have been scheduled to disseminate results as Stage I progresses. This portion of the program will:

Adopt Conceptual Model of Nearshore Habitat Existing scientific models will be adapted to develop a conceptual model of the Puget Sound Nearshore. The model will describe natural functions and processes within the nearshore environment that support salmon and other key species, and describe how these processes interact with human uses. While the conceptual model will focus on the nearshore, it will recognize connections to upland, watershed and offshore systems for potential inclusion in cross system comparisons.

Compilation and Access of Existing Information High value data sets on nearshore habitats & the resources they support, will be compiled, synthesized and integrated to make available for use by the partners. Projects to be considered include— compilation of Shore Zone, drift cell, forage fish, oblique photos etc into a comprehensive and accessible data analysis tool. Data integration tasks will bring together currently available information on marine shoreline characteristics to facilitate the use of these data in restoration shoreline management planning. As part of this project, a web portal will be developed that supports the short and long term information access needs of The Nearshore Study and its partners. Data discovery, complete data set retrieval, feedback from data users, the dissemination and support of selected “canned” data products, selected ad hoc data query, and GIS mapping functions will be included.

Limiting Factors Analysis for Salmon and Other Key Species This task shall identify factors limiting salmon and other key species in the nearshore by utilizing the analysis of current and historic conditions, the conceptual model, and knowledge of salmon life history and ecology. The analysis will be conducted at multiple spatial scales targeting the key processes and habitat characteristics that are most limiting to salmon in the nearshore of Puget Sound.

Conditions Analysis and Assessment Characterization of the current and historic conditions of key nearshore habitats and processes through analyses of information available to local, federal, state, tribal, and other groups that are seeking to identify sites for restoration. Developed from the compilation of existing data, the limiting factors analysis and reconstructed historic current conditions.

Selection Criteria for Habitat Restoration. Evaluate alternative approaches and select criteria for establishing priorities for restoration and conservation projects, based on providing high quality functioning habitats that will contribute to salmon recovery and support other key species. This task will utilize Guiding Ecological Principles to generate specific recommendations for the distribution of restoration actions of various types across the Puget Sound Basin. This task will contain an integration of results from the conceptual model, compilation of existing information, limiting factors analysis, conditions analysis and initial identification of data gaps and information needs. Effort will be tailored to the development of restoration approaches, selection criteria and recommendations.

Action Project List. Develop a list of areas and actions on an annual basis that are appropriate for habitat restoration and/or an enhanced level of protection derived by applying selection criteria to existing habitat data, and generating a list of the highest priority areas and actions. Task to serve in guiding project for selecting areas and sites for high priority restoration projects.

Identify Data Gaps and Research Needs for Stage II. Revise and update data gaps and research needs developed under the Technical Framework as necessary to complete Stage II. Provides entities working on restoration of nearshore areas a list of the most important weaknesses in the existing data and what new data should be collected if funding becomes available. This will help focus any future data collection efforts.

Adaptive Management

These efforts are designed to scope and implement efforts related to nearshore investigations and data collection activities which would build upon the more programmatic aspects of the technical components listed above. In addition, these efforts would capitalize on research and technical studies, which are consistent with the goals and objectives of The Nearshore Study. Potential studies might include:

- (1) Assessing the effectiveness of previously completed restoration projects to verify benefits.
- (2) Development of reference sites to serve as templates of properly functioning conditions.
- (3) Incorporation of existing studies (outside The Nearshore Study) that could provide additional information to the Stage I study components if additional resources were provided.

The basis of actions to be taken under this study will be the improvement of conditions in the basin that would be expected to prevail without a project in place (“without project” condition). Emphasis will be placed on the priority nearshore areas identified as critical for marine resource recovery in the conceptual model and using the selection criteria. The without project definition will use information contained in existing documents and using the new information and models listed above. A list of possible restoration project alternatives in the Puget Sound Basin will be developed which will address the priority needs of the basin. A selection methodology will be employed to reduce the list of all possible ‘best’ project features in the basin to evaluate and recommend for Federal involvement.

The process of identifying the ‘best’ project alternatives for consideration will involve a collaborative effort between the USACOE, WDFW, other potential sponsors, affected Tribes and Federal and resource agencies.

Initially, a ‘long list’ list of potential ecosystem restoration project alternatives, identified from a literature review, the conceptual model, selection criteria, and any other information sources, will be developed. These ‘early action’ protection and restoration projects will be further screened to determine which, if any, have enough information or ample momentum to be funded and constructed prior to the completion of the feasibility study. Those potential projects that remain will be further screened and scrutinized using the criteria and models developed during the planning process to identify which projects would best achieve the project goals and objectives.

For the purpose of this PMP, it is assumed that this ‘long list’ of identified potential project alternatives will include about 100 potential alternatives throughout the Puget Sound Basin, including Hood Canal and the Straits. This estimate of 100 potential project alternatives is not intended to limit the consideration of projects, but to aid in identifying the resources needed to prepare and evaluate the list.

Second, an ‘ecosystem restoration measurement’ unit will be selected for each project alternative type that best represents that project type’s contribution to the protection and restoration of the nearshore environment. For example, shoreline restoration alternatives might be measured by feet of shoreline enhanced or restored. Similarly, functional reconnection might be measured by the number of

acres of wetlands, spawning areas, or aquatic habitat created or restored by another project alternative. The selection of 'ecosystem restoration measurement' units will reflect the needs assessment based on the 'without project condition' and information developed during the planning process. However, evaluation in all phases will include quantity and quality aspects of each alternative. A 'potential project alternative fact sheet' will be developed for each of the potential project alternatives including a sketch of the project plan, description of the location, number of 'ecosystem restoration measurement' units produced, and the estimated construction cost of the project alternative. An incremental cost effectiveness analysis will be performed on each of the potential project alternative listed under a project type using the 'ecosystem restoration measurement' unit selected for that project alternative type. The results of the incremental cost effectiveness analysis will be used to rank each project alternative listed under each of the project types (i.e., estuarine, fish habitat, wetland, etc.). The ranking, least costly to most costly, will be displayed under each project alternative type.

Third, the model(s) developed during the planning process will be used to further evaluate, screen, and rank the list of project alternatives. It is assumed, although not known, that specific selection factors will be used to develop a decision matrix for each of the project alternative types. The following are 'selection factors' that may be used to evaluate each project alternative:

- Provides most cost effective environmental restoration
- Provides critical fish and wildlife habitat
- Improves nearshore functions and/or processes
- Preserves historic or cultural resources
- Is acceptable to local sponsor, tribes, resource agencies & public
- Meets the corps' criteria for Federal participation
- Meets the local sponsor's funding objectives

2.3.2 Stage II – Refinement of Model, Selection Criteria, Plan Formulation.

The processes, data, and criteria developed during Stage I will be inserted and manipulated to further calibrate and refine the models, selection criteria and scope of the overall project. It is anticipated that new information collected and synthesized during Stage I might alter the study parameters or direction. Additional data collection may be needed to further understand the processes and functions of Puget Sound during this Stage. Additional modeling exercises may be required to better depict the diverse conditions of the nearshore habitat. Surveys of marine species may be required and/or new methodologies developed to assist in the development of a Sound-wide approach to restoration, enhancement or preservation of key nearshore habitat areas. Some key elements have been identified and include the following:

Technical Elements for Stage II

Upon approval, Stage II will be designed to build upon direction given under Stage I by initiating a full-scale planning and environmental studies program. The purpose of Stage II is to begin acquiring program specific data to serve as planning guidance and decision-making tools later in the planning process. It is anticipated that specific areas of investigation will be tailored to outcomes under Stage I however; several specific areas of study have been identified as needing attention. The first effort shall be a continuance of data management functions initiated in Stage I. Secondly, efforts should be made based on workshops and other discussions held during Stage I to provide direction for studies designed to gain project relevant information for salmonid and other nearshore species use of nearshore resource with a focus on high priority areas. The second effort will synthesize lessons learned and application research of existing restoration projects. Efforts started under Stage II will be tailored where possible to end prior to initiation of Stage III but many of the biological investigations will continue into Stage III.

Operate Nearshore Science Team. Continued costs to fund the NST from Stage I. Assumes continued compensation for some employees with additional costs for meetings and publications.

Compilation and Access to New and Existing Information. Continued compilation, synthesis and integration of high priority information on nearshore habitats and the resources they support especially information on vegetation or other critical habitat distribution and associated species assemblages. Includes technical dissemination of information in the form of workshops, conferences, publications and mass media. This effort would serve as an extension and summary of information management products.

Data Gaps and Field Studies. Under direction of the NST, shall continue to scope and execute major research needs that were identified in Stage I to evaluate current and historic conditions, evaluate recovery potential, and guide future restoration decisions.

Adaptive Management. These efforts will continue efforts from Stage I. The intent is to develop, scope and implement efforts related to nearshore investigations and data collection activities, which would build upon the more programmatic aspects within the technical components, listed in Stage I. In addition, these efforts will continue to capitalize on research and technical studies, which are consistent with the goals and objectives of The Nearshore Study.

