

**PUYALLUP RIVER FLOOD RISK REDUCTION FEASIBILITY STUDY  
PIERCE COUNTY, WASHINGTON**

**PROJECT MANAGEMENT PLAN**

*Prepared By:*  
**U.S. Army Corps of Engineers  
Seattle District**

*In Coordination With:*  
**Pierce County**

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**DRAFT**

# Puyallup River General Investigation Project Management Plan

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## **Puyallup River General Investigation Feasibility Project Management Plan**

### **1 INTRODUCTION**

**Background.** This Project Management Plan (PMP) is incorporated into the feasibility cost sharing agreement (FCSA) entitled “Agreement between the Department of the Army and Pierce County for the Puyallup River Study”. This PMP defines the Scope of Work and documents the process for conducting the feasibility phase study. It is a means for those involved in the study (i.e., Seattle District, Pierce County, 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 study-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 intent of a PMP is to be a roadmap for quality project delivery, guiding the project delivery team through the development of an evaluation of the flooding issues in the study area and a determination on a plan of action to help alleviate flood issues. The intent of this PMP also covers the scoping effort for the feasibility phase. The PMP defines the purpose of the study, tasks, and schedule for completing the feasibility phase. The PMP also serves to allocate responsibilities between the U.S. Army Corps of Engineers, Seattle District (Corps) and Pierce County (“local sponsor”). The PMP provides a common understanding of needs and expectations for project delivery between the sponsor and the Corps.

The feasibility report and integrated Environmental Impact Statement (EIS) will be a complete decision document in sufficient detail to form the basis for the local sponsor, Corps of Engineers (Corps), 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 feasibility study described in this PMP will be conducted in several stages, each subject to agreement between the Corps and Pierce County. Annually, the sponsor and the Corps will meet to discuss study progress and any needed changes in scope. Any necessary changes in study scope, costs and non-federal contributions will be agreed to by both parties prior to funding being provided by the local sponsor in accordance with the FCSA. Subsequent work conducted under this feasibility study will require prior agreement by the Corps and Pierce County.

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/problems. The PMP addresses the following:

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- 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 the local sponsor as in-kind services.
- 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 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, 17 August 2001.
- 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.
- i. ER 1105-2-101, "Planning - Risk Analysis for Flood Damage Reduction Studies," U.S. Army Corps of Engineers, January 3, 2006.
- j. ER 1110-2-1405, "Hydraulic Design for Local Flood Protection Projects," U.S. Army Corps of Engineers, September 30, 1982.
- k. ER 1165-2-21, "Flood Damage Reduction Measures in Urban Areas," U.S. Army Corps of Engineers, October 30, 1982.
- l. ER 1165-2-26, "Implementation of Executive Order 11988 on Flood Plain Management," U.S. Army Corps of Engineers, March 30, 1984.
- m. EC 1105-2-410, "Review of Decision Documents," U.S. Army Corps of Engineers, May 22, 2008.
- n. EC 1165-2-209, "Civil Works Review Policy," U.S. Army Corps of Engineers, 31 Jan 2010.
- o. All applicable federal, state and local policies and regulations pertinent to fish and wildlife restoration and flood damage reduction.

The PMP is meant to serve as a living document and will be refined to reflect changes throughout the feasibility phase. Either on an annual basis or prior to initiating major stages of

the feasibility phase, the Corps, Pierce County and any other financial partners will confer and revisit the scope of work, costs, and shared funding commitments described in this PMP. If necessary and Issue Resolution Conference (IRC) will be held with Pierce County, and Corps District, Division, and Headquarters staff to resolve any conflicts over alternation of the PMP.

**1.1 Study Intent.** The intent of the feasibility study is to evaluate significant flooding problems in the Puyallup/White River basin downstream of Electron Dam on the Puyallup River, the Carbon River, and downstream of Mud Mountain Dam on the White River; to formulate, evaluate, and screen potential solutions to this problem; and to recommend a series of actions and alternatives 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 flood problems and accomplish flood risk management (i.e., flood attenuation) of the Puyallup/White River basin; additionally, the plan must be technically viable, economically sound, and supported by the local jurisdictions and local sponsor. The project will result in an integrated Feasibility Study Report/Environmental Impact Statement (EIS) in support of the National Environmental Policy Act (NEPA).

**Reconnaissance Phase Study.** The Puyallup River Reconnaissance Report, dated **day month year**, finds that there is a federal interest in pursuing a feasibility study to address flood risks on the Puyallup River.

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

- Chronic flooding to public and private properties
- Threat of flood damage to major transportation corridors
- Degradation of existing infrastructure
- Damage to agricultural properties
- Decreased channel capacity due to sedimentation

The reconnaissance report has been used as a base from which to continue the required planning studies. The purpose of this reconnaissance study was to identify flood problem areas along the lower Puyallup River, develop conceptual measures to address the identified problems and opportunities, and work with the local governments to determine which measures and/or alternatives warranted further study. Information from the reconnaissance report will be expanded and updated as required to reflect current problems and opportunities to establish final planning objectives and criteria to be used to identify, formulate, and evaluate alternative plans to address flooding issues.

At the initiation of the reconnaissance phase the original interest from the local sponsor was to address flooding issues along the lower 8 miles of the Puyallup River. Prior to completion of the reconnaissance report the basin experiences large scale flooding in January 2009. At this time the local sponsor indicated an interest in pursuing a basin wide study. The reconnaissance report recommends that the study be expanded to include a larger scope. Authority for the study encompasses the entire White River Basin. In order to fully address and implement an effective

flood risk management project, the Corps recommended that the scope of the study increase from the lower 8 miles of the Puyallup River to include the entire Puyallup, White, and Carbon Rivers.

**1.2 Study Sponsorship and Stakeholder Agencies.** Pierce County is the local sponsor. Other entities such as the Puyallup Tribe may choose to provide funding or in-kind services through an inter-local agreement with Pierce County. Other Project Stakeholders may include:

- City of Puyallup<sup>1</sup>
- City of Tacoma<sup>1</sup>
- City of Orting<sup>1</sup>
- City of Sumner<sup>1</sup>
- City of Fife<sup>1</sup>
- City of Auburn<sup>1</sup>
- Town of Buckley<sup>1</sup>
- Town of Pacific<sup>1</sup>
- Port of Tacoma<sup>1</sup>
- Tacoma Public Utilities<sup>1</sup>
- Puyallup Indian Tribe<sup>1</sup>
- Muckleshoot Indian Tribe
- Washington Department of Ecology (WDOE)
- Washington Department of Natural Resources (WDNR)
- Washington Department of Transportation (WSDOT)<sup>1</sup>
- Washington Department of Fish and Wildlife (WDFW)
- National Marine Fisheries Service (NMFS)
- U.S. Fish and Wildlife Service (USFWS)<sup>2</sup>
- U.S. Environmental Protection Agency (EPA)<sup>2</sup>
- U.S. Geological Survey (USGS)<sup>2</sup>
- Federal Emergency Management Agency (FEMA)<sup>2</sup>
- U.S. Forest Service<sup>2</sup>

<sup>1</sup>Participants in inter-local funding agreement

<sup>2</sup>Prospect Cooperating Agencies under NEPA

The project PM will participate in the Puyallup River Executive Task Force. This task force is made up of representatives from local jurisdictions impacted by or with interest in the Puyallup River basin. Many of the funding participants are members of this task force. The project PM will provide briefings to the Task Force and use this platform as a mechanism for public information.

## **2 FEASIBILITY PHASE STUDY REQUIREMENTS.**

The objective of feasibility studies is to investigate and recommend solutions to water resource problems. Cost of feasibility studies, are 50% Federal and 50% non-Federal as defined in Section 105 of the WRDA of 1986.

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The feasibility phase starts with the issuance of initial Federal feasibility funds, following the execution of the Feasibility Cost Sharing Agreement, and terminates on the date the feasibility report is submitted to the Office of Management and Budget by the assistant Secretary of the Army for Civil Works for review of consistency with the policies and programs of the President. The feasibility phase may also be terminated if it is determined that there is no clear Federal interest in a project or if no project would meet the current policies or programs. The products of the phase are a Feasibility Report including NEPA documentation, and a Chief of Engineers Report.

**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. Flood risk management and 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 reducing flooding impacts.
- Environmentally, economically, and socially sustainable; acceptable to project stakeholders; and able to meet permitting and regulatory requirements.
- Supported by the non-federal 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, the project non-federal sponsor, and other project stakeholders.

