
PROJECT MANAGEMENT PLAN

CACHE LA POUUDRE RIVER GENERAL INVESTIGATION STUDY GREELEY, COLORADO

November 2005



**U.S. Army
Corps of Engineers
Omaha District**

PROJECT MANAGEMENT PLAN
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CACHE LA POUFRE AT GREELEY, COLORADO G. I. STUDY
EXECUTIVE SUMMARY

The Cache la Poudre River is subject to flooding that originates both from high mountain snowmelt in the spring and runoff from intense thunderstorms on the high plains. The town suffered extensive flood damage during a flood in May 1999. The natural riverine ecosystem provided by its channel and flood plain is scarce in the semi-arid high plains of eastern Colorado, yet provides essential habitat features to over half of Colorado's bird species. The riverine ecology in Greeley is in poor shape and much of the river is cut off from access to local residents. Seeking to reduce flood damages, improve the environment within the flood plain and to integrate the river into the fabric of the community, the city of Greeley has requested that the Corps of Engineers study the feasibility of both flood control and ecosystem restoration in and around the city. The study was authorized by a Senate Resolution under the Rivers and Harbors Act. A Reconnaissance Study has been completed that shows the likelihood of a Federal interest in reducing flood damages and improving the environment at Greeley.

The Corps of Engineers proposes to evaluate the feasibility of flood reduction and ecosystem restoration measures within a 17 mile reach of the river, in and around Greeley. Flood damage reduction efforts will be directed at a roughly 7 mile reach of the river (Birch Avenue, upstream to North 47th Avenue) inside the city limits and will focus on protecting high-damage areas along a 2 to 3 mile reach largely east of 11th Avenue. The ecosystem restoration effort will include areas of the entire 17 mile reach with focus on the restoration of old oxbows and meander channels, available gravel pits and flood plain storage areas and on providing connectivity through green space restoration in the flood way. The gravel pits that characterize much of the flood plain in and around Greeley will be evaluated for both their flood storage utility and their potential to improve the ecosystem of the river and its flood plain.

The feasibility study will employ the body of knowledge derived from recent studies and will employ the validated models used in those efforts. Hydrologic, hydraulic and economic models will focus on determining where frequent flooding generates high damages, and on cost effective methods of damage reduction. Both structural and non-structural flood damage reduction measures will be considered. Current mapping will be used for modeling, and for delineation of property and utilities.

The initial focus of the study will be to identify the flood reduction measures that will be the most cost-effective to construct and to identify locations in the flood plain that will provide the greatest benefit to the regional ecosystem through restoration. Special emphasis will be placed on identifying areas that can serve to both reduce flood damages and which can be reclaimed for use by both wildlife and enjoyed by the citizens of Greeley. The results of this initial focus will be provided so that decision makers may determine the future course of the feasibility study. At its conclusion, the study will produce a Recommended Plan and Environmental Assessment contained in a Detailed Project Report, which can be used to seek authorization and appropriation to proceed to project design and construction.

**PROJECT MANAGEMENT PLAN
GENERAL INVESTIGATION STUDY
CITY OF GREELEY, COLORADO
NOVEMBER 2005**

1 PROJECT SCOPE

The scope of this project includes solving both flood control and ecosystem problems along the Cache la Poudre River at Greeley. The extent of the solutions will be governed by the agreement worked out between the City of Greeley and the Corps of Engineers at the conclusion of the Feasibility Study.

1.1 Location

The study area is located in Weld County Colorado, in and around the city of Greeley. The potential study area extends along a 17 mile reach of the Cache la Poudre River, from its confluence with the South Platte River upstream into rural Weld County. The study area is located in Colorado Congressional District 4. The location of Greeley in north-central Colorado and the study reach within Greeley are shown in Figures 1 and 2.

The focus of the flood damage reduction feasibility effort will be on an approximately 7 mile reach of the Cache la Poudre River; Birch Avenue upstream to North 47th Ave. The study effort will be confined to the Cache la Poudre River and its flood plain. Most of the potential flood damages in that reach are concentrated in a 2 to 3 mile reach near Highway 85. Residential and industrial areas east of 11th Avenue have been the most susceptible to flood damage. It is in that area that most of the flood damage reduction feasibility efforts will be concentrated.