The decision on which projects to implement will be undertaken using a collaborative approach involving the Steering Committee members, Science Team members, WDFW, the Corps, other potential sponsors, affected Tribes, resource agencies and other interested groups.

The Project Delivery Team (Table 2) and Steering Committee will use these decision matrices to select the 'short list' (nominally, the top 30 project alternatives) for detail

study in Stage III of this Feasibility Study. Once developed, this project alternative selection activity will be documented in a Plan Formulation Letter Report, considered in a in-progress review, provided in final form to the Executive Committee for information and become the Plan Formulation Section of the feasibility report/EIS. The Feasibility report and Programmatic EIS will be written and modified throughout the planning process.

2.3.3 Stage III - Project Specific (Detailed) Study.

Upon approval, Stage III will be designed as a continuance of studies with further refinement based on data gathered under Stage II. Stage III will continue information management functions initiated and carried through in earlier stages. Stage III will consolidate results of field studies to develop tools to be used by the project during design and alternative selection. Stage III will also serve to synthesis planning and biological investigations such that feedback in the form of public dissemination can be given to various stakeholders.

Operate Nearshore Science Team. Continued costs to fund the NST from Stage II. Assumes continued compensation for some employees with additional costs for meetings and publications.

Compilation and Access to New and Existing Information. Continued compilation, synthesis and integration of high priority information on nearshore habitats and the resources they support especially information on vegetation or other critical habitat distribution and associated species assemblages. Includes technical dissemination of information in the form of workshops, conferences, publications and mass media. This effort would serve as an extension and summary of information management products.

Data Gaps and Field Studies. Under direction of the NST, shall continue to scope and execute major research needs that were identified in Stages I and II to evaluate current and historic conditions, evaluate recovery potential, and guide future restoration decisions.

Adaptive Management. These efforts will continue efforts from Stage II. The intent is to develop, scope and implement efforts related to nearshore investigations and data collection activities which would build upon the more programmatic aspects within the technical components listed in Stage II. In addition, these efforts will continue to capitalize on research and technical studies, which are consistent with the goals and objectives of The Nearshore Study.

In addition, the short list selected in the first portion of the study will be developed to a concept level of detail (35% design) including identification of restoration outputs and benefits, cost estimates in micro computer aided cost engineering system (MCACES) and NEPA/SEPA documentation appropriate to support a

recommendation for federal project authority in a feasibility report. The preparation of the feasibility report will consist of writing the main body and appendices, as well as a NEPA/SEPA EIS or supplement. The documentation will be on going and take place throughout the feasibility phase. During the feasibility phase, a technical review conference (TRC) and alternative formulation briefing (AFB) will be conducted with senior personnel from HQUSACE, NWD, Seattle District, and sponsor. The draft feasibility report will then be released for public review and a series of public meeting will be held. The draft report will be revised and a final feasibility report/EIS will be submitted to the Division Engineer at NWD for further processing.

2.3.4 Washington Level Review and Support

After the Division Engineer issues a Public Notice on the feasibility report, the report will then begin the Washington level review process. This process consists of filing the final EIS in the Federal Register following State and Federal agency review, submittal of the Chief of Engineer's report to the Assistance Secretary of the Army for Civil Works [ASA(CW)], and submittal of the ASA(CW) letter to the Office of Management and Budget (OMB) for review for consistency with the policies and programs of the President.

2.3.5 Early Action Projects

Projects formulated to address ecosystem restoration objectives may be eligible for consideration in the Corps' Continuing Authorities Program (CAP) at a significant savings in project implementation time. Two Continuing Authorities: 1) Section 1135 of Water Resources Development Act (WRDA) of 1986, Project Modifications for Improvement of the Environment, and 2) Section 206 of WRDA of 1996, Aquatic Ecosystem Restoration, provide for ecosystem restoration to restore degraded ecosystem structure, function, and dynamic processes to a less degraded, more natural condition.

Section 1135 is used to restore a degraded ecosystem that resulted from Corps' project impacts and Section 206 can be used to restore degraded aquatic ecosystem in the public interest. Each of these authorities has a Federal project limit of \$5,000,000 and requires a non-Federal sponsor to share 25% of the Section 1135 project costs or 35% of the Section 206 project costs.

The development of these projects requires the preparation of a Preliminary Restoration Plan (PRP), at full Federal expense, and a Feasibility Study Report, Plans & Specs and Construction cost shared with a non-Federal sponsor. These authorities require just under two years from inception to the start of construction, a significant savings over the comparable 4 to 8 years required when specific project Congressional authorization is required. Projects that are selected for further consideration in the project selection process of Stage I, II and III of this feasibility study will be reviewed to determine if they can be implemented in the CAP. If accepted into the CAP, these projects will be deleted from the short list and monitored throughout the General Investigation (GI) project to determine success.

Finally, the Puget Sound and Adjacent Waters Restoration Initiative, is a new Corps of Engineers authority to implement critical restoration projects that will produce immediate and substantial ecosystem restoration, preservation, and protection benefits. This program authorizes a total of \$40 million in Federal funding for projects with no more than \$5 million going to any one project. Projects will be identified through a prioritization process that will involve many of the Federal, state, local, and tribal interests throughout Puget Sound. The program authorization is Section 544 of the Water Resources Development Act of 2000, Public Law 106-541.

All projects implemented under this authority will be cost-shared 65% Federal - 35% Non-Federal. The Non-Federal share can come in the form of cash, in-kind services, and credit for real estate. Sponsors must also provide all land, easements, and right of ways and be responsible for any operation and maintenance activities.

2.4 Breakdown Structure.

The relationship between the feasibility study phase and related phases of project development is illustrated in Figure 2. Level 1 is the project itself, with successive levels representing discrete phases or aspects of project/study development. Level 5 represents the tasks and subtasks necessary to produce the feasibility report, associated appendices, and EIS. The work breakdown structure (WBS) identifies the work to be performed and when the work will be performed. It provides a logical sequence of activities and identifies products or deliverables through the various stages of the feasibility phase. The study tasks are organized in Table 1 (Feasibility Cost Estimate Summary) according to their associated WBS.

**FIGURE 2
Levels and Phases of Project Development**

Washington, Level 1 (Project):

- Puget Sound Nearshore Ecosystem Restoration Study

Level 2 (Major phases of project development):

- Reconnaissance phase
- Feasibility phase
- Pre-construction engineering and design (PED) phase
- Construction phase
- Operation and maintenance phase

Level 3 (Product of the feasibility phase):

- Decision Document

Level 4 (Features of the decision document):

- Feasibility Report
- Engineering Appendix
- Economics Appendix
- Real Estate Appendix
- NEPA/SEPA Environmental Impact Statement

Level 5 (Specific tasks and subtasks to achieve Level 4 features):

Table 1. FEASIBILITY COST ESTIMATE

Sub-Account - Study Work Item & Total Costs	Stage I (see table 1A)		Stage II		FY 2006
	FY 2002	FY 2003	FY 2004	FY 2005	
J000 - FEASIBILITY REPORT					
Government Effort	\$-	\$15,000	\$125,000	\$100,000	\$50,000
Sponsor In-kind Services	\$-	\$15,000	\$50,000	\$-	\$25,000
\$405,000					
JAE00 - ENGINEERING AND DESIGN					
Government Effort	\$-	\$50,000	\$50,000	\$100,000	\$175,000
Sponsor In-kind Services	\$-	\$-	\$50,000	\$25,000	\$125,000
\$675,000					
JB000 - SOCIO-ECONOMIC STUDIES					
Government Effort	\$-	\$25,000	\$25,000	\$25,000	\$125,000
Sponsor In-kind Services	\$-	\$25,000	\$25,000	\$-	\$125,000
\$160,000					
JC000 - REAL ESTATE STUDIES					
Government Effort	\$12,500	\$25,000	\$25,000	\$25,000	\$50,000
Sponsor In-kind Services	\$-	\$15,000	\$25,000	\$25,000	\$25,000
\$237,500					
JD000 – ENVIRONMENTAL STUDIES					
Government Effort	\$661,000	\$600,000	\$747,850	\$756,250	\$1,000,000
Sponsor In-kind Services	\$680,000	\$800,000	\$866,650	\$858,250	\$1,000,000
\$6,220,000					
JH000 – COST ESTIMATING					
Government Effort	\$-	\$-	\$-	\$50,000	\$25,000
Sponsor In-kind Services	\$-	\$-	\$-	\$-	\$-
\$100,000					
JJ000 – PLAN FORMULATION					
Government Effort	\$-	\$45,000	\$50,000	\$150,000	\$50,000
Sponsor In-kind Services	\$-	\$45,000	\$40,000	\$50,000	\$50,000
\$530,000					
JN000 - ALL OTHERS					
Government Effort	\$-	\$-	\$25,000	\$25,000	\$25,000
Sponsor In-kind Services	\$-	\$-	\$-	\$-	\$-
\$100,000					
Z000 – PROGRAM AND PROJECT MANAGEMENT					
Government Effort	\$162,000	\$205,550	\$200,000	\$300,000	\$1,000,000
Sponsor In-kind Services	\$334,000	\$291,050	\$200,000	\$300,000	\$200,000
\$2,382,600					
SUBTOTAL	\$1,849,500	\$2,156,600	\$2,504,500	\$2,789,500	\$1,125,000
CONTINGENCY (approx. 15% applied FY06 & FY07)					\$168,750
TOTAL ESTIMATE (IN 2001 DOLLARS)	\$1,849,500	\$2,156,600	\$2,504,500	\$2,789,500	\$1,293,750
Cost Inflation (assumed approx. 3% per yr.)	\$55,485	\$129,396	\$225,405	\$334,740	\$193,750
FULLY FUNDED YEARLY ESTIMATE	\$1,904,985	\$2,285,996	\$2,729,905	\$3,124,240	\$1,487,500