### 3 PROJECT DELIVERY TEAM

#### 3.1 Team members

Project Delivery Team (PDT)

Name	PDT Position/Title	Phone Number	E-mail Address
Amy Gibbons	Lead Project Manager	206.764.3550	Amy.c.gibbons@usace.army.mil
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Jeff Laufle	Biologist/Environmental Lead	206.764.6578	Jeffrey.c.laufle@usace.army.mil
Danielle Storey	Cultural Resource Lead	209.764.4466	Danielle.l.storey@usace.army.mil
Doug Knapp	Hydraulic Engineer	206.764.6542	Douglas.d.knapp@usace.army.mil
Don Bisbee	Economist	206.764.3716	Donald.j.bisbee@usace.army.mil
Laura Orr	Cost Engineer	206.764.6761	Laura.a.orr@usace.army.mil
Lee Ford	Civil Engineer	206.764.3765	Lee.ford@usace.army.mil
Lauren McCrosky	Historian	206.764.3538	Lauren.l.mccroskey@usace.army.mil
Harold Smelt	Pierce County Public Works	253.798.2725	<a href="mailto:Hsmelt@co.pierce.wa.us">Hsmelt@co.pierce.wa.us</a>
Randy Brake	Pierce County Public Works	253.798.4651	<a href="mailto:rbrake@co.pierce.wa.us">rbrake@co.pierce.wa.us</a>
Marsha Huebner	Pierce County Public Works	253.798.4662	<a href="mailto:Mhuebne@co.pierce.wa.us">Mhuebne@co.pierce.wa.us</a>
Lorin Reinelt	Pierce County Public Works	253.798.3096	<a href="mailto:lreinelt@co.pierce.wa.us">lreinelt@co.pierce.wa.us</a>

#### 4 EXECUTIVE OVERSIGHT COMMITTEE

The Executive Oversight Committee is made up of top management from the Seattle District, Corps of Engineers and Pierce County. If financially-contributing, other participating partners will also be included on the Executive Oversight Committee. 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.

Executive Oversight Committee

<b>Name</b>	<b>Title</b>	<b>Organization</b>
Col. Anthony Wright	District Engineer	USACE, Seattle District
Pat McCarthy	County Executive	Pierce County
Mona Thomason	Planning Branch Chief	USACE, Seattle District
Brian Zeigler	Public Works Director	Pierce County

#### 5 AD-HOC TECHNICAL ADVISORY COMMITTEES

AD-HOC Technical Advisory Committees will be made up of technical advisors from Tribal governments, jurisdictions participating the Puyallup River Executive Task Force and regulatory agencies with jurisdiction in the study area. Membership on the committees will be drawn from the following list, depending on the range of expertise needed. The primary purpose of these Committees is to provide technical data to the PDT as available and necessary and to review project products and provide continued feedback to the PDT. Members of the Technical Advisory Committee who are with agencies participating in the Puyallup River Executive Task Force will also be asked to provide briefings to members of that task force and clarify technical issues to ensure that their member is appropriately able to participate in Task Force discussions of the GI.

Technical Advisory Committee

<b>Name</b>	<b>Title</b>	<b>Agency</b>	<b>E-mail Address</b>
Jeff Laufle	Biologist/Environmental Lead	USACE, Seattle District	
	Environmental Lead	Pierce County	
Doug Knapp	Hydraulic Engineer	USACE, Seattle District	
	Hydraulic Engineer	Pierce County	
Danielle Story	Archaeologist	USACE, Seattle District	
		Puyallup Tribe	
		Muckleshoot Tribe	
		City of Puyallup	
		City of Tacoma	
		City of Orting	

Name	Title	Agency	E-mail Address
		City of Sumner	
		City of Fife	
		City of Auburn	
		Town of Buckley	
		Town of Pacific	
		Port of Tacoma	
		Washington Department of Ecology	
		Washington Department of Natural Resources	
		Washington Department of Transportation	
		Washington Department of Fish and Wildlife	
		National Marine Fisheries	
		US Fish and Wildlife Service	
		US Environmental Protection Agency	
		US Geological Service	
		Federal Emergency Management Agency	
		US Forest Service	

## 6 WORK BREAKDOWN STRUCTURE

For the purposes of this PMP, an estimate of 5 flood risk management alternatives was used to develop the scope and cost of investigations and design necessary. This estimate of 5 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 an EIS and Biological Assessment.

### 6.1 Program and Project Management

Tasks under this WBS are as follows:

- Preparing and updating the PMP. This PMP will be updated annually to modify schedules and funding as well as supplement the statement of work as tasks become clearer.
- Monitor scope, schedule, and budget. The USACE PM will be required to prepare weekly staff notes detailing project progress. The USACE PM will also prepare

monthly schedule and budget updating and narratives to the Line Item Review Board and the Project Review Board.

- The entire PDT will attend PDT meetings as scheduled.
- The USACE PM will be the public contact for the project. The PM will prepare and provide presentations to various forums and press outlets as requested.

## **6.2 Identify Problems and Opportunities**

### **6.2.1 Problems and Opportunities**

Problems and opportunities will be framed in terms of the Federal objective and specific study planning objectives. Problems and opportunities should be defined in a manner that does not preclude the consideration of all reasonable potential alternatives to solve the problems and achieve the opportunities.

Developing a list of problems and opportunities will be an early action item for the PDT.

### **6.2.2 Constraints**

Constraints are restrictions that limit the planning process. Some general types of constraints that need to be considered are resource constraints and legal and policy issues. Resource constraints are those associated with limits in knowledge, expertise, experience, ability, data, information, money and time. Legal and policy constraints are those defined by law, USACE policy and guidance.

An initial list of project constraints is as follows:

- A project must comply, to the extent possible, with the objective of Executive Order (EO) 11988, Floodplain Management. It is the intent of EO 11988 – and Corps policy – to:
  - Reduce the hazards and risk associated with floods;
  - Minimize the impact of floods on human safety, health and welfare;
  - Restore and preserve natural floodplain values; and
  - Avoid inducing floodplain development unless it is the only practicable alternative.
- A project must comply with all other Federal, State, and local regulations, including environmental regulations
- Recommended projects must support Corps Environmental Operating Principles, and be based on identified and agreed-upon criteria for environmental, economic and social sustainability.
- Alternatives must address project purpose and need.

The PDT will discuss and develop an enhanced list for the project during an early PDT meeting.

### **6.2.3 Project Purpose and Need Statement (Feasibility and NEPA)**

This statement will be the official project purpose and need statement. Any alternative that does not meet this statement will not be considered for recommendation as the preferred plan.

This process will result in a Purpose and Need Report.

### **6.3 Inventory and Forecast Conditions**

This process develops an inventory and forecast of critical resources (physical, demographic, economic, social, etc.) relevant to the problems and opportunities under consideration. This information is used to further define and characterize the problems and opportunities as well. A quantitative and qualitative description of these resources is made, for both current and future conditions, as is used to define existing and future without-project conditions.

The future without-project condition provides the basis from which alternative plans are formulated and impacts are assessed. Since impact assessment is the basis for plan evaluation, comparison and selection, clear definition and full documentation of the without-project condition requires an inventory. Gathering information about potential future conditions requires forecasts, which should be made for selected years over the period of analysis to indicate how changes in economic or other conditions area likely to have an impact on problems and opportunities.

The PDT will collect existing data and identifying data gaps. The following existing documents and studies will be used to aid in the development of the study area characterization and selection process:

- The boilerplate PMP developed for the project.
- Puyallup River Basin and Mud Mountain fish passage studies already conducted or scheduled for completion.
- The Corps 905(b) report.
- The on-going Pierce County EDT Analysis.
- The Pierce County Comprehensive Flood Plan.
- Commencement Bay Trustees Restoration Documentation Cumulative Impact Study, Volume II Restoration Options.
- Updated flood mapping completed for FEMA (to be completed Month Year).
- Other Documents as provided by the Pierce County and all participating partners.
- The Puyallup River Comprehensive Flood Control Plan.
- Clarks/Clear Creek Basin Characterization Report.
- The Lower Puyallup Watershed Action Plan.
- Lower Puyallup River Flood Protection Investigation: Without-Project Analysis provided by Tetra Tech in association with Northwest Hydraulic Consultants.

The basis of actions to be taken under this study will be the improvement of flood conditions in the study area that would be expected to prevail without a project in place (“without-project” condition). The ‘without-project’ definition will use information contained in the documents listed above. Alternative formulation must comport with project purpose and need under NEPA; thus, development of a valid P&N statement is an early priority. A selection methodology developed by the Corps and Pierce County will be employed to develop and refine the list of

potential alternatives in the study area to evaluate and recommend for Federal involvement. The results of this prioritization will be presented to a larger group of entities including resource agencies, Tribes, Cities and other entities.