Ecosystem restoration efforts will be focused on reaches of the river that show the most promise for riparian habitat improvement. The potential for habitat improvement along the river and in off-channel storage areas and reclaimed oxbows between the Poudre Learning Center and Island Grove Park were noted for further evaluation in the Reconnaissance Study. That reach will be the initial focus for defining feasible ecosystem restoration efforts.



Figure 1 – Location of Greeley, CO and the Cache La Poudre River

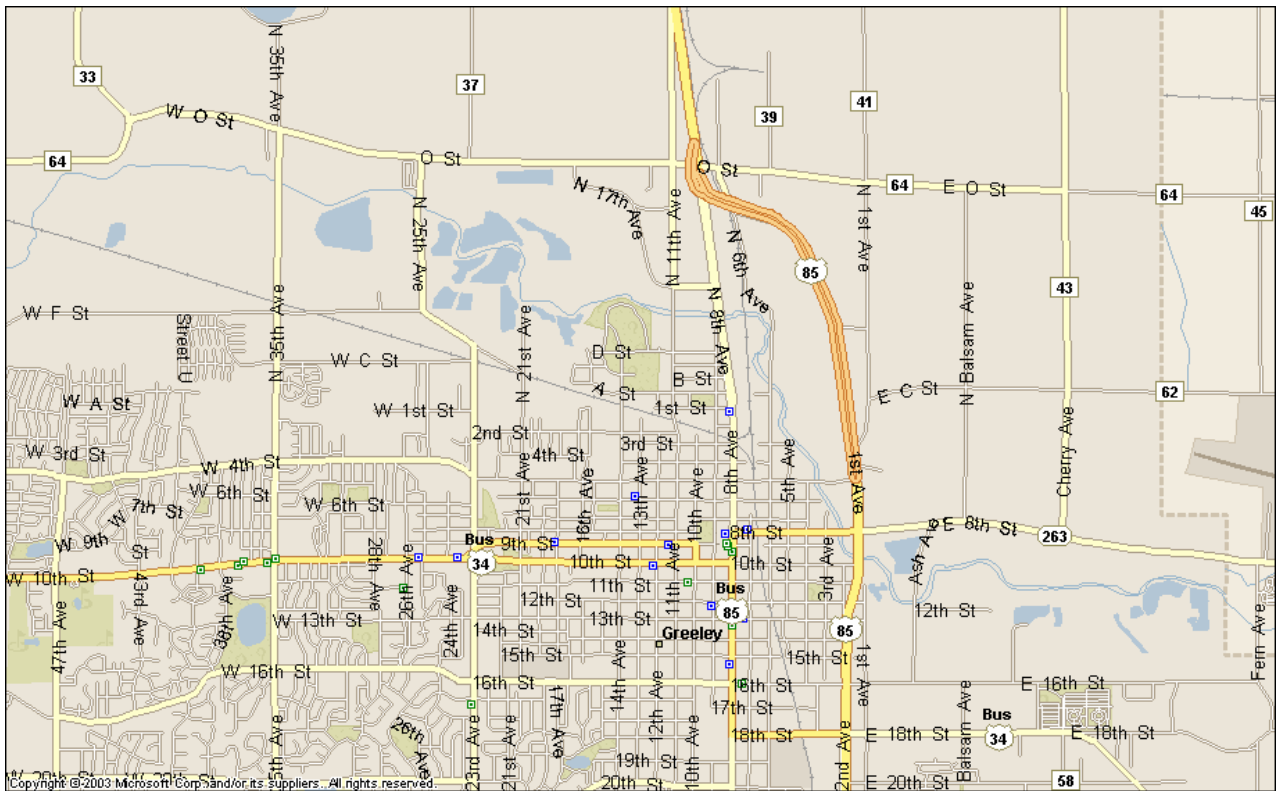


Figure 2 – Approximate Study Reach in Greeley, Colorado

1.2 Proposed Study Effort

1.2.1 GENERAL STUDY SCOPE

The study effort will build upon what was learned in the Reconnaissance Study (905(b) Report). The primary study objective is to determine the most beneficial plan to reduce the flood threat to Greeley and improve the riparian ecosystem of the Cache la Poudre River. Based upon the results of the Reconnaissance Study, it is anticipated that flood damages can be reduced by increasing stream channel conveyance; lowering flood peaks by storing part of the excess flow in designated areas of the flood plain and removing some developed property from the floodway.

Channel conveyance can be improved by buying and removing some property from critical reaches of the floodway and moving existing sand berms (spoil bank levees) further from the center of the river. Widening the floodway will build upon the City's on-going effort to improve the channel capacity of bridge crossings in Greeley. Where the floodway can be widened, efforts will be made to improve both the environment in the reach and provide a public access corridor.