GOVERNMENT COST SHARE	\$860,565	\$1,023,483	\$1,360,157	\$1,715,000	\$773,001	\$295,148
TOTAL GOVERNMENT COST	\$6,027,353					
SPONSOR'S CONTRIBUTION						
Cash	\$0	\$0	\$0	\$0	\$0	\$0
In-kind services	\$1,044,420	\$1,262,513	\$1,369,749	\$1,409,240	\$708,199	\$234,083
TOTAL SPONSOR COST	\$6,028,203					
TOTAL PROJECT COST	\$12,055,556					
TOTAL GOVERNMENT COST	\$6,027,353					
TOTAL SPONSOR COST	\$6,028,203					

Table 1a. STUDY WORK ITEM AND TOTAL COSTS*	STAGE I – OCTOBER 2001 to APRIL 2003			
	April 2002	October 2002	April 2003	Total
*without 3% cost inflation				
J000 – FEASIBILITY REPORT				
Draft Report Preparation (EIS)	\$-	\$-	\$15,000	\$15,000
Technical Review of Report	\$-	\$-	\$-	\$-
WA Level Review and Support	\$-	\$-	\$-	\$-
<i>Total</i>	\$-	\$-	\$15,000	\$15,000
Government Effort	\$-	\$-	\$7,500	\$7,500
Sponsor In-kind Services	\$-	\$-	\$7,500	\$7,500
TOTAL = \$15,000				
JAE00 - ENGINEERING AND DESIGN FOR SELECTED ALTERNATIVES				
Hydrology Studies	\$-	\$-	\$25,000	\$25,000
Hydraulic Studies	\$-	\$-	\$-	\$-
Geotechnical Studies	\$-	\$-	\$-	\$-

Table 1a. STUDY WORK ITEM AND TOTAL COSTS*	STAGE I – OCTOBER 2001 to APRIL 2003			
	*without 3% cost inflation	April 2002	October 2002	April 2003
HTRW Studies	\$-	\$-	\$-	\$-
Survey and Mapping	\$-	\$-	\$-	\$-
Design Analysis	\$-	\$-	\$-	\$-
<i>Total</i>	\$-	\$-	\$25,000	\$25,000
Government Effort	\$-	\$-	\$25,000	\$25,000
<i>Sponsor In-kind Services</i>	\$-	\$-	\$-	\$-
TOTAL=\$25,000				
JB000 - SOCIO-ECONOMIC STUDIES				
Identify Potential Restoration Sites	\$-	\$-	\$12,500	\$12,500
Incremental Cost Analysis	\$-	\$-	\$12,500	\$12,500
Appendix	\$-	\$-	\$-	\$-
<i>Total</i>	\$-	\$-	\$25,000	\$25,000
Government Effort	\$-	\$-	\$12,500	\$12,500
<i>Sponsor In-kind Services</i>	\$-	\$-	\$12,500	\$12,500
TOTAL=\$25,000				
JC000 - REAL ESTATE STUDIES				
Obtain Rights of Entry	\$5,000	\$7,500	\$15,000	\$27,500
Gross Appraisal of Lands				
Appendix			\$5,000	\$5,000
<i>Total</i>	\$5,000	\$7,500	\$20,000	\$32,500
Government Effort	\$5,000	\$7,500	\$12,500	\$25,000
<i>Sponsor In-kind Services</i>	\$-	\$-	\$7,500	\$7,500
TOTAL=\$32,500				
JD000 – ENVIRONMENTAL STUDIES				
Nearshore Science Team	\$20,000	\$20,000	\$10,000	\$50,000
Guiding Principles	\$3,500	\$3,500	\$3,000	\$10,000
Written Framework	\$3,500	\$3,500	\$3,000	\$10,000
Coordination – NST	\$67,000	\$66,000	\$67,000	\$200,000
Conceptual Model	\$10,000	\$10,000	\$10,000	\$30,000
Compile Access Information	\$233,000	\$233,000	\$234,000	\$700,000
Limiting Factors Analysis	\$25,000	\$25,000	\$25,000	\$75,000
Conditions Analysis and Assessment	\$33,000	\$33,000	\$34,000	\$100,000
Dvlp Selection Criteria	\$16,000	\$17,000	\$17,000	\$50,000

Table 1a. STUDY WORK ITEM AND TOTAL COSTS*	STAGE I – OCTOBER 2001 to APRIL 2003			
	*without 3% cost inflation	April 2002	October 2002	April 2003
Action Project List	\$50,000	\$50,000	\$50,000	\$150,000
ID Data Gaps	\$17,000	\$17,000	\$16,000	\$50,000
Adaptive Management	\$175,000	\$175,000	\$175,000	\$525,000
Prepare Programmatic EIS	\$-	\$-	\$-	\$-
Prepare Supplemental EIS	\$-	\$-	\$-	\$-
Fish & Wildlife Coordination	\$20,000	\$15,000	\$15,000	\$50,000
Cultural Resource Studies	\$-	\$-	\$-	\$-
TOTAL	\$673,000	\$668,000	\$659,000	\$2,000,000
Government Effort	\$333,000	\$328,000	\$319,000	\$980,000
<i>Sponsor In-kind Services</i>	<i>\$340,000</i>	<i>\$340,000</i>	<i>\$340,000</i>	<i>\$1,020,000</i>
TOTAL=\$2,000,000				
JH000 – COST ESTIMATING				
Evaluate Alternatives	\$-	\$-	\$-	\$-
<i>Total</i>	<i>\$-</i>	<i>\$-</i>	<i>\$-</i>	<i>\$-</i>
Government Effort	\$-	\$-	\$-	\$-
<i>Sponsor In-kind Services</i>	<i>\$-</i>	<i>\$-</i>	<i>\$-</i>	<i>\$-</i>
TOTAL=\$0				
JJ000 – PLAN FORMULATION				
Without Project Condition Report	\$-	\$-	\$40,000	\$40,000
Needs Assessment	\$-	\$-	\$5,000	\$5,000
Formulation of Alternatives	\$-	\$-	\$-	\$-
Selection of Alternatives	\$-	\$-	\$-	\$-
<i>Total</i>	<i>\$-</i>	<i>\$-</i>	<i>\$45,000</i>	<i>\$45,000</i>
Government Effort	\$-	\$-	\$22,500	\$22,500
<i>Sponsor In-kind Services</i>	<i>\$-</i>	<i>\$-</i>	<i>\$22,500</i>	<i>\$22,500</i>
TOTAL=\$45,000				
JN000 – ALL OTHERS				
Government Effort	\$-	\$-	\$-	\$-
<i>Sponsor In-kind Services</i>	<i>\$-</i>	<i>\$-</i>	<i>\$-</i>	<i>\$-</i>
TOTAL=\$0				
Z000 – PROGRAM AND PROJECT MANAGEMENT				

Table 1a. STUDY WORK ITEM AND TOTAL COSTS*	STAGE I – OCTOBER 2001 to APRIL 2003			
	April 2002	October 2002	April 2003	Total
*without 3% cost inflation				
Program Management	\$40,000	\$40,000	\$40,000	\$120,000
Project Management	\$162,000	\$163,000	\$163,000	\$488,000
Public Outreach/Involvement	\$40,000	\$40,000	\$40,000	\$120,000
Executive Committee	\$5,500	\$5,500	\$5,500	\$16,500
PED Cost Sharing Agreement	\$-	\$-	\$-	\$-
Negotiate Draft PCA	\$-	\$-	\$-	\$-
Total	\$247,500	\$248,500	\$248,500	\$744,500
Government Effort	\$80,500	\$81,500	\$81,500	\$243,500
<i>Sponsor In-kind Services</i>	<i>\$167,000</i>	<i>\$167,000</i>	<i>\$167,000</i>	<i>\$501,000</i>
TOTAL=\$744,500				
SUBTOTAL	\$925,500	\$924,000	\$1,037,500	\$2,887,000
CONTINGENCY (approx. 15%)	\$-	\$-	\$-	\$-
TOTAL ESTIMATE (IN 2001 DOLLARS)	\$925,500	\$924,000	\$1,037,500	\$2,902,000
FULLY FUNDED ESTIMATE	\$925,500	\$924,000	\$1,037,500	\$2,887,000
GOVERNMENT COST SHARE	\$418,500	\$417,000	\$473,000	\$1,308,500
SPONSOR'S CONTRIBUTION	\$507,000	\$507,000	\$564,500	\$1,578,500

3.0 FISCAL YEAR FUNDING BREAKDOWN.

The funding breakdown is based on a schedule, which typically requires the submittal of the final feasibility report to the Northwestern Division Commander 40 months after signing the Feasibility Cost Sharing Agreement (FCSA) and initiating the study. In this case, it has been determined that in order to collect and synthesize all necessary information on the project, additional time for the study will be required. NOTE that the “study period”, as defined in the Feasibility Cost Sharing Agreement (Article 1 D), commences with the release to the U.S. Army Corps of Engineers, Seattle District, of initial federal feasibility funds following execution of the Agreement. The study period, and thus the feasibility phase itself, ends when the Division Engineer sign the Public Notice.