Without-project conditions will be completed for a 50-year planning horizon. Disciplines will perform tasks as identified below:

### **Survey and Mapping**

This also includes the preparation of topographic maps. Available cross section and topographic data from Pierce County's recent survey work and FEMA's flood mapping were assumed to be available and could be used in producing 10% design analysis of alternatives.

### **Hydrology and Hydraulics**

Hydrologic studies will support the identification of risk under the Failure Modes and Effects Analysis (FMEA) methodology. A Corps of Engineers approved, georeferenced, hydrodynamic model of the Puyallup, White, and Carbon Rivers will be developed to reflect baseline conditions with respect to hydraulics, channel geomorphology and channel stability. The model will be constructed using the most recent FMEA, survey, and potential failure mode data. The model will be used to investigate potential failure modes and to generate water surface profiles to be used for measure selection and alternative analysis.

### **Environmental Resources**

An in-depth literature review and data gap analysis of available references on environmental studies previously conducted or currently underway. This literature review/data gap analysis will; 1) gather the documented ecological factors within Puyallup/White River Basin and the estuary, 2) identify data gaps within the literature on the basin, and 3) prepare a synthesis of all literature reviewed to support a follow on assessment of needs and alternatives. The data gap analysis will outline environmental data already collected as well as identify gaps that exist. Those gaps identified will be evaluated for their relevancy to the identified projects and will be followed up accordingly. Concurrently, a study area characterization will be conducted. Environmental coordination with resources agencies will begin during this stage. Field investigations will be conducted based on those relevant data gaps identified.

Environmental staff will also forecast conditions within the planning horizon to determine how the natural environment may change if no action is taken.

### **Cultural Resources (Pre-historic and Historic)**

Section 106 of the NHPA requires federal agencies to take into consideration the affect of their actions (including federally funded, permitted, or licensed projects) on properties listed in, or determined eligible for listing in, the National Register of Historic Places. The Section 106 implementing regulations require the responsible federal agency (or their designee) to identify all cultural resources that are 50 years of age or older within a pre-determined project Area of

Potential Effect, referred to as the APE. The consultation process also requires, at minimum, contact with the SHPO and tribal governments to obtain comments about the effect of the project on cultural resources. Depending upon circumstances, other interested members of the public should be identified and contacted as well.

- Prior to commencing field surveys, the cultural resources staff will conduct archival research of the Puyallup River floodplain for information related to both the prehistoric and historic eras. It is recommended that a geoarchaeologist review existing geological and ecological literature relating to the glacial period and Holocene in the study area.
- The Corps recommends consulting with the affected tribe(s) to conduct an ethnographic study of the project area.

### **Economics**

Compile existing property and structure inventories in the study area. Determine those structures outside of convention (e.g., sports arenas and/or large public buildings) and develop specific depth-damage functions to use in calculating flood damages. Use the Marshall & Swift Real Estate Valuation Service to adjust assessors property values to accurately reflect “depreciated replacement value”.

Determine existing economic conditions and potential future without- project conditions, including identification and comparison of benefits and costs of alternative plans. The damage assessment should include the value of all pertinent structures, property, agricultural crops, automobiles, roads, and associated traffic disruption and emergency response costs. Describe economic differences between the authorized and proposed projects. The assessment will show emergency damages and associated costs, including evaluation of public utilities, evacuation efforts, temporary housing, levee repair efforts, and impacts on federal, state, and local government services.

### **Geomorphology**

These studies will be conducted by engineers or geomorphologists trained in fluvial processes to document specific geomorphic characteristics significant to design of the alternatives. The assessment will gather information to characterize the river reaches including number of large woody debris pieces, significant pools, dimensional measurements of bankfull width, lineal length of actively eroding bank, locations of reach segments that appear to be actively aggrading or degrading, and average slope for reach segments. Superficial and subsurface sediments will also be characterized as necessary. Geomorphic data will be used to evaluate what cross sectional dimensions constitute sediment competency or equilibrium. Designers will use sediment information to back calculate hydraulic information for the sample location and calibrate sediment transport modeling if necessary.

### **Geotechnical Studies**

Geotechnical engineers will compile information from existing documents and conduct a levee risk and reliability analysis to determine at what point levee failure can be expected to occur. This analysis will provide probable failure/non-failure points that are input into hydrology and hydraulic models.

Results of this analysis will be reported in the Without-Project Condition Report.

#### **6.4 Fish and Wildlife Coordination Act**

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 Corps. The Corps 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 FWCA Report for inclusion in the Feasibility Report. The Corps effort also includes 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.

#### **6.5 Environmental Coordination**

Environmental coordination will be a continuous effort in cooperation with Federal, State, Tribal, and local jurisdictions. The NMFS and USFWS will be consulted on threatened and endangered species under the Endangered Species Act and the Fish and Wildlife Coordination Act (USFWS only); WDOE will be consulted on the Coastal Zone Management Act and the Clean Water Act; and WDFW, WDNR, WDOT and other State agencies will be consulted with accordingly. Environmental coordination will continue with the Puyallup Tribe and the Muckleshoot Tribe ensuring their interests are appropriately considered.

#### **6.6 NEPA Scoping**

The NEPA scoping process determines the scope of issues to be addressed and identifies the significant issues related to a proposed action. Previously identified problems and constraints, Purpose and Need, goals and objectives and without-project conditions will be presented to the public (mode and frequency funding dependent) during an official NEPA scoping process. This will include notification of the scoping period in the Federal Register, a comment period of no fewer than 45 business days, and a scoping report that documents the scoping process used, format of project information delivery, and comments received during the official comment period. This process will not result in formal response to comments received. Comments will be used to inform the PDT as to needs regarding revision of the problems and constraints, Purpose and Need, goal and objectives, and without-project condition reporting.

This process will result in the NEPA Scoping Report.

## **6.7 Alternative Formulation**

Alternative plans shall be formulated to identify specific ways to achieve planning objectives within constraints, so as to solve the problems and realize the opportunities that have been identified. An alternative plan consists of a system of structural and/or non-structural measures, strategies, or programs formulated to meet, fully or partially, the identified planning objectives subject to the planning constraints.

A management measure is a feature or activity (discreet project) that can be implemented at a specific geographic site to address one or more planning objectives. Management measures are the building blocks of alternative plans and are categorized as structural and nonstructural. Equal considerations must be given to these two categories of measures during the planning process.

An alternative plan is a set of one or more management measures functioning together to assess one or more objectives. A range of alternative plans shall be identified at the beginning of the planning process and screened and refined in subsequent iterations throughout the planning process. However, additional alternative plans may be identified at anytime during the process. Plans should be in compliance with existing statutes, administrative regulations, and common law or include proposals for changes as appropriate.

Formulation of alternatives will be performed through developing and combining management measures. These management measures are single components or projects that include, but are not limited to, setback levees, new or improved levees, dredging, floodwall, and non-structural actions. These measures will be combined to develop a series of plans (alternatives) to achieve the maximum level of flood management available to the study area.

During this stage an initial screening of the measures will be performed. Any alternatives that pose major environmental concerns will also be eliminated during this stage of the screening.

### **6.7.1 Measures Development**

Measures development consists of identifying features or activities (discreet project) that can be implemented at a specific geographic site to address one or more planning objectives. These measures will be developed based on information obtained through the without project condition analysis and review of existing information. Measures will be developed with the intent of addressing specific problems and opportunities related to flooding in the associated geographic region for which the measure is developed. This task will require input from the PDT, stakeholders, and public.

### **6.7.2 Measures Analysis**

Technical data and analyses that will be used for this initial screening will include 10% measures design and cost estimates, quantitative hydraulic analysis, and qualitative environmental analysis.

### **Hydrology and Hydraulics**

The task will include the identification of hydrologic factors that would contribute to the failure modes of each potential measure. Levels of risk related to these hydrologic factors will be assigned to each potential alternative reflecting their relative potential to cause system failure. FMEA will be used as a screening factor to eliminate alternatives that are very high risk.

The task will include the identification of the failure modes of each proposed measure, consequences to the system if failure occurs, likelihood of occurrence, and methods of detection. This PMP assumes that these hydraulic studies will include hydraulic design for 25 measures, as well as system wide evaluation of the selected alternative.

### **Economics**

Determine existing economic conditions and potential future with-project conditions, including identification and comparison of benefits and costs of alternative plans. The damage assessment should include the value of all pertinent structures, property, agricultural crops, automobiles, roads, and associated traffic disruption and emergency response costs. Describe economic differences between the authorized and proposed projects. The assessment will show emergency damages and associated costs, including evaluation of public utilities, evacuation efforts, temporary housing, levee repair efforts, and impacts on federal, state, and local government services.