Gravel pits and old oxbows offer potential as storage areas for flood flows. In addition, unoccupied flood plain property, such as the old sugar plant reservoir site east of 6th Avenue near the mouth of Eaton Draw, could also be used for flood storage. The flood storage areas will also be evaluated for their potential to improve riparian habitat along the Cache la Poudre River in Greeley, wetland habitat for migratory bird species and for public access via the regional trail system.

The initial focus of the study will be to identify flood damage reduction alternatives that are likely to have favorable benefit / cost ratios. Additionally, ecosystem restoration efforts that are the most productive will be identified at that time. For both the flood damage reduction and ecosystem improvement efforts, typical tasks will include defining the problem and opportunities, forecasting the future conditions without a project and formulating alternative plans. This initial focus is referred to as "Decision Point 1" or "Phase 1" and a separate cost estimate has been prepared for that part of the study.

Specific tasks that will be addressed for Decision Point 1 include defining of stage-frequency-damage curves along key river reaches, determining the shape of major historical flood hydrographs, trends in flooding with time and identifying specific channel reaches and storage areas for ecosystem restoration. An economic analysis will be conducted, including the existing condition expected annual damages for floods of all frequencies. Initial real estate efforts will focus on data acquisition needed to formulate viable plans. The existing ecosystem will be documented, and a dominant cover-type map developed for the project reach.

If desirable flood damage reduction and ecosystem restoration measures are identified for Decision Point 1, then the study will continue to its conclusion through the process of evaluating the alternatives against the "without project" alternative, comparing the alternatives and selecting a plan. When Decision Point 1 is reached, the scope of the

study can be enlarged if desired, to include tributary flood issues, channel stability and other issues that surface during the first part of the feasibility study effort.

More details on the proposed study effort, and the specific tasks to be performed by each member of the team, are provided in the Project Management Plan Appendix A.

1.2.2 FLOOD DAMAGE REDUCTION

The flood situation in Greeley has been studied in recent years, and the results from those earlier reports will be used in the plan formulation effort. Geographic Information Systems (GIS) information will be used as available. When useful, existing data will be updated with new information that has been collected in the past few years. A major flood in 1999 provided additional focus to alleviating the flood threat. A goal of this proposed study effort will be to determine the economic feasibility of a flood control project at Greeley. Hydrologic and hydraulic models will be developed that allow detailed analysis of alternatives by routing historical floods and floods of various frequencies through Greeley and evaluating stages at specific locations and available flood storage against flood volumes. The adequacy of any existing levees in the city will be evaluated so that decisions can be based upon their potential service during a major (100 or 500-year) flood.

The existing floodway mapping will be used when analyzing flood reduction alternatives. Both structural and non-structural flood mitigation methods will be considered. If a structural flood damage reduction measure is selected, a Conditional Letter of Map Revision (CLOMR) will be developed and submitted to FEMA, in order to expedite the process of having the Greeley flood insurance maps revised to reflect the reduced potential flood damages.

1.2.3 ECOSYSTEM RESTORATION

Recognizing the relative rarity of riparian ecosystem on the high plains of eastern Colorado, feasible alternatives will be identified that can lead to improvements in wildlife habitat, native ecosystems and water quality in the Greeley area. A goal of this study will be to identify means by which the riparian ecosystem can be improved. When feasible, ecosystem restoration goals will be pursued in conjunction with the flood control effort. An example is the establishment of greenways where the floodway is widened. Ecosystem restoration alternatives will be formulated from different mixes of environmental restoration measures. Measures are expected to include restoration of river meanders, side channels, oxbows wetlands and riparian vegetation and habitat. Where possible, invasive species will be replaced with native vegetation. The Corps will also prepare the NEPA / Environmental Assessment, and related reports as required for the flood damage reduction and ecosystem restoration measures that are selected.

1.3 Services to be provided

The Corps will assist the local Sponsor in identifying flood control, water resource and ecosystem problems within the reach of the Cache la Poudre River in and around City of Greeley, Colorado, evaluate possible solutions to correct the problems, and recommend a plan to be implemented. The Corps will make maximum use of existing plans and

documents as well as information obtained from various agency experts, utilization of professional and technical judgment, and site visits to formulate solutions.