The feasibility study cost estimate shown in Table 1 is summarized by fiscal year (1 Oct - 30 Sept). Table 1 shows the estimated cost of each study work item in 2001 dollars, followed by the estimate of government and sponsor’s cost share, and a 15% contingency each year. The fully funded total study cost estimate for the government and sponsor’s cost share is shown at the end of Table 1 with an approximate 15% contingency. The fully funded estimate is determined by multiplying the base year 2001 estimated study costs by an approximate 3% inflation factor for work to be performed in FY 2002 through 2007. Detailed study cost estimates for individual study tasks have been assembled in Appendix B. The detailed estimates will be used by the project manager in issuing work requests during the course of the feasibility phase.

4.0 STUDY TASK AND SUBTASK DESCRIPTIONS AND WORK BREAKDOWN STRUCTURE CODES.

Below is a brief description of the individual feasibility phase tasks, organized in accordance with the prescribed work breakdown structure (WBS). The WBS for each task and subtask corresponds to the work category element in the Corps of Engineers Financial Management System (CEFMS). Use of the WBS will enable the estimated funding and actual cost of individual tasks and subtasks, and consequently the estimated and actual costs of the feasibility phase, to be allocated and accounted for, respectively. The study cost estimate is summarized in Table 1. Detailed cost estimates for individual study tasks shown in Table 1 are assembled as an attachment to the PMP. The study schedule is shown in Appendix A.

J000 - FEASIBILITY REPORT.

The government and the sponsor will perform the work at a total cost of \$405,000.

J001 - Draft Report Preparation. This task includes all activities specifically pertaining to writing the draft feasibility report and NEPA/SEPA EIS for public review. Activities include writing the draft feasibility report / EIS, editing and revision

following independent technical review, and distributing the draft feasibility report / EIS for public review.

Reference: ER 1105-2-100.

J002 - Draft Feasibility Report / EIS Independent Technical Review. This work includes costs for technical review of the draft feasibility report / EIS by the Independent Technical Review (ITR) Team. Qualified staff members who are independent of the technical production of the feasibility report will conduct technical review of the draft report. The review will verify that the recommended plan (1) satisfies engineering and functional criteria; (2) meets the customers needs consistent with law and existing public policy, (3) has correct design assumptions and calculations; and (4) has a sufficient level of engineering to substantiate both the screening level comparative cost estimates and the baseline cost estimate with contingencies, as well as benefits, to support selection of the recommended plan. Members of the ITR team will include Seattle District and sponsor's personnel. The study will also have extensive in-progress review during the plan formulation process, and the draft feasibility report /EIS will undergo a rigorous public review following the independent technical review.

Reference: EC 1165-2-203, Technical and Policy Compliance Review.

J003 - Final Report Preparation. This effort includes all activities specifically pertaining to producing the final feasibility report /EIS. Specific activities include writing, assembling, editing, reviewing, revising, responding to review comments, preparing the final documents, and transmitting them for processing by the Northwestern Division Engineer.

Reference: ER 1105-2-100.

J004 - Washington Level Review and Support. This task includes those activities typically necessary for the Seattle District and the project Sponsor to support the Washington Level Review process of the feasibility report. This process starts with the signing of the final report by the Seattle District Engineer, and ending when the Assistant Secretary of the Army (Civil Works) submits the feasibility report to the Office of Management and Budget for review for consistency with the policies and programs of the President. These items could include answering comments, attending Washington level meetings and other necessary travel, and making minor report revisions as a result of Washington Level Review. This work item is required to be estimated at 5% percent of the total study cost or \$50,000 whichever is less, and will be shared equally.

Reference: ER 1105-2-100, EC 1105-2-208.

JAE00 – ENGINEERING AND DESIGN.

The government and the sponsor will perform this task for a total cost of \$675,000.

This account includes engineering and design studies of alternative restoration sites and preparation of an engineering appendix to the feasibility report. Engineering and design studies will be performed at the minimum level needed to establish conceptual designs for project features/elements and for development of construction cost estimates, and estimates of operation, maintenance, repair, replacement, and rehabilitation (OMRR&R), and monitoring. At the same time these studies will establish an appropriate basis for further pre-construction engineering and design (PED) design efforts, and project construction schedules. The tasks will also include restoration planning consisting of identifying habitat improvement measures in coordination with team members, quantifying the outputs/benefits of each measure, assist in the selection of the recommended plan, and preparation of narrative covering the above items. The design appendix will consist of all design data analyses, a written description of the design features of the recommended plan, plates, and cost estimates.

Reference: ER 1110-2-1150, ER 1105-2-100

JAE01 - Hydrology Studies. This subaccount includes hydrologic studies to support hydraulic and design studies. Where hydraulic modeling is required hydrologic flow duration data will be required for the modeling efforts. Hydrologic input to the feasibility report will be prepared along with a Hydrology Appendix.

JAE02 - Hydraulic Studies. This subaccount includes hydraulic design studies for approximately 30 sites throughout the nearshore habitats in the Puget Sound Basin. Some of the proposed projects will require hydraulic modeling. Also if removal or relocation projects are proposed for the nearshore (i.e., removing road fills in the historic intertidal areas where the stream has been forced into a culvert and the remainder of the road area within the estuary filled), a computer model will be required to determine the effect on water surface elevations from replacing or removing these structures from within the water course, and restoring the natural hydrology to the site. Hydraulic tidal input will be required for the estuary sites that have tidal effects. This effort will also include hydraulic input for the OMRR&R estimate. This work will include the preparation of a hydraulic section is the Engineering and Design Appendix.

JAE03 - Geotechnical Studies. This subaccount includes the investigation, exploration, and analysis of foundation and material conditions related to the selection and design of the selected restoration alternatives. The activities leading to selection of the short list will utilize existing geotechnical data for the screening of alternatives. Geotechnical investigations and analyses will be performed only on the sites selected for detailed study in Stage II to establish conceptual designs for project features. The major geotechnical analysis will be done in the pre-

construction engineering and design (PED) effort. A geotechnical section will be included in the Engineering and Design Appendix.

JAE04 - Hazardous, Toxic, and Radiological Waste (HTRW) Studies. The objective of HTRW studies is to determine the presence and character of contamination identified in an initial screening of the 30 sites selected for detailed study. A Phase I screening will be done on each of the sites in detailed study. If this screening shows significant contaminants exist at the site, consideration will be given first to selecting another site or developing an estimate of the HTRW studies that would need to be conducted in the PED phase.

JAE05 - Survey and Mapping. This subaccount includes all surveying, aerial photography, mapping, bathymetry, and related tasks necessary to support engineering and design studies for the study. This may also include the preparation of topographic maps.

JAE06 - Design Analysis. This design analysis outlines any necessary civil design analysis work necessary to identify and define conceptual features of ecosystem restoration elements of plans considered and recommended in the feasibility report. This work will consist of, but not be limited to:

- visiting sites
- providing engineering data for the fact sheets on each site considered in Stage I screening
- collecting and evaluating background data such as topographic and bathymetric survey data, hydrologic and hydraulic data
- entering data to digital terrain model (used to calculate quantities and make cross sections, etc.)
- developing topographic files to be used for design
- preparing concept designs and defining features for 30 sites
- preparing quantity estimates for use in cost estimating
- establishing major work items and construction sequence
- performing in-house and interagency coordination.

JAE07 - Write Appendix. Prepare narrative of analyses performed, methodologies used and results obtained for Engineering and Design Appendix. The information developed above will be used as a basis for developing and screening alternative plans. Project features will be developed to form an adequate basis for establishing a project construction schedule and a baseline cost estimate. Engineering and design studies will be performed at the minimum level needed to establish conceptual designs for project features and elements and for development of construction cost estimates, while at the same time forming an appropriate basis for subsequent pre-construction engineering and design (PED). The engineering appendix will document the engineering and design effort during project formulation, and will include the design data analyses, a detailed description of the design features of the recommended plan, summary of alternative measures and plans evaluated, drawings, and construction cost estimates.