### **Environmental**

Field investigations will be conducted based on the data gap analysis, and found to be necessary in determining if all potential alternatives have been fully formulated. The literature search and data gap analysis will determine in conjunction with field inspections, the environmental output of each and/or the types of field studies necessary to develop the data to assess site-specific environmental outputs of each site considered in the priority basins. Document this task with a memorandum containing field observations, data collected and recommendations for further study. It will also provide the basis for a qualitative analysis of environmental impacts of each measure. This impact analysis will be used during the measures screening process to screen out measures that are not feasible due to environmental impacts.

### **Civil Engineering**

The project civil engineer will develop 10% level concept designs

### **Cost Engineering**

The product of this task will be the preparation of a 10% Cost Estimate(s) on selected alternatives using the latest approved Micro Computer Aided Cost Engineering System (MCACES) MII program in accordance with ER110-2-1302, ER 1110-2-10-1150, ETL

1110-2-573 and General Cost Engineering Regulations. Selected alternatives to be estimated will be provided by the PDT.

### **Real Estate**

This activity will involve identifying potential real estate issues such as WDNR ownership, Super Fund involvement, etc. Real estate issues are not considered to rule out any measure, but to identify actions that may be required to address specific real estate issues. For example, where WDNR ownership is involved, WDNR may have to be considered as one of the project local sponsors. Rights of Entry will be obtained for the measures to be considered further.

Real estate will also develop land costs for use with project cost estimates based on a 10% design.

#### **6.7.3 Measures Screening**

A set of screening criteria will be developed for this effort based on the project Purpose and Need and goals and objectives. Proposed measures not meeting these criteria will be eliminated from consideration under the feasibility study. A series of decision matrices will be developed for screening of the alternatives.

### **6.8 Feasibility Scoping Meeting**

The purpose of the Feasibility Scoping Meeting (FSM) is to bring the vertical team, local sponsor, and resource agencies together to agree on the problems and solutions to be investigated and the scope of analyses required. A FSM will address the problems, opportunities, and needs; refine study constraints; identify the key alternatives; and further define the scope, depth, and methods of analyses required.

This task requires production of a pre-conference submittal, typically the initial chapters of the feasibility study through formulation and evaluation of preliminary plans. Coordination, meeting attendance, and preparation of presentation materials are also required.

### **6.9 Initial Range of Alternatives (Report)**

Measures remaining under consideration will be formulated in flood risk reduction plans, or alternatives. This initial range of alternatives will be reported as information to the PDT, stakeholders and general public.

A 10% level of design summary sheet will be developed for each of the potential alternatives including a sketch of the project plan, description of the location, and the estimated construction cost of the project.

### **Plan Formulation**

Alternatives will be developed from management measures based on the compatibility of measures in terms of function and optimization of performance. Measures will be

combined to meet the hydraulic nexus required for basin wide performance. The initial range of alternatives will also be formed with the goal of maximizing net benefits and costs keeping in mind the identified objectives and constraints.

### **6.10 Alternative Screening**

A set of screening criteria will be developed for this effort based on the project Purpose and Need and goals and objectives. Proposed alternatives not meeting these criteria will be eliminated from consideration under the feasibility study. A series of decision matrices will be developed for screening of the alternatives.

### **6.11 Evaluations of Alternative Plans**

The evaluation of effects is a comparison of the with-project and the without-project conditions for each alternative. The evaluation will be conducted by assessing or measuring the differences between each with- and without-project condition and by appraising or weighting those differences.

Evaluation consists of four general tasks.

- The first is to forecast the most likely with-project condition expected under each alternative. Each with-project condition will describe the same critical variables included in the without-project condition development. Criteria to evaluate the alternatives include all significant resources, outputs and plan effects. They also include contributions to the project Purpose and Need, and goals and objectives.
- The second task is to compare each with-project condition to the without-project condition and document the differences between the two.
- The third task is to characterize the beneficial and adverse effects by magnitude, location, timing and duration.
- The fourth task is to identify the alternatives that will be further considered in the planning process, based on a comparison of the adverse and beneficial effects and the evaluation criteria.

An incremental cost effectiveness and incremental cost analysis will be performed on each of the potential alternatives. The results of the incremental cost effectiveness analysis will be used to rank alternatives.

### **Hydrology and Hydraulics**

The task will include the identification of the failure modes of each proposed alternative, consequences to the system if failure occurs, likelihood of occurrence, and methods of detection. This PMP assumes that these hydraulic studies will include hydraulic design for 5 alternatives, as well as system wide evaluation of the selected alternative.

These hydraulic design studies will extend previous modeling (“zoom-in”) to provide information for site specific design. Extension of modeling may include providing additional definition of site terrain and geological detail. These hydraulic studies will include alternative feature sizing, stability design, identification of local impacts, and definition of the “end product” and potential maintenance practices. The alternatives with relatively low potentials for causing system failure will be considered a low risk and design of features at the site will be done using basic engineering methods of analysis. The alternatives found to have a high potential for system failure will receive more detailed design analysis including modeling of failure probabilities. Hydraulic tidal input will be required for the estuary sites that have tidal effects. Computer modeling will also be required to determine the reduction in water surface elevations caused by flood risk management features.

### **Economics**

Determine existing economic conditions and potential future with-project conditions, including identification and comparison of benefits and costs of alternative plans. The damage assessment should include the value of all pertinent structures, property, agricultural crops, automobiles, roads, and associated traffic disruption and emergency response costs. Describe economic differences between the authorized and proposed projects. The assessment will show emergency damages and associated costs, including evaluation of public utilities, evacuation efforts, temporary housing, levee repair efforts, and impacts on federal, state, and local government services. Damage costs associated with flooding will be quantified using the Hydrologic Engineering Center's Flood Damage Analysis (HEC-FDA) model.

Evaluate the Regional Economic Development (RED) impacts and Other Social Effects (OSE) associated with both the with- and without- project implementation. Emphasis on the RED will focus on the adverse effects associated with a flood event. The OSE will provide population at risk and loss of life estimates as well as provide levee break scenarios to show impacts on selected demographic classes of residents.

### **Environmental**

Field work will be completed at this phase to quantify impacts of alternatives. Based on a preliminary assessment, field investigations are likely to include the following; 1) Riparian investigations evaluating LWD, terrestrial connectivity, and species compositions; 2) Floodplain investigations on connectivity/fragmentation and storage capacities; 3) Wetland investigations to include locating and assessing quality; and 4) Wildlife investigations identifying species composition and use of riparian areas, wetlands, and areas of special interest that are linked with proposed projects.

### **Geotechnical Engineering**

These are activities leading to selection of the refined list of alternatives 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 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.

### **Civil Engineering**

Civil design analysis includes work necessary to identify and define conceptual features of flood risk management 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 3 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 measures and/or alternatives
- preparing quantity estimates for use in cost estimating
- establishing major work items and construction sequence
- performing in-house and interagency coordination.

The alternatives evaluation will be documented in an impact report.

### **6.12 Alternative Refinement**

It is assumed that the initial range of alternatives will not produce a clear preferred alternative. As such, the PDT will review the performance/impact analysis to determine if portions of alternatives should be used to form a hybrid alternative for analysis or if a new alternative is formulated.

#### **Hydraulic Engineering**

The Project Delivery Team and Technical Oversight Committee will provide comments and recommendations on the original 5 alternatives. In the likely case that none of the 5 original alternatives will lead to a preferred alternative, the previous hydraulic modeling will be modified to address recommended changes. All five of the original alternatives may be modified for further hydraulic modeling. Model boundary conditions should not be changed at this time unless new data is provided. The basis of the additional computer modeling should focus on fine-tuning the alternatives for further review. Water surface elevation levels will be determined to analyze the alternatives and flood risk management features.

#### **Plan Formulation**

This task will involve analyzing portions of alternatives to identify which best meet the identified problems and opportunities, taking into consideration any constraints associated with the alternatives. It will be important to formulate the revised alternatives with the intent of meeting and optimizing benefits and costs for the NED plan.

### **6.13 Revised Evaluations of Alternative Plans**

The refined/revised alternative will be analyzed on the same level as those in the initial range of alternatives.

Alternatives will then be compared against each other, with emphasis on the outputs and effects what will have the most influence in the decision making process. A comparison of the outputs of the various alternatives must be made. Beneficial and adverse effects of each alternative must be compared. These include monetary and non-monetary benefits and costs. Identification and documentation of tradeoffs will be required to support the final recommendation. The comparison effort can be defined as a reiteration of the evaluation step, with the exception that in this effort each alternative (including the no action alternative) is compared against each other and not against the without-project condition. The output of this comparison is a ranking of alternatives.

This analysis will use the same methodology as was used in Section 6.9.