1.4 Key Products

1.4.1 KEY PRODUCTS DEVELOPED IN THE RECONNAISSANCE PHASE:

- 905 (b) Analysis Report
- Preliminary Project Management Plan
- Feasibility Study Cost Estimate
- Feasibility Cost Sharing Agreement
- Letter Of Intent (to cost share) from the Sponsor

1.4.2 KEY PRODUCTS TO BE DEVELOPED IN THE FEASIBILITY PHASE

- Feasibility Report or Detailed Project Report
- Recommended Plan
- Environmental Assessment or Environmental Impact Statement & related technical reports

1.5 Study Authority

This study is authorized under a resolution dated March 22, 1971, by the Committee on Public Works of the United States Senate referencing Section 3 of the River and Harbor Act of June 1902. The text of the resolution is as follows:

“RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE UNITED STATES SENATE, That the Board of Engineers for Rivers and Harbors, created under the provisions of Section 3 of the River and Harbor Act approved June 13, 1902, be, and is hereby requested to review the report of the Chief of Engineers on the South Platte River and Tributaries, Colorado, Wyoming, and Nebraska, published as House Document Numbered 669, Eightieth Congress, and other pertinent reports, with a view to determining whether any modifications of the recommendations contained therein are advisable at this time, with particular reference to the desirability of developing a comprehensive plan for the utilization and conservation of water and related land resources of the South Platte River Basin, in the interest of flood control, regional water supply and waste management, water quality control, recreation, fish and wildlife conservation, wise use of flood plain, lands, and other resources for enhancement and protection of the environment. Investigation to be coordinated with the State of Colorado, local governmental entities, and other interested Federal and State agencies.” Resolution adopted on March 22, 1971. Signed by Chairman Jennings Randolph at the request of Senators Gordon Allott and Peter H. Dossinick of Colorado.

1.6 Purpose of the Project Management Plan (PMP)

1.6.1 OBJECTIVE OF THE PMP

This PMP is intended to document the Federal and non-Federal efforts ultimately required to conduct the feasibility phase and shall be developed jointly by the Corps of Engineers (Corps) and the Sponsor. The PMP will ensure that the work required for the feasibility phase has been carefully developed and considered. It outlines the project

scope, budget, schedules, and roles and responsibilities of the participating agencies. Providing a quality study that identifies the Sponsors needs and expectations, and that is completed on schedule and within budget is the primary goal of all participants. Critical components of the final PMP are:

- a) Identifying the objectives of the feasibility study.
- b) Developing sufficient level of plan detail.
- c) Identifying costs of required studies.
- d) Identifying schedule of activities to be performed during the feasibility study.

The product of the feasibility study, a feasibility report, will be used by the non-Federal Sponsor, other local agencies, and the Corps and ultimately the U.S. Congress to initiate any additional studies or necessary remedial measures, including construction actions. The report will provide a complete presentation of the study and results, and will document compliance with all applicable Federal, State and local statutes, executive orders and policies. The necessary environmental analysis, as applicable to any recommendations or plans, will also be included. Further, it will provide a sound basis for decision makers to judge the recommended plan.

1.6.2 RECONNAISSANCE PHASE

This document presents the Project Management Plan (PMP) for the Greeley, Colorado General Investigation Study. The initial effort in this project has been to conduct the reconnaissance phase of investigation. The purpose of the reconnaissance study is to determine if the water resource and ecosystem problems on the Cache la Poudre in Greeley, Colorado, warrant Federal participation in a feasibility study and the negotiation of a Feasibility Cost Sharing Agreement (FCSA) between the Federal Government and the City of Greeley, Colorado. Tasks related to that goal include; completion of a 905(b) Analysis Report, documentation of the results of the analyses conducted during the reconnaissance phase, preparation of a Project Management Plan (PMP), assessment of the level of interest and support from non-Federal organizations in Greeley, development of scopes and cost estimates. The PMP is a living document and will be updated as the project progresses and it establishes the framework necessary for the execution of the feasibility study.

1.6.3 FEASIBILITY PHASE

The feasibility phase begins once the FCSA is signed, thus most of this Project Management Plan has been developed to define the project once that phase of work begins. It is anticipated that the Feasibility Study will be conducted in two parts. The first phase will concentrate on problem identification, forecasting future without project conditions and formulating plans. This is defined as “Decision Point 1” in the remainder of the PMP and the PMP Appendix. The focus during this phase will be on identifying cost effective flood control solutions and outlining key ecosystem goals for the Cache la Poudre River through Greeley. The remainder of the study will involve evaluating those plans, comparing those plans and selecting a final plan that will be carried forward to the development of plans and specifications for construction.