Reference: ER 1110-2-1150, ER 1105-2-1407.

JB000 - SOCIO-ECONOMIC STUDIES.

The government and the sponsor will perform the work for a total cost of \$160,000.

An economic analysis related to ecosystem restoration will be performed. This includes helping identify all potential restoration alternatives and then performing an incremental cost and cost effectiveness analysis for each of the separate restoration components. The results of this analysis will be used to:

- assist in the selection of the preferred projects and to compute an apportionment of costs to be assigned to each project purpose.
- determine the construction costs to be paid by the federal government and local sponsor.
- assist the local sponsor in preparing a financing plan and statement of financial capability.
- prepare an assessment of sponsor's financing plan.
- prepare economic appendix to include the results of the economic analyses, benefit-cost ratios, maximization analysis, federal versus non-federal cost sharing computation, and determining the National Ecosystem Restoration (NER), and the National Economic Development (NED) plans.

The results of these studies will be documented in an Economic Appendix containing narrative describing the analysis performed, methodologies used and results obtained.

Reference: ER 1105-2-100, Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies.

JC000 - REAL ESTATE STUDIES.

The work will be performed by the government and the sponsor for a total cost of \$237,500.

This task includes all required real estate studies and analyses to support plan formulation and plan selection, including obtaining Rights-of-Entry (ROE) where needed to support field investigations and a gross appraisal of land costs required for economic evaluation to be developed in Stage III, site specific study. A Real Estate Appendix for the feasibility report will be prepared containing a real estate write-up describing the lands, easements, and rights-of-way required for the recommended plans, the gross appraisal of land values, and an estimate of the sponsor's administrative and acquisition costs.

JD000 - ENVIRONMENTAL STUDIES.

The work will be performed by both the government and the sponsor for a total cost of \$6,220,000.

This task includes inventory and assessment required to determine the effects of restoration of ecosystems and non-monetary benefits of all alternative plans. A number of discrete tasks have been identified, as described below. Work will lead to preparation of a programmatic environmental impact statement (EIS), plus appropriate written narrative for the feasibility report. These studies will provide valuable and vital information for Endangered Species Act (ESA) Section 7 biological evaluations, where determinations on how construction activities and habitat changes would affect endangered and threatened species are made. This work will be coordinated in consultation with NMFS and USFWS.

Reference: ER 1105-2-100, ER 200-2-2

JD001 - Cultural Resource Studies.

This subaccount includes work required to locate, identify, and evaluate historic and prehistoric cultural resources (CR) possibly impacted by alternative measures. Previous CR studies have identified numerous CR sites within the project area. This subaccount provides for completion of CR inventory (e.g., location and identification) and site evaluation. In addition, there will be a preliminary evaluation of the effects of restoration project alternatives upon historic properties. These tasks will be accomplished in consultation with the Washington State Historic Preservation Officer (SHIPO). Existing CR information will be considered in screening project alternatives. This subaccount will support intensive survey and site evaluations for consideration of inclusion on the National Register of Historic Places and provide for the efficient planning of required data recovery investigations needed prior to construction. If required, site data recovery would occur during the project construction phase. The CR data recovery strategy will be developed in accordance with a Memorandum of Agreement between the Seattle District, the SHPO, the Advisory Council on Historic Preservation, and the affected Tribes. The strategy will also consider the extent of potential effects of final alternatives. The Government will complete CR portions of the EIS (including input to the FR and PMP). Completed CR assessment, evaluation, and mitigation, in conjunction with the inventory and initial assessment funded under this subaccount, could be expected to total one percent of the total estimated Federal appropriations required for project construction.

References: National Historic Preservation Act of 1966, Archeological and Historical Preservation Act of 1974, National Environmental Policy Act of 1969, Executive Order 11593 (Protection and Enhancement of the Cultural Environment), Native American Religious Freedom Act, and Native American Graves Repatriation Act.

JD002 - Information Management. A map-based format [i.e., Geographical Information System (GIS)] technology will be used to manage the large volume of diverse geospatial data and information needed to screen and evaluate the nearshore environment and identify potential sites for restoration. Tasks include: identifying and accessing environmental data; data quality verification; preparing digitized data layers for use in map site screening and selection; and the management and operation of map-based systems.

JD003 - Information Review. Conduct an in-depth review of available references and other objective information on environmental limiting factors, particularly as they pertain to salmonids, and ecosystem restoration proposals within the nearshore habitat of Puget Sound. This review will: 1) identify the documented ecological limiting factors within Puget Sound Basin, 2) assemble information on ecosystem restoration projects that have been proposed to meet the needs of the basin, as well as those already constructed for restoration and 3) prepare a synthesis of all information reviewed to support a follow-on assessment of needs and alternatives to meet the needs of the project purpose.

JD004 - Field Investigations. Conduct field investigations necessary to obtain data on approach, priority and value of potential ecosystem restoration alternatives for the nearshore habitat areas of Puget Sound and to gather information necessary for future restoration planning, design, implementation and assessment. Use in conjunction with results of the information review (JD003) to assist development of alternatives. Together with the information review, determine through field investigations the environmental outputs for each type of each site considered in the nearshore project. Document this task with a memorandum containing field observations, data collected and recommendations for further study for each of the priority basins. Field investigations may include the following separate efforts:

Nearshore Functional Assessment. Characterize the function of intertidal and shallow subtidal nearshore habitats provide for floral and faunal communities supporting salmon and other key species, including evaluating functional changes from shoreline alteration from artificial structures and human uses. Surveys will seek to quantify important functions, such as determining diet of nearshore fishes, prey resources availability and refuge from predation.

Salmon and Forage Fish Migration and Movement Patterns. Patterns of juvenile salmon migration and movement of other key species (e.g., forage fishes) through Puget Sound are a relatively unknown but critical information gap in understanding the function of the nearshore. Studies of movement will need to be conducted at several scales in order to document fish interaction at both fine scales, such as intra- and inter-habitat movement over tidal cycles, and coarse scales, such as rates and routes of movement within (e.g., between islands, west-east shores) among the various basins of the Sound. New technologies for fish tagging and tracking will enable some of these studies to document real-time movement, while other more

conventional mark-and-recapture techniques may be more appropriate for other investigations of more cumulative movement patterns.

Nearshore Habitat Mapping. Based on the emerging results of the Nearshore Functional Assessment (above), this investigation will involve mapping the distribution and integrity of different intertidal and shallow subtidal habitats for salmon and other key species. The purpose is to identify at the landscape scale locations where restoration would achieve the greatest increase in habitat and function.

Limiting Factors Analyses. The objective of this task is to identify the key processes and characteristics, constituting factors limiting salmon and other key species, that have been degraded in the nearshore region of Puget Sound. Assessment of limiting factors will utilize in part analysis of current and historic conditions, development of the conceptual model, and knowledge of salmon life history and ecology. Analysis will be conducted at multiple spatial scales related to the distribution of watersheds with depressed salmon populations and known migratory pathways of these salmon through Puget Sound.

Riparian/Shoreline Vegetation Surveys. Characterize the composition of shoreline vegetation assemblages and assemblage quality within 100 m of the shoreline. Particular emphasis will be placed on the supralittoral and backshore zones relative to their support of salmonid habitat.

Bathymetry and Substrate Surveys. Characterize nearshore bathymetry and substrate types up to the -10 m (MLLW) depth stratum and at least 100 m landward of the shoreline. The present resolution of nearshore bathymetry-topography and substrate data is insufficient (too coarse) for ecological characterization and for restoration planning. Nearshore bathymetric/topographic mapping and substrate characterization should be feasible over large scales if new technology (e.g., water penetrating airborne laser) and spatial datasets (e.g., PRISM seamless bathymetry-topography GIS dataset) are incorporated into survey and development of product.

Ground/Surface Water Quality and Quality Inventory. Assess natural levels and anthropogenic inputs of surface and groundwater in nearshore, with emphasis on small stream (surface) and seeps (groundwater) inputs to nearshore habitats. This study will specifically assess point source and cumulative non-point (e.g., septic failures) seeps and other sources from likely anthropogenic loading of nutrients, contaminants and other dissolved and particulate stressors on nearshore habitat integrity

The local sponsor will participate and provide assistance to these field investigations.

JD005 - Prepare Programmatic NEPA/SEPA EIS. The principal outputs of this effort will include: evaluation of programmatic alternatives; determination of

geographic areas of interest and restoration site feasibility; and definition of siting criteria. The work includes preparing a draft programmatic EIS, conducting the EIS review process and related environmental coordination, contract management, and production of the final NEPA/SEPA programmatic EIS. Documents will be reviewed in-house and by Agencies and the public as necessary before preparing final NEPA/SEPA EIS.

Reference: 33 CFR Parts 230 and 325, and ER 1105-2-100.