The revised evaluation and comparison will be documented in the Alternative Impact Assessment Report.

### **6.14 Risk Analysis**

Coordinate with the lead planner, geotechnical, hydrologic and hydraulic engineers regarding the evaluation of each potential alternative in accordance with the latest risk analysis guidance.

### **6.15 Preferred Alternative Plan Selection (Report)**

A single alternative will be selected for recommendation from among all those that have been considered. The recommended plan (known as the National Economic Development or NED Plan) must be shown to be preferable to taking no action or implementing any of the other alternatives considered during the planning process. The criteria for selection of a recommended plan for this project will be developed while considering the following:

For all project purposes, the alternative plan that reasonably maximizes net economic benefits consistent with protecting the Nation's environment, the NED plan shall be selected.

Projects may deviate from the NED if requested by the non-Federal sponsor and approved by the ASA CW.

After reviewing performance data and impact analysis, the PDT will prepare a recommendation for selection of an alternative. This recommendation and justification will be documented in a report and presented to District and Division Command for approval. The alternative ranking activity will be documented in a memorandum for record, considered in a checkpoint review, provided in final form to the Executive Committee for information and become the Plan Formulation Section of the integrated feasibility report/EIS.

### **Hydrology and Hydraulics**

These hydraulic design studies will expand on previous modeling to provide information for site specific design. Extension of modeling may include providing additional definition of site terrain and geological detail. These hydraulic studies will include alternative feature sizing, stability design, identification of local impacts, and definition of the “end product” and potential maintenance practices. The recommended alternative with relatively low potentials for causing system failure will be considered a low risk and design of features at the site will be done using basic engineering methods of analysis. The recommended alternatives found to have a high potential for system failure will receive more detailed design analysis including modeling of failure probabilities. Hydraulic tidal input will be required for the estuary sites that have tidal effects. Computer modeling will also be required to determine the reduction in water surface elevations caused by flood risk management features. This effort will also include hydraulic input for OMRR&R estimate. This work will include the preparation of a hydraulic section in the Engineering and Design Appendix.

### **Real Estate**

This stage involves preparation of Lands, Easements and Rights-of-Way (LER) drawings for the alternative (map delineating project footprint, land ownership, ingress and egress to each site, temporary work areas, disposal sites etc.) A real estate plan describing the lands, easements, and rights-of-way required for the recommended plans which includes a baseline cost estimate for land costs, local sponsor administrative and acquisition costs, and federal review and assistance costs.

### **Plan Formulation**

Plan Formulation will be responsible for guiding the selection of the recommended NED based on all available information that is collected and on the design and analysis performed on the alternatives. Plan formulation will ensure that all objectives have been met and that the recommended plan is consistent with the applicable laws, statutes, Executive Orders, regulations and current policy guidance. The selected plan must optimize costs and provide feasible flood management solutions.

## **6.16 35% Design**

The PDT engineering team will prepare 35% design plans and CWE for the preferred alternative. 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 restoration (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 design appendix will consist of all design data analyses, a written description of the design features of the recommended plan, plates, and cost estimates in MCASES.

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 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 alternatives and/or measures evaluated, drawings, and construction cost estimates in MCASES.

The products of this task will be a 35% Baseline Cost Estimate (BCE), including a cost risk analysis, and a baseline schedule developed for the selected alternative. The BCE will include, as a minimum, the estimates summary sheets for direct costs, indirect costs, and owner costs to the subfeature level, and a Total Project Cost Summary Sheet (TPCS).

#### **6.16.1 Value Engineering**

Value engineering is required for all Civil Works projects exceeding \$1,000,000 in value. The purpose of value engineering is to improve the efficiency of the recommended plan. It is performed during the 35% design process for all projects over \$1 million, and is intended to reduce construction and maintenance costs, improve engineering features, and generally provide a better Federal product.

#### **6.17 Environmental Documentation (Report)**

The Environmental Coordinator will work with ERS staff to initiate coordination with resource agencies as appropriate. Technical work will lead to preparation of an environmental impact statement (EIS), plus appropriate written narrative for the feasibility report, and the completion of a biological assessment as directed by the Endangered Species Act (ESA). The ESA work will be coordinated in consultation with NMFS and USFWS.

#### **Hazardous, Toxic and Radiological Waste (HTRW)**

The objective of HTRW studies is to determine the presence and character of contamination identified in an initial screening of the alternatives selected for detailed study. A Phase I screening will be completed for the recommended alternative. If the 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.

**Clean Water Act Section 404(b)(1) Evaluation.** The Corps 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.

**Clean Water Act, 401 Water Quality Certification.** The Non-Federal Sponsor will obtain a 401 Water Quality Certification from the WDOE.

**Endangered Species Act Coordination.** ESA coordination letters will be sent to both the USFWS and 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 (CZM) consistency determination will be completed with the project.

**National Historic Preservation Act Section 106.** Although the *study area* is delineated, the *APE* is not defined. It is neither feasible nor reasonable to conduct a thorough archaeological investigation throughout the entire floodplain. Therefore, the CR Unit recommends a phased approach.

- **Develop a historic context statement.** A thorough review of literature pertaining to the prehistory, ethnography and history of the project area should be conducted prior to the reconnaissance survey effort. The review should include an examination of existing maps, soil surveys, aerial photographs, historic maps, and Corps archival material related to the project area. This product should be a stand-alone document, appropriate for public consumption.
- **Identify consulting parties.** Affected tribe(s), CLGs, SHPO, THPO, local historic societies, and any other consulting parties. CR Staff will draft letters seeking knowledge of or concerns with the project APE (or study area).
- **Research design and gap analysis.** The above material should be used to generate the background section of the larger project report and identify areas where additional field investigations should be conducted. The research design provides a description of the theoretical and methodological approached to be followed in the study. Research design will:
  - Address the theoretical basis of the research (a discussion of the research paradigms under which the CR staff is operating)
  - Provide a synthesis of recent research
  - Present testable hypotheses or identify the goals of the research, identify important research questions pertinent to the study area and identified data gaps
  - Identify test implications of hypotheses

A stand alone report that incorporates findings and recommendations for further procedures will be produced by the survey team at the conclusion of this survey.

- **Reconnaissance Survey.** Two cultural resources teams consisting of a) two – three professional archaeologists and b) one historic structures expert plus an archaeologist or historian should conduct a reconnaissance surveys of the study area to identify potentially eligible historic properties. Resources should be identified and recorded, but not necessarily evaluated, at this point. A stand alone report that incorporates findings and recommendations for further procedure will be produced by the survey team at the conclusion of this survey.

**Other Local Permits.** The Non-Federal Sponsor will be required to obtain any other required non-federal permits.

## **6.18 Draft Feasibility Study Report and Draft Environmental Impact Statement (Report)**

### **6.19 Alternative Formulation Briefing**

The purpose of the Alternative Formulation Briefing (AFB) is to confirm that the plan formulation and selection process, the tentatively selected plan, and the definition of Federal and non-Federal responsibilities are consistent with the applicable laws, statutes, Executive Orders, regulations and current policy guidance. The goal is to obtain Headquarters endorsement of the tentatively selected plan, to identify and resolve any legal or policy concerns that would otherwise delay or preclude Washington-level approval of the draft report, and to obtain Headquarters approval to release the draft report and NEPA document to the public concurrent with Headquarters policy compliance review of the draft report.

This task requires production of a pre-conference submittal, typically the draft report in its entirety. Coordination, meeting attendance, and preparation of presentation materials are also required.

### **6.20 Independent Expert Peer Review**

See attached review plan for details.

### **6.21 Final Feasibility Study Report and Final Environmental Impact Statement**

It is anticipated that this project will not result in a determination of Significant Environmental Impact; however, this will not be confirmed until the Environmental Assessment is complete.

### **6.22 Compilation and Preliminary Reviews of Final Report**

Following completion of the final feasibility study report and Environmental Impact Statement the report will be provided for public review and comment. The document will also go through all necessary Corps in-house review processes prior to review and signature by the District Commander.

### **6.23 MSC/HQUSACE Final Reviews and Approval**

After The District Commander signs the Feasibility Report and the final NEPA documentation is filed the MSC and HQUSACE will review and approve the report for congressional authorization. The Chief of Engineers report will be signed and submitted to the Assistant Secretary of the Army for Civil Works and Office of Management and Budget.

### **6.24 Congressional Review and Approval**

Once the Office of Management and Budget provides clearance for the feasibility report, the Assistant Secretary of the Army for Civil works will submit the report to Congress. Congress will review the report and provide approval for construction in a Water Resources Development Act.

### 6.25 After Action Report

An After Action Report will be the responsibility of the Project Manager, with input from the PDT, sponsor, and other key players involved in the feasibility phase. The intent of the report is to document and clarify how the feasibility phase was executed and what the outcomes were. The PDT then proposes ways to ensure that and potential errors identified during the course of the study are not repeated again by this team, and as guidance for other Corps feasibility studies. The report also serves as a tool for identifying where processes could be streamlined or improved in the future. Lessons Learned are discussed within the District and posted on the District webpage.

### 6.26 Pre-Construction Engineering and Design

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. 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 Corps and the local sponsor.

At a 100% design Current Working Estimate (CWE) will be prepared for ATR review and approval. Once the project is advertised for constructions an Independent Government Estimate (IGE) will be prepared with an updated baseline construction schedule for contract award purposes. All of the above will be developed using Micro Computer Aided Cost Engineering System (MCACES) MII program in accordance with ER110-2-1302, ER 110-2-10-1150, ETL 1110-2-573 and General Cost Engineering Regulations.

### 6.27 Negotiate Draft Design Agreement (DA)

This task includes reviewing the model DA with the local sponsor and agreeing on a final draft DA to be included in the final feasibility report. The DA describes all of the requirements and responsibilities relating to the advanced design of the project, including items of local cooperation required from the local sponsor.

## 7 Schedule

### FEASIBILITY PHASE SCHEDULE AND MILESTONES

Milestone Description	Documentation	Scheduled Dates
Execute FCSA	FCSA	August 2010
Initiate Feasibility Study		August 2010
PMP In-Progress Review	PMP	Annually in March
Identify and Forecast Conditions	Without Project Condition Report	November 2011
Preliminary Measures Screening Complete	Measures Report	May 2012
Feasibility Scoping Meeting	FSM Read-ahead Document	July 2012
Alternative Formulation Complete	Initial Range of Alternatives Report	November 2012
Alternatives Analysis Complete	Alternative Impact/Performance Report	April 2013

Puyallup River General Investigation Project Management Plan

<b>Milestone Description</b>	<b>Documentation</b>	<b>Scheduled Dates</b>
Plans Selection	Plan Recommendation Report	May 2013
Feasibility Design Complete	35% Design And Impact Report	October 2013
Alternative Formulation Briefing	AFB Read-Ahead Document	November 2013
Final Draft Feasibility Study Report and Draft EIS	Draft Feasibility Study Report and Draft EIS	April 2014
Public Review Complete (Draft Feasibility Report & Draft EIS)	Comment Logs and Response Documents	September 2014
Agency Technical Review/Policy Review Draft Feasibility Report & Draft EIS Complete	Agency Technical Review/Policy Review Documents	May 2015
Independent Expert Technical Review Complete	IEPR Documents	June 2015
Final Feasibility Report With NEPA Submitted to NWD	Documents with District Engineer's Signature	April 2016
Chief Report to ASA(CW)	Documents with Chief of Engineers' signature	September 2016

## 8 BUDGET

Below is an estimate of costs to completion for all tasks identified in Section 6 as well as project management costs associated with management and review of the project deliverables.

<b>Task</b>	<b>Federal Cost</b>	<b>Local Cost</b>
Program and Project Management - FY 10	\$30,000	\$30,000
Identify Problems and Opportunities	\$10,000	\$10,000
Identify & Forecast Conditions – FY 10	\$360,000	\$360,000
<b>Total FY 10</b>	<b>\$400,000</b>	<b>\$400,000</b>

Program and Project Management - FY 11	\$125,000	\$125,000
Identify & Forecast Conditions – FY 11	\$250,000	\$250,000
Fish & Wildlife Coordination -FY 11	\$15,000	\$15,000
Alternative Formulation	\$60,000	\$60,000
<b>Total FY 11</b>	<b>\$450,000</b>	<b>\$450,000</b>

Program and Project Management - FY 12	\$125,000	\$125,000
Fish & Wildlife Coordination -FY 12	\$15,000	\$15,000
NEPA Scoping	\$25,000	\$25,000
Alternative Formulation	\$90,000	\$90,000
Feasibility Scoping Meeting	\$10,000	\$10,000
Initial Range of Alternatives Report	\$15,000	\$15,000
Alternative Screening	\$10,000	\$10,000
Evaluations of Alternative Plans	\$150,000	\$150,000
<b>Total FY 12</b>	<b>\$440,000</b>	<b>\$440,000</b>

Puyallup River General Investigation Project Management Plan

<b>Task</b>	<b>Federal Cost</b>	<b>Local Cost</b>
Program and Project Management - FY 13	\$125,000	\$125,000
Fish & Wildlife Coordination -FY 13	\$15,000	\$15,000
Evaluations of Alternative Plans	\$210,000	\$210,000
Alternative Refinement	\$75,000	\$75,000
Revised Evaluations of Alternative Plans	\$100,000	\$100,000
Risk Analysis	\$50,000	\$50,000
Preferred Alternative Plan Selection	\$25,000	\$25,000
35% Design	\$200,000	\$200,000
<b>Total FY 13</b>	<b>\$800,000</b>	<b>\$800,000</b>

Program and Project Management - FY 14	\$150,000	\$150,000
Fish & Wildlife Coordination -FY 14	\$15,000	\$15,000
Environmental Documentation	\$100,000	\$100,000
Alternative Formulation Briefing	\$10,000	\$10,000
Draft Feasibility Study Report and Draft EIS	\$80,000	\$80,000
<b>Total FY 13</b>	<b>\$355,000</b>	<b>\$355,000</b>

Program and Project Management - FY 14	\$150,000	\$150,000
Fish & Wildlife Coordination -FY 14	\$5,000	\$5,000
Agency Technical Review/Policy Review Draft Feasibility Report & Draft EIS Complete	\$50,000	\$50,000
Independent External Peer Review	\$500,000	\$100,000
Final Feasibility Study Report and Draft EIS Preparation	\$10,000	\$10,000
<b>Total FY 14</b>	<b>\$515,000</b>	<b>\$515,000</b>

Program and Project Management - FY 15	\$150,000	\$150,000
Fish & Wildlife Coordination -FY 15	\$5,000	\$5,000
Final Feasibility Study Report and Draft EIS Preparation	\$40,000	\$40,000
Compilation and Preliminary Reviews of Final Report	\$30,000	\$30,000
MSC/HQUSACE Final Reviews and Approval	\$20,000	\$20,000
Congressional Reviews and Approval	\$10,000	\$10,000
After Action Report	\$50,000	\$50,000
<b>Total FY 15</b>	<b>\$305,000</b>	<b>\$305,000</b>
<b>Project Total</b>	<b>\$3,465,000</b>	<b>\$3,145,000</b>

## **9 STUDY MANAGEMENT AND COORDINATION.**

### **9.1 Coordination Mechanism.**

- The Corps and Pierce County will each appoint project managers who will be responsible for the day-to-day management of the study. They will maintain close coordination with the entire PDT. The PDT will consist primarily of Corps technical staff and representatives from Pierce County conducting technical analysis. The PDT will ensure timely execution of the study and compliance with the PMP and the FCSA.
- The project managers from each jurisdiction will exchange quarterly study progress reports to identify progress of all study tasks during the period to document PMP identified tasks completed and funds expended.
- The project managers from each jurisdiction will be responsible for re-scoping, re-costing, and recommending funding share contributions to the Executive Committee for approval annually prior to proceeding with subsequent stages of the feasibility study.
- Project management responsibilities for any other financially contributing partners will be included as amendments to the PMP during re-scoping efforts.

**Review and Acceptance of Work.** The Project Delivery Team (PDT), under the direction of the Corps and with input from the non-federal project manager will monitor, review and accept all work. Each 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.

Major project deliverables, such as the without project condition report and measures report, will be subject to Agency Technical Review. See the attached review plan for further detail.

## **10 MONITORING AND CONTROL.**

### **10.1 Review Plan**

A review plan is attached for reference. All major project reports will be reviewed for quality consistent with the Northwest Division approved review plan.

### **10.2 Communication Plan.**

The goal of the Communication Plan is to inform stakeholders of public comment opportunities and study milestones, increase public awareness of agency plans, milestones, and opportunities to provide meaningful comments, answer questions from local elected officials as representatives of their community (including tribal nations), and keep the PDT composed of Corps and local sponsor staff informed.

The Communication Plan has several key messages:

- Continue to work closely with Pierce County on a flood risk management plan for the lower Puyallup River.
- The feasibility process will provide the information and processes needed to select the best possible alternative for the most cost-effective amount of money and the least environmental, socio-economic impact.
- All flood risk management projects have residual risk for damages when exceeded. The Communication plan will insure the community and stakeholders are aware of residual risks,

and that these are acceptable to the public and the Corps.