JD006 - Prepare Supplemental NEPA/SEPA EIS. For each of the specific site plans recommend for further federal consideration, a supplement to the programmatic NEPA/SEPA EIS will be prepared containing project/site specific information and assessments.

Reference: 33 CFR Parts 230 and 325, and ER 1105-2-100.

JD007 - Fish and Wildlife Coordination Act Report. This subaccount includes coordination with, and studies conducted by the USFWS, as required by the Fish and Wildlife Coordination Act (FWCA). This task will be performed by the USFWS and managed by the Government. The Government will write a scope of work and transfer funds to the USFWS for interagency and tribal coordination, planning and evaluation of the impacts of alternative measures and plans on fish and wildlife resources, preparation of a minimum of two planning aid letters (PAL), and a draft and final Fish and Wildlife Coordination Act Report (FWCA) for inclusion in the Feasibility Report. The Government effort will also include monitoring USFWS work and providing USFWS with required information such as description of alternatives, map of affected area, etc. The USFWS effort will include environmental data collection and evaluation of the environmental resources of the study area. The USFWS will review alternative plans and assess the effect of alternatives on the environmental values of the study area. The USFWS will offer recommendations concerning formulation of alternative plans. The USFWS will prepare a FWCA Report documenting its findings. The FWCA Report will be included as an attachment to the FR/EIS.

Reference: Fish and Wildlife Coordination Act of 1958 (PL 85-624, as amended).

JD008 - Environmental Coordination. Coordination consists of attending agency and sponsor meetings, coordinating with Native American Tribes, and attending team and public meetings and workshops.

Clean Water Act Section 404(b)(1) Evaluation. The Government will complete a Section 404(b) 1) evaluation for the recommended projects. A 404(b)(1) analysis will be completed for both the programmatic EIS and the Supplemental EIS.

Endangered Species Act Coordination. Endangered Species Act (ESA) coordination letters will be sent to both the USFWS and the NMFS. Based on their response, the ESA coordination will be completed with the preparation of a biological assessment(s), as appropriate, to identify possible effects to special status species found in the project area.

Coastal Zone Management Act. A Coastal Zone Management Act consistency determination will be completed with the project.

JH000 - COST ESTIMATING.

The government will prepare cost estimates, with input from the sponsor for a total cost of \$100,000.

This task includes development of cost estimates necessary to evaluate alternative plans, and preparation of a detailed baseline cost estimate for the recommended plan to be used for project authorization, development and completion. All cost estimates will include all federal and non-federal costs for lands and damages, all construction features, relocation of facilities and utilities, mitigation (if required) planning, engineering and design, supervision and administration, contingencies and cost escalation associated with each of these activities through mid-point of construction.

Reference: ER 1105-2-100.

JJ000 - PLAN FORMULATION AND EVALUATION.

The government and sponsor will jointly conduct plan formulation for a total cost of \$530,000.

This task involves identifying all potential alternatives to solve the identified problem, evaluating each alternative and selecting the recommended plans. Alternatives will be formulated based on four criteria: completeness, effectiveness, efficiency, and acceptability. As formulation progresses, remaining alternatives will be evaluated in greater detail, eliminating alternatives until detailed evaluation is complete and a recommended alternative is selected for implementation. The formulation process will analyze all available information and data assembled from many different components of the study.

Reference: ER 1105-2-100.

JJ001 - Without Project Condition Report. This task involves defining the conditions that will prevail in the basin into the future without the project including, a literature review, data gathering, coordination and reporting. The following is a

partial list of anticipated studies that may be conducted to assist in preparation of the Without Project Conditions Report:

- Fisheries and other marine resources trends;
- Habitat loss estimates
- Fish and wildlife population estimates
- Potential human build out estimates

JJ002 - Needs Assessment. This task uses the without project condition and predicts the needs of the environment to support salmonid species and other marine resources within the Puget Sound Basin.

JJ003 - Formulation of Alternatives. For the Puget Sound Basin a selection of the project alternative types that best meet the needs will be made in collaboration with Washington State, other local sponsors, the Tribes, resource agencies and the public. A list of project alternatives that fit the selected project types will then be formulated.

JJ004 - Selection of Alternatives for Detailed Study. The list of projects will then be evaluated to determine the 30 project alternatives that are most effective in meeting the objectives. An incremental cost and cost effectiveness analysis, a test of acceptability and the sponsor's willingness will be used to determine the 30 project alternatives to be recommended for detailed study.

Reference: ER 1105-2-100.

JN000 - ALL OTHER. This work involves the Biddability/Constructability/Operability (BCO) reviews and any Value Engineering (VE) studies that might result from this effort. While the planning for these activities is very speculative, an estimate of \$100,000 was used to cover these tasks until a better definition of the scope can be made.

Z000 - PROGRAM AND PROJECT MANAGEMENT.

This task will include all activities related to the overall management of the feasibility phase. The project will be jointly managed by the USACOE and the sponsor, and assumes costs for full time project management and part-time project management assistance. Total costs will be \$2,513,000 over the life of the study.

Z001 - Program Management. Program management consists of feasibility phase budget development, justification, management, defense and execution, as well as fund allocation and monitoring of both federal and non-federal expenditures. It includes preparation of budgetary documents and upward reporting, programming of funding, managing and tracking study obligations and expenditures, and accounting for sponsor cash contributions and in-kind services.

2002 - Project Management. Project management includes a wide variety of tasks and activities. These include overall coordination and local, state, tribal and federal governmental agencies, interest groups, and the general public; oversight management of Corps of Engineer, sponsor, and contracted study tasks and related activities; coordination between the Corps and the sponsor; attending and conducting meetings and briefings throughout the study; responding to congressional and other inquiries; and oversight management of review of the draft and final feasibility activities. This task does not include plan formulation, report preparation, or Washington level review support that are separately accounted for.

Reference: ER 5-1-11, ER 1105-2-100.

A **Steering Committee** will be formed as part of the project management team for this study. The Steering Committee leads the project, provides information to the Executive Committee and keeps them informed of key actions and decisions. The Steering Committee makes final decisions on project scope and direction, and coordinates with other Federal and State agencies, and other technical or advisory committees that may be formed as a result of the study effort to ensure efforts are not duplicative. The membership of the committee will be determined jointly by the sponsor and the USACOE. The USACOE and sponsor project managers will act as co-chairpersons for the Steering Committee.

2003 - Public Outreach and Involvement

This subaccount will consist of activities related to developing public information on the study and obtaining public comments during the study process. Education and increased awareness and exchange of viewpoints are vital to the development of acceptable and successful recommendations for improvements to the existing situation. The public involvement/outreach strategy will be on-going throughout the project and consist of 1) a series of workshops and public meetings throughout the Puget Sound Basin, 2) workshop and meeting notices, news releases, and public information brochures; 3) speaking engagements at community service clubs and local organizations by Corps and State, County, and local government personnel and possibly other experts, if available, and 4) development of a website and public information dissemination strategy. The study will have extensive review throughout the process by agencies at the federal, state, local and Tribal governmental level, and by, special interest groups, and the general public. Those entities most directly involved in review will include project partners, project stakeholders such as WDF&W, WSDOT, WDOE, USFWS, NMFS, the Puget Sound Native American Groups, local governments, Hood Canal Coordinating Council, Northwest Straits Commission, People for Puget Sound and private citizen groups and interest groups. The Sponsor will provide meeting facilities and develop public notices, news releases, and brochures for workshops and public hearings. The Government will maintain a mailing list and distribute workshop and public hearing notices. The Government and Sponsor will jointly conduct workshops and public meetings and participate in the community outreach engagements.

Reference: ER 1105-2-100.

Recognizing that the active involvement of all interested publics in the planning and design process is critical, as well as obtaining valuable input from interested stakeholders in the community, the state will solicit the active involvement of local land use planners, environmental groups, local governmental agencies, Native American tribes, businesses, resource agencies, interested groups, and private citizens. Participation of people with scientific and technical expertise will also be encouraged to increase the amount of relevant information available to the project study team. Coordination with several groups will be maintained to facilitate dialogue among basin residents and interest groups.

2004 - Executive Committee. This task includes costs incurred by the study Executive Committee made up of members from the Corps, WDFW, Tribal representatives, State and Federal Agencies, local governments and other executives who generally oversee study progress in accordance with the PMP, as prescribed in Article IV of the FCSA. The Executive Committee will meet periodically throughout the feasibility phase.

2005 - Pre-construction Engineering and Design (PED) Cost Sharing Agreement. A pre-construction engineering and design (PED) cost sharing agreement is prepared during the feasibility phase, following completion and submittal of the final feasibility report. Therefore, some scoping for PED is required during feasibility for inclusion into the Feasibility Report. The PED phase of project development encompasses all planning and engineering necessary for project construction. It also outlines the division of engineering and design responsibilities between the government and the sponsor.