- Our highest priority is the safety of people in the study area.
- The recommended alternative must not have significant impacts on other portion of the basin. Significant impacts must be mitigated, whether they are environmental impacts or induced flooding.
- A Corps project must be economically and environmentally sound and feasible from an engineering standpoint.
- Corps projects include costs for mitigation and operation and maintenance. Therefore, all stages and aspects of a project are considered in the evaluation of alternatives. Corps projects strive to be sustainable.
- The financial capability of the local sponsor to co-fund construction, and entirely fund operation and maintenance of projects is a key part of project success. The development of a financial support system during feasibility is a responsibility of the local sponsor.

External Communications are outlined in the External Communication Strategic Plan attached to this PMP. The targeted audience for the Puyallup River feasibility study communication plan includes: Pierce county commissioners, Pierce County staff, mayors and public work directors of Puyallup, Tacoma, Fife, Orting, and Sumner, tribal leaders of the Puyallup and Muckleshoot tribes, Nature Conservancy, US Fish and Wildlife Service, Washington Department of Fish and Game, National Oceanic and Atmospheric Agency, United States Geologic Survey, Federal Emergency Management Agency, agricultural and business leaders, elected federal and state officials, sports fishing/recreational groups, other NGOs, property owners in affected areas, WRIA 10, the Puyallup River Watershed Council, and the general community.

The tools to implement the Communication Plan include: workshops, team meetings, attendance by PDT members at the Pierce County Commissioners meetings, participation in the Puyallup River Executive Task Force, holding meetings with tribal representatives, attending watershed council meetings, news releases, meetings with local media, project website, site tours, and public meetings. Pierce County will coordinate the majority of the public involvement through their excellent knowledge of local channels. The PDT will meet on a regular basis to discuss design progress and resolve product development issues. The team will meet monthly, unless they elect to discuss issues by email or teleconference. Team includes both Corps and Sponsor staff. The Corps and County will exchange quarterly updates on execution and expenditures.

### **10.3 Safety and Occupational Health.**

During planning, the PDT will review project activities against the specific hazards addressed in their position hazard analyses. Unusual hazards will be identified in a project-specific analysis appended to this plan. A separate construction-phase hazard analysis will be prepared in accordance with NWSOM 385-1-1 and ER 385-1-1.

### **10.4 Risk Management.**

Risk management is a systematic process of identifying, analyzing, and responding to risk for the entire project life cycle. A risk analysis is performed for five categories of project risk: cost, time, quality, environmental, and safety. The level of detail of the risk analysis and plan is based on the complexity of the project. When a project is determined to be other than low-risk, the risk must be identified, and associated control procedures defined to address the risk. A key concern of the Corps is the potential for residual flooding risks with constructed projects. This is

particularly an issue if the flood risk management plan encourages additional development behind projects that can have catastrophic failure, such as levees. The risks of operating dams for additional flood control will also be seriously considered by the Corps. Modifications to the Mud Mountain Dam, even for operational changes, will require coordination with Corps HQ concerning the ability of the dam to meet current Corps design/operation requirements. The Corps will need to insure that prudent assumptions have been made concerning the hydrology and hydraulics of the basin, the condition of existing flood risk management projects, and the ability of the local sponsor to operate and maintain the recommended system over time. A budget will be set for development and monitoring of a risk management plan. A standardized procedure will be developed for the PDT to track identified risks, identify new risks, determine if agreed responses to risks have been executed, and evaluate the effectiveness of risk responses to reduce identified risks. Appendix X provides a table of identified risks and the probability and severity for each.

### **10.5 Value Management.**

Key to the review of study progress is a comparison of the actual cost of work produced to the planned value of the work produced. The sum of the budgeted cost of work tasks described in this PMP form the basis for determining the “budgeted cost of work produced” (BCWP). A determination of the percent completed for each task can be applied to the estimated cost of each task presented in this PMP and summed to determine the BCWP. The procedure for generating the earned budget value for work produced (BVWP) will be the responsibility of the Corps’ PM to obtain from each task manager an estimate of percent complete for each task in progress. The “actual cost of work produced” (ACWP) will be obtain from monthly cost reports. The Corps’ PM will compare “earned budget value” verses planned budget to obtain the most effective measure for tracking progress of this study’s productivity by a single value. It can be used to measure the productivity on each task or group of tasks performed by a specific team member of for the project as a whole. The estimated BCWP can be plotted over time and the ACWP for each review plotted on the curve to give a visual indication of actual progress versus this plan.

### **10.6 Data Management.**

The project manager will plan, organize and maintain the project files for eventual closeout, transfer and archiving. In addition to record keeping requirements, projects involving geospatial data must complete a Geospatial Data Management Plan. The Geospatial Data Management Plan integrates geospatial data management into the Project Management Business Process and facilitates the implementation of enterprise data management. This data collection and management plan covers Computer Aided Design and Drafting (CADD) and Geographic Information System (GIS) products. Implementation of this plan will allow project delivery teams comprised of experts from various districts to work collaboratively on a project. For this collaboration to become a reality, the U.S. Army Corps of Engineer must follow established criteria, policy and guidance for the acquisition, processing, storage, distribution, and use of geospatial data. Project delivery team members who are responsible for collecting spatial data and producing CADD and GIS products have a major role to play in the success of this effort. A data management plan for geospatial efforts will be developed as needed.

### **10.7 Change Management.**

Study progress will be monitored and reviewed as the study progresses. This project management plan incorporates assumptions and predictions concerning the possible outcome of these studies in order to provide a reasonable scope of work, estimate of the cost and length of the study. As this study progresses these assumptions and prediction will be reevaluated to determine if the actual outcome of a study segment matches the assumed outcome. These assessments will be done continuously as the study progresses. Formal evaluation of changed conditions will occur at the conclusion of each stage and at designated checkpoints. Prior to initiating a new stage of this study and at the PMP In-Progress Review, Technical Review Conference and Alternative Formulation Briefing, the Corps, Pierce County and any other financial partners will confer and revisit the scope of work, costs, and shared funding commitments described in this PMP. Each of these reviews will provide an opportunity to revise the set of assumed outcomes and revise the scope of work, cost and shared funding commitments to accommodate these changes and ensure a favorable outcome.

### **10.8 Value Engineering.**

Value engineering is required for all Civil Works projects exceeding \$1,000,000 in value. The purpose of value engineering is to improve the efficiency of the recommended plan. It is performed during the 35% design process for all projects over \$1 million, and is intended to reduce construction and maintenance costs, improve engineering features, and generally provide a better Federal product.

## **11 ACQUISITION STRATEGY**

All work will be conducted by the Corps, the local sponsor, or contractors. The assignment of specific tasks is shown in the study scope of work. Work can be completed by contractors for the local sponsor of the Corps, provided there is mutual agreement on the scope of work and selection of the contractor. Any modifications to the scope of work or allocation of tasks must be agreed upon by both the local sponsor and the Corps before work is initiated. Design work in plans and specifications will be completed in-house by the Seattle District or contracted by the Seattle District. Construction will be completed by contract.

## **12 CLOSEOUT PLAN**

Projects are closed out when completed. Interim close out occurs following the completion of the feasibility phase. All study expenditures (labor, contacts, equipment, and work in-kind) are accounted for. The amount of federal and nonfederal cash provided to the study is tabulated, along with credited work in kind (submitted to Chief, Finance and Accounting by the project manager) The close out insures that expenditures are balanced, if nonfederal funds need to be given back to the sponsor, or if there is a need for additional nonfederal cash to balance the books. Expenditures and obligations of work are tracked through the Corps CEFMS and P2 systems.

## **13 LESSONS LEARNED**

A Lessons Learned report will be prepared at the conclusion of the feasibility study, and following key decision point meetings during feasibility. The Lessons Learned report will be the responsibility of the Project Manager, with input from the PDT, sponsor, and other key players

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involved in the particular issues. The intent of a Lessons Learned Report is to clarify what happened, why, and how. The PDT then proposes ways to insure that these errors are not repeated again by this team, and as guidance for other Corps feasibility studies. Lessons Learned are discussed within the District and posted on the District webpage. "Lessons Learned" can also represent examples of studies where things went unusually well, providing guidance for other studies.

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## **STRATEGIC COMMUNICATION PLAN**

### **Puyallup River General Investigation**

#### **I. Defining the Assignment or Challenge:**

The U.S. Army Corps of Engineers (USACE), Seattle District, is conducting a general investigation (GI) study on the Puyallup/White River basin downstream of Electron Dam on the Puyallup River, the Carbon River, and downstream of Mud Mountain Dam on the White River. The feasibility study addresses the substantial flooding and flood damages experienced in the Puyallup/White River basin and the severe risk to life posed each winter by flood events. The goal of the study is to develop a plan that will address flood risk management in the basin. There will be high interest from the local communities, elected officials and media.

The Corps of Engineers, along with Pierce County as the local sponsor, is leading this feasibility study to identify more clearly the flooding problem. There is a plan for Pierce County to sign inter-local agreements or accept in-kind services from a variety of local governments and Tribes. Pierce County will coordinate the majority of the public involvement through their excellent knowledge of local channels.

#### **II. Identify USACE Vision, Values and Goals:**

##### **a. USACE Vision, Values, Goals, Capabilities and Strategies:**

- Public Safety
- Sound Water Resources
- Sustainability Ethic
- Consistent, Efficient and Effective Business Processes

**b.** Strategic Communication planning is centrally managed, vertically synchronized and locally executed to enhance credibility and confidence in USACE. It is communication that allows for transparent, understandable, two-way dialogue to inform and educate employees, stakeholders, and the public. The project team will communicate early and often with stakeholders to ensure they are aware of opportunities to comment and study milestones.

**III. Identify Stakeholders:**

Federal Stakeholders				
National	Administration	Congress	Fed. Agencies	Internal
None	Secretary of the Army	Area Delegation	National Marine Fishers Service, U.S. Fish and Wildlife Service, Federal Emergency Management Agency, Environmental Protection Agency, U.S. Geological Survey, U.S. Forest Service (all agencies are represented on Puyallup River Executive Task Force)	Headquarters USACE, Northwestern Division

Division/District Stakeholders				
State Govt	State Orgs	Local Govt	Local Pop	Interest Groups
WA Governor	NA	Pierce County (local sponsor)	Local Residents	Neighborhood Associations
WA Legislature			Agricultural and Business Leaders	Water Resources Inventory Area (WRIA) 10
			Local Media	Chambers of Commerce
				Sports/Fishing/Recreational Groups
				Puyallup River Watershed Council
				Puyallup River Executive Task Force (local cities, port, Tribes, utilities, state and federal agencies sit on this task force)
				Nature Conservancy

**IV. Establish Communication Goals, Objectives and Metrics:**

**End State:** Improved stakeholder understanding of the study.

**a. Goal 1:** Inform stakeholders of public comment opportunities and study milestones.

**Objective for Goal 1:** Keep stakeholders consistently and directly informed.

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- **Strategy:** Use established lists of e-mails and Seattle District Web site to announce public opportunities and milestones.
- **Tactics/tools:** 1) Use Corps of Engineers and local e-mail lists and postings to the Seattle District Web site. 2) Attend Puyallup River Executive Task Force meetings to announce pertinent information.
- **Implementation Leads:** Project Manager and public affairs — both Corps of Engineers and local sponsor
- **Metric: Letters and phone calls of concern from stakeholders received by Corps and local sponsor. Level of knowledge expressed in letters/emails and phone calls of concern.**

**b. Goal 2:** Increase public awareness of plans, milestones, and opportunities to provide meaningful comments.

**Objective for Goal 2:** Raise local awareness of milestones and opportunities to comment.

**Strategy 1:** Provide field trips for local reporters to share milestones and status as well as answering any questions regarding the study.

- **Tactics/tools:** Before the public scoping meeting, set up a media day for reporters to come tour the study area.
- **Implementation (responsible party, timeline, costs):** Corps of Engineers and local sponsor public affairs will lead this effort. Will need media packets including factsheets and FAQs.
- **Evaluation:** Media promotion of upcoming milestones.

**Strategy 2:** News releases two weeks prior to milestone events.

- **Tactics/tools:** Send timed and targeted news releases to local media.
- **Implementation:** Corps of Engineers public affairs will work with local sponsor's public affairs office to prepare joint news releases with a review by the team prior to dissemination.
- **Evaluation:** Attendance at public meeting/open house. Absence of reporting on inadequate notification.

**Strategy 3:** Inform federal and state agencies and Tribes of milestones and opportunities to comment via separate e-mail.

- **Tactics/tools:** Use existing mailing lists to reach agencies and Tribal representatives.
- **Implementation (responsible party, timeline, costs):** Diane Lake, Seattle District Corps of Engineers Tribal Liaison, to e-mail all updates, releases and notices to the Tribes and project manager to e-mail the information to agencies.
- **Evaluation:** Letters and phone calls of support received by Corps of Engineers.

**Strategy 4:** Inform interested parties of current work via Corps of Engineers Web site, frequently updated.

- **Tactics/tools:** Post current drawings, documents and upcoming event notification on the project's site. Put Web site address in any correspondence.
- **Implementation (responsible party, timeline, costs):** Corps of Engineers public affairs
- **Evaluation:** Web hits

**c. Goal 3:** Answer questions from congressional delegation, and state and local elected officials.

**Objective for Goal 3:** Address questions and concerns face-to-face with congressional delegation (or staff), state, county and local elected officials. Include site visit.

- **Strategy:** Invite (thru staff) congressional delegation, local and state elected officials to meet in person with project managers and agency officials, if appropriate.
- **Tactics/tools:** E-mail invitation to elected officials (thru staff). Draft FAQs as reference document for team members.

## Puyallup River General Investigation Project Management Plan

- **Implementation (responsible party, timeline, costs):**
  - Identify project team participants.
  - Confirm with Pam Gumaer, Corps of Engineers Seattle District Executive Assistant, that correct staffers are contacted.
  - Establish date and time, including opportunity for site visit.
  - Reserve location.
  - Draft e-mail invitation for team review.
  - Draft FAQs as reference for team members.
- **Evaluation:** Level of awareness and level of understanding in private encounters (public stance may differ). Stated unanswered concerns or questions.

### **V. Identify Key Messages**

- The Corps of Engineers, Pierce County and Puyallup River Executive Task Force, understand the serious impacts from floods and will be conducting a thorough study to ensure the most appropriate plan is selected.
- The Corps of Engineers, Pierce County and Puyallup River Executive Task Force are working together toward one solution.
- Our highest priority is the safety of the people in the local communities.
- Flood risk management solutions must have minimal environmental impact or adequate mitigation for impacts.
- The feasibility study report will give us information to select the best possible alternative for the most cost-effective amount of money and least environmental impact.
- We must follow all of the steps in the process in order to complete a thorough study so we come up with the best solution for the taxpayers' money.
- A Corps of Engineers flood risk management project must be engineeringly and environmentally sound.
- The Corps of Engineers must balance competing needs. When determining flood risk management alternatives, the Corps must consider environmental impacts, impacts to other communities, current and future effects, and much more.
- Due to the size of potential floods and wide distribution of people in the Puyallup/White River basin, we will need to combine a number of flood risk management projects to make a significant difference in flooding. The Corps of Engineers, with input from the local communities, will evaluate a wide range of different options and combinations to develop an array of projects that provide the most benefits at the least cost, with acceptable and safe construction.

### **VI. Action Plan — Identify Communication Products and Communication Activities:**

#### **a. Communication Products:**

- Media Advisory
- News release
- Fact Sheet
- Frequently Asked Questions with Answers
- Backgrounder
- Web site
- Paid public notices to announce public meetings/open houses

#### **b. Communication Activities:**

- Public Meeting

## Puyallup River General Investigation Project Management Plan

- Stakeholder Briefing/Meeting
- Open House
- Interviews with Reporters
- Conference calls

### c. Action Matrix:

Action	Responsibility	Trigger	Status
Hold public meeting/open house as part of NEPA scoping (must be done prior to the Feasibility Scoping Meeting)	Public Affairs, PDT	Not decided yet	Trigger not yet reached
Send routine update news releases and update Web site	Public Affairs (joint news releases)	Further into the study	Trigger not yet reached
Hold public meeting/open house once there is an initial range of alternatives	Public Affairs, PDT	Once we have draft of initial alternatives	Trigger not yet reached
Hold public meetings/open house for comment period on draft feasibility report/Environmental Impact Statement (NEPA)	Public Affairs, PDT	Once report is ready	Trigger not yet reached
Provide report on media and public inquires to Project Delivery Team (PDT)	Public Affairs	When it happens	Trigger not yet reached
Input inquiries and new releases into Vocus	Public Affairs	W/in 24 hrs and at end of event	Trigger not yet reached

### **VII. Implementing the Plan:**

- Stay true to the plan during execution.
- Regular meetings of the PDT to reassess the external communication situation.
- Update the plan every year.

### **VIII. Evaluation of Communication Plan Success:**

- Work with the Puyallup River Executive Task Force on keeping complaint log/citizen comments current. Try to incorporate the pertinent and useful comments in to the study.
- Yearly written summary of where we are at to monitor progress or digression from communication goals.