2006 - Negotiate Draft Project Cooperation Agreement (PCA). This task includes coordinating with the local sponsor during the feasibility phase. It also includes reviewing the model project cooperation agreement (PCA) with the sponsor and agreeing on a final draft PCA to be included in the final feasibility report. The PCA describes all of the requirements and responsibilities relating to construction of the project, including items of local cooperation required from the local sponsor.

Reference: Section 221 of Flood Control Act of 1970 (Public Law (PL) 91-611), as amended by Sections 101(e) and 103(j) of the 1986 Water Resource Development Act (PL 99-662), as amended.

5.0 STUDY MANAGEMENT AND COORDINATION.

5.1 Coordination Mechanism.

Study management and coordination is generally described in Section 4 of this Agreement. The specific coordination mechanism between the Seattle District and the local sponsors described below.

- a. The Corps project manager will be responsible for the day-to-day management of the study. He/she will maintain close coordination with the entire Project Delivery Team (PDT), to ensure timely prosecution of the study and compliance with this Agreement. The Corps project manager will meet and confer with the sponsor's designated representative on a regular basis throughout the study to discuss study progress. The Corps project manager will maintain a written record of such meetings, with a copy provided to the sponsor's representative and members of the (PDT).
- b. The Corps project manager will prepare quarterly study progress reports, with appropriate input from the sponsor's representative and the Project Delivery Team (PDT). Quarterly progress reports on the study will be submitted to the Executive Committee and PDT. The reports will identify progress of all study tasks during the period, as well as document unresolved conflicts or policy issues requiring action by the Executive Committee. In addition, modifications to the PMP requiring amendment of the Agreement will be reported to the Executive Committee as necessary.
- c. The sponsor project manager also will be responsible for day-to-day management of the study. He/she will coordinate with the Corps project manager to ensure necessary work is completed on time and reported accurately to the Corps. The sponsor project manager is responsible for reporting in-kind contributions to the Corps on a quarterly basis, assisting the Corps in the analysis of real estate, environmental studies and documentation, plan formulation, and public outreach and coordination throughout the project.

5.2 Review and Acceptance of Work.

The Project Delivery Team (PDT), under the direction of the Corps project manager, will monitor and review all work. Review and acceptance of work products will be documented in the quarterly study progress reports submitted to the Executive Committee and PDT. The project manager will bring any disagreements about the acceptability of completed work to the PDT for resolution. Any unresolved issues will be brought to the attention of the Executive Committee.

6.0 QUALITY CONTROL PLAN.

6.1 Purpose.

This Quality Control (QC) Plan presents the process that assures quality products. This QC plan defines the responsibilities and roles of each member on the Project Delivery Team (PDT) and Independent Technical Review (ITR) Team. The products to be reviewed by the ITR Team are the draft feasibility report, NEPA/SEPA EIS and associated technical appendices, and any interim reports..

6.2 Methodology.

a. **The Project Delivery Team** (PDT) consists of qualified staff principally from within the Seattle District and the sponsor. Team members are identified in Table 2.

TABLE 2 FEASIBILITY PHASE PROJECT DELIVERY TEAM

<u>Discipline</u>	<u>Name</u>	<u>Office/Agency</u>
Project Manager	Lori Morris	Corps of Engineers
Program Analyst	Patricia Bauccio	Corps of Engineers
Environmental Coordinator	Jeff Dillon	Corps of Engineers
Environmental Resources	Fred Goetz/Aimee Kinney	Corps of Engineers
Cultural Resources	Dave Grant	Corps of Engineers
Fish & Wildlife	Jeff Dillon/Fred Goetz	Corps of Engineers
Economic Evaluation	Jeff Mendenhall	Corps of Engineers
Cost Engineering	To be determined	Corps of Engineers
Real Estate	Kevin Kane	Corps of Engineers
Hydraulic Engineering	Amy Reese Catherine Petroff	Corps of Engineers
Construction	To be determined	Corps of Engineers
Engineering	Eric Nelson	Corps of Engineers
Sponsor	To be determined	WA Dept of Fish & Wildlife

b. **The Independent Technical Review (ITR) Team** will be selected on the basis of having the proper knowledge, skills, and experience necessary to perform the task and their lack of affiliation with the development of the feasibility report/EIS and associated appendices. The review team is primarily drawn from Seattle District personnel, to ensure that the technical work and products from economics, engineering, environmental, cost estimating, real estate, and other disciplines produce a quality product. Review team members, where known, are shown in Table 3. Review of the EIS will also be accomplished through the formal NEPA/SEPA review process.

Technical review will use appropriate analytical methods for each technical area. Technical review will rely on periodic technical review team meetings to discuss critical checkpoints to include definition of the ‘without project conditions’ selection of projects for detailed study and completion of the concept design and cost estimates, and on the review of the written feasibility report documentation and files. Independent technical review will ensure that:

- the feasibility report is consistent with current criteria, procedures and policy.

- clearly justified and valid assumptions that are in accordance with established guidance and policy have been utilized, with any deviations clearly identified and properly approved.
- concepts, features analytical methods, analyses, and details are appropriate, fully coordinated, and correct.
- problems/issues are properly defined and scoped.
- conclusions and recommendations are reasonable.

TABLE 3 PROPOSED INDEPENDENT TECHNICAL REVIEW (ITR) TEAM

<u>Discipline</u>	<u>Reviewer</u>	<u>Office/Agency</u>
Review Team Leader	Les Soule	Corps of Engineers
Plan Formulation and Policy	Bruce Sexauer	Corps of Engineers
Environmental Restoration	Pat Cagney	Corps of Engineers
Engineering & Design	Patrick Naher	Corps of Engineers
Economics	Donald Bisbee	Corps of Engineers
Cost Engineering	To be determined	Corps of Engineers
Real Estate	Wanda Gentry	Corps of Engineers
Cultural Resources	David Rice	Corps of Engineers
Sponsor	Tim Smith	WA Dept of Fish & Wildlife

c. **Executive Committee.** The Executive Committee is made up of top management from the Seattle District, Corps of Engineers, Federal and State agency representatives, Tribal representation, local government participants, and select others. These individuals are identified on Table 4. This committee will meet periodically throughout the feasibility study to provide oversight and ensure that the study is conducted consistent with the provisions in this PMP. The Committee may also make recommendations that it deems warranted to avoid potential sources of dispute. Requests for changes in scheduling and study costs will also presented to the Committee for their review and approval. Representatives from non-governmental organizations may participate on the committee as non-voting members.

TABLE 4 EXECUTIVE COMMITTEE
 (*non-voting members)

Name	Position	Office/Agency
Colonel Ralph Graves	District Commander, Seattle	Corps of Engineers
Jeff Koenings	Director	WA Dept of Fish & Wildlife
Dr. William Ruckelshaus	Chairman	SRFB
Mona King	Planning Branch Chief	Corps of Engineers
Bruce Sexauer	GI Coordinator	Corps of Engineers
Lynn Childers	Manager, Division of Federal Activities	USFWS
Michael Schiewe	Director, Fish Ecology Division	NMFS
Terry Williams	Commissioner	NWIFC
Doug Sutherland	Commissioner of Public Lands	WA Dept of Natural Resources
Nancy McKay	Chair	Puget Sound Water Quality Action Team
To be determined	County Executive	Local Government
Kathy Fletcher	Executive Director	People for Puget Sound*
Tom Fitzsimmons	Director, Washington Department of Ecology	Washington Department of Ecology

6.3 Quality Control Responsibilities.

a. General. Technical review team continuity will be maintained through the life of the project, to the maximum extent possible. The size and composition of the review team shall be based on the complexity of the project; this composition may change as the project progresses and specific project features are better defined. The review team leader will normally be a Corps of Engineers project manager.

b. Project Manager. The feasibility study project manager shall be responsible for coordinating the review effort with the review team leader and shall:

- ensure that the schedule contains sufficient time to perform reviews of completed products.
- ensure that the ITR team leader is notified of significant PDT meetings and review conferences so that he/she can assemble the review team for in progress reviews.
- manage responses to review memorandums and resolve technical issues with the ITR review team leader, consult with Northwest Division as appropriate, and forward all unresolved technical issues to the appropriate Functional Chief for resolution.

c. **Resource Managers.** Each Corps of Engineers Resource Manager is responsible for ensuring that all work prepared by or for his/her Section or Branch has received any necessary internal quality control checks prior to the feasibility report being furnished to the review team for review.

d. **Independent Technical Review (ITR) Team Leader.** The ITR review team leader is responsible for coordinating all activities associated with the independent technical review of the draft feasibility report and EIS, and will:

- attend all major plan formulation meetings.
- coordinate the technical review and assemble all technical review comments and other review related correspondence for the use by the ITR team and Project Delivery Team.

e. **Technical Review Team Members.** Each review team member is responsible for performing an independent technical review of the draft feasibility report and EIS or portion thereof.

6.4 **Quality Control Process.**

a. **Technical Coordination.** Generally, product development shall be performed in accordance with established criteria, guidance, and policy. Meetings with the appropriate ITR review team members during the planning process will be held at key decision points. PDT meetings will also be held to discuss and resolve technical and/or policy issues that may arise during the course of product development. Technical issues and concerns raised during the technical review process will be documented, as will the resolution of these issues and concerns.

b. **Product Quality Control.** Product Quality Control is the responsibility of the project manager working with the ITR team leader to complete the independent technical review of a completed product. The Corps project manager will provide completed documents to the ITR review team leader who will distribute them to the ITR review team members for review. During the review, review team meetings will be scheduled as required to ensure that all components have been coordinated, there is consistency throughout the document and there is a consensus on proposed revisions. Any issues on which a review team position cannot be reached will be referred through the project manager to the District Functional Chief for resolution. The review team leader will record the significant team comments in a written review memorandum that will be provided to the project manager for appropriate action. Comments that cannot be resolved between reviewers and study team will be taken by the review team leader and project manager to the appropriate Functional Chief for final disposition; the assistance of Northwestern Division and HQUSACE will be requested as needed.

c. Consultant Products. Consultants are an extension of the Corps or sponsor staff. Accordingly, any designs, reports, etc. prepared by consultants will have an independent review by the ITR review team just as if they had been prepared by the Project Delivery Team.

d. Policy Review. Questions or problems regarding policy concerns will be elevated through NWD directly to HQUSACE (CECW-A) for resolution, as the issues develop. Legal and real estate policy issues will be elevated to the Chief Counsel and Director of Real Estate, respectively.

6.5 Technical Review Documentation.

a. All significant review comments will be provided to the Project Delivery Team in written format. The project manager will assure that all significant comments are resolved and their final disposition is identified in writing.

b. The feasibility report submitted to higher authority shall be accompanied by technical review documentation. This document shall be a separate item not to be included as part of the feasibility report. A page indicating the names of the Project Delivery Team members and technical review team members shall be included.

6.6 Schedule.

Feasibility phase milestones are scheduled as indicated on Table 5 of the Project Management Plan.

TABLE 5 FEASIBILITY PHASE SCHEDULE AND MILESTONES

<u>Milestone</u>	<u>Description</u>	<u>Scheduled Dates</u>
060	Execute FCSA	Sept 27, 2001
100	Initiate Feasibility Study	October 1, 2001
105	PMP In-Progress Review	October 1, 2002
111	Existing W/O Project Conditions Complete	April 1, 2003
112	Preliminary Screening Complete	April 1, 2004
	Plan Formulation Complete (Stage II)	April 1, 2005
113	Plans Selection	April 1, 2005
105	IPR	March 7, 2005
114	Feasibility Design Complete	October 31, 2006
120	Technical Review Complete	December 1, 2006
124	AFB	December 15, 2006
145	Public Review Complete (Draft Feasibility Report & NEPA/SEPA EIS)	June 1, 2007
165	Feasibility Report With NEPA/SEPA Submitted to NWD	August 31, 2007
170	Northwestern Division Commander's Public Notice	October 12, 2007
290	PED Agreement Signed with WA State	Spring 2008
330	Chief Report to ASA(CW)	Summer 2008
350	President Signs Authorization	Fall 2008
960	Construction Initiated	October 1, 2010
990	Construction Complete	October 1, 2020

APPENDIX A

Gantt Chart Project Schedule

APPENDIX B
Detailed Cost Estimate

Table 1a. STUDY WORK ITEM AND TOTAL COSTS*	STAGE I – OCTOBER 2001 to APRIL 2003				
	*without 3% cost inflation	April 2002	October 2002	April 2003	Total
J000 – FEASIBILITY REPORT					
Draft Report Preparation (EIS)	\$-	\$-	\$15,000	\$15,000	
Technical Review of Report	\$-	\$-	\$-	\$-	
WA Level Review and Support	\$-	\$-	\$-	\$-	
Government Effort	\$-	\$-	\$7,500	\$7,500	
Sponsor In-kind Services	\$-	\$-	\$7,500	\$7,500	
TOTAL = \$15,000					
JAE00 - ENGINEERING AND DESIGN FOR SELECTED ALTERNATIVES					
Hydrology Studies	\$-	\$-	\$25,000	\$25,000	
Hydraulic Studies	\$-	\$-	\$-	\$-	
Geotechnical Studies	\$-	\$-	\$-	\$-	
HTRW Studies	\$-	\$-	\$-	\$-	
Survey and Mapping	\$-	\$-	\$-	\$-	
Design Analysis	\$-	\$-	\$-	\$-	
Government Effort	\$-	\$-	\$25,000	\$25,000	
Sponsor In-kind Services	\$-	\$-	\$-	\$-	
TOTAL=\$25,000					
JB000 - SOCIO-ECONOMIC STUDIES					
Identify Potential Restoration Sites	\$-	\$-	\$12,500	\$12,500	
Incremental Cost Analysis	\$-	\$-	\$12,500	\$12,500	
Appendix	\$-	\$-	\$-	\$-	
Government Effort	\$-	\$-	\$12,500	\$12,500	
Sponsor In-kind Services	\$-	\$-	\$12,500	\$12,500	
TOTAL=\$25,000					
JC000 - REAL ESTATE STUDIES					
Obtain Rights of Entry	\$5,000	\$7,500	\$15,000	\$27,500	
Gross Appraisal of Lands					
Appendix			\$5,000	\$5,000	
Government Effort	\$5,000	\$7,500	\$12,500	\$25,000	
Sponsor In-kind Services	\$-	\$-	\$7,500	\$7,500	
TOTAL=\$32,500					
JD000 – ENVIRONMENTAL STUDIES					
Environmental Coordination	\$135,000	\$135,000	\$135,000	\$405,000	
Information Review/Compilation	\$183,500	\$183,500	\$183,000	\$550,500	
Information Management	\$75,000	\$75,000	\$75,000	\$225,000	
Field Investigations	\$166,000	\$167,000	\$167,000	\$500,000	
Prepare Programmatic EIS	\$-	\$100,000	\$100,000	\$200,000	
Prepare Supplemental EIS	\$-	\$-	\$-	\$-	
Fish & Wildlife Coordination	\$15,000	\$15,000	\$15,000	\$45,000	
Cultural Resource Studies	\$-	\$25,000	\$25,000	\$50,000	
Government Effort	\$287,250	\$350,250	\$350,000	\$987,500	
Sponsor In-kind Services	\$287,250	\$350,250	\$350,000	\$987,500	

Table 1a. STUDY WORK ITEM AND TOTAL COSTS*	STAGE I – OCTOBER 2001 to APRIL 2003			
	April 2002	October 2002	April 2003	Total
*without 3% cost inflation				
TOTAL=\$1,975,000				
JH000 - COST ESTIMATING				
Evaluate Alternatives	\$-	\$-	\$-	\$-
Government Effort	\$-	\$-	\$-	\$-
Sponsor In-kind Services	\$-	\$-	\$-	\$-
TOTAL=\$0				
JJ000 - PLAN FORMULATION				
Without Project Condition Report	\$-	\$-	\$40,000	\$40,000
Needs Assessment	\$-	\$-	\$5,000	\$5,000
Formulation of Alternatives	\$-	\$-	\$-	\$-
Selection of Alternatives	\$-	\$-	\$-	\$-
Government Effort	\$-	\$-	\$22,500	\$22,500
Sponsor In-kind Services	\$-	\$-	\$22,500	\$22,500
TOTAL=\$45,000				
JN000 - ALL OTHERS				
Government Effort	\$-	\$-	\$-	\$-
Sponsor In-kind Services	\$-	\$-	\$-	\$-
TOTAL=\$0				
Z000 - PROGRAM AND PROJECT MANAGEMENT				
Program Management	\$40,000	\$40,000	\$40,000	\$120,000
Project Management	\$162,000	\$163,000	\$163,000	\$488,000
Public Outreach/Involvement	\$40,000	\$40,000	\$40,000	\$120,000
Executive Committee	\$5,500	\$5,500	\$5,500	\$16,500
PED Cost Sharing Agreement	\$-	\$-	\$-	\$-
Negotiate Draft PCA	\$-	\$-	\$-	\$-
Government Effort	\$133,500	\$134,500	\$134,500	\$402,500
Sponsor In-kind Services	\$114,000	\$114,000	\$114,000	\$342,000
TOTAL=\$744,500				
SUBTOTAL	\$827,000	\$956,500	\$1,078,500	\$2,862,000
CONTINGENCY (approx. 15%)	\$124,050	\$143,475	\$161,775	\$429,300
TOTAL ESTIMATE (IN 2001 DOLLARS)	\$951,050	\$1,099,975	\$1,240,275	\$3,291,300
FULLY FUNDED ESTIMATE	\$951,050	\$1,099,975	\$1,240,275	\$3,291,300
GOVERNMENT COST SHARE	\$489,612	\$566,088	\$649,175	\$1,704,875
SPONSOR'S CONTRIBUTION	\$461,438	\$533,887	\$591,100	\$1,586,425

APPENDIX C

Sponsor's Letter of Intent