2. WORK BREAKDOWN STRUCTURE

2.1 General

The Work Breakdown Structure (WBS) is a breakdown of the project into its component work tasks and products. Table 1 presents the WBS for the work effort leading up to Decision Point 1. Table 2 presents the WBS for the entire Feasibility Study. The detailed WBS for this project, and the scopes of work for each technical discipline, are provided in the Appendix. Decision Point 1 is reached by conducting the first three steps of the planning process in this feasibility study. Those steps include the specification of problems and opportunities, inventorying and forecasting future conditions and the formulation of alternative plans. A separate cost estimate has been prepared for that initial effort.

2.2 In-Kind Services

The Sponsor may contribute up to 50 percent of the Study Costs through the provision of In-Kind Services (IKS), subject to applicable laws and as negotiated as part of the cost share agreement. The IKS work will be geared to services that City officials can provide more efficiently and which improve the accuracy of the feasibility study. The IKS to be provided by the Sponsor, the estimated negotiated costs for those services and the estimated schedule under which those services are to be provided will be specified in the PMP established for the Cost-Shared Feasibility phase. Negotiated costs shall be subject to an audit by the Government to determine reasonableness and allowability. The local Sponsor shall provide documentation of the method by which the In-Kind Services were computed. More details on the tasks that can be credited as In-Kind Services, and their impact on the total study cost, are provided in the PMP Appendix.

2.3 Work Breakdown Structure by Phase

The work breakdown structure and cost estimate is presented by phase and by work discipline in Tables 1 and 2. Table 1 presents the anticipated costs to reach Decision Point 1 and Table 2 presents the anticipated costs for the entire study.

**CACHE LA POUFRE AT GREELEY, COLORADO
COST ESTIMATE TO DECISION POINT 1**

Table 1

Work Item	Cost Estimates (\$)		
	Corps	In-Kind	Total
Cultural Resources Assessment	\$1,688	\$0	\$1,688
Environmental Studies	\$44,596	\$0	\$44,596
Economic Studies	\$42,666	\$3,600	\$46,266
Real Estate Studies	\$22,297	\$22,413	\$44,710
Hydrologic Studies	\$42,090	\$2,400	\$44,490
Flood Plain Management Studies	\$16,902	\$0	\$16,902
Hydraulic Studies	\$80,380	\$8,900	\$89,280
Geotechnical Studies	\$15,420	\$2,400	\$17,820
HTRW Baseline Study	\$10,000	\$0	\$10,000
Surveys and Mapping	\$8,550	\$10,400	\$18,950
Structural Studies	\$0	\$0	\$0
Project Cost Estimates	\$9,290	\$0	\$9,290
Constructability Review	\$0	\$0	\$0
Plan Form & Project Management	\$61,350	\$12,300	\$73,650
Funds Management	\$3,552	\$0	\$3,552
External ITR	\$0	\$0	\$0
Federal Audit	\$0	\$0	\$0
Value Engineering	\$0	\$0	\$0
Required Washington Level Review	\$10,000	\$0	\$10,000
SUBTOTAL	\$368,781	\$62,413	\$431,194
Contingency (approx 12.5%)	\$46,098	\$7,802	\$53,899
PHASE 1 STUDY COST	\$414,879	\$70,214	\$485,093

**CACHE LA POUFRE AT GREELEY, COLORADO
ENTIRE FEASIBILITY STUDY COST ESTIMATE**

Table 2

Work Item	Cost Estimates (\$)		
	Corps	In-Kind	Total
Cultural Resources Assessment	\$6,250	\$0	\$6,250
Environmental Studies	\$163,266	\$0	\$163,266
Economic Studies	\$104,772	\$3,960	\$108,732
Real Estate Studies	\$91,614	\$44,663	\$136,277
Hydrologic Studies	\$125,000	\$37,400	\$162,400
Flood Plain Management Studies	\$28,342	\$0	\$28,342
Hydraulic Studies	\$215,770	\$8,900	\$224,670
Geotechnical Studies	\$61,626	\$6,000	\$67,626
HTRW Baseline Study	\$10,000	\$0	\$10,000
Surveys and Mapping	\$13,500	\$14,000	\$27,500
Structural Studies	\$10,000	\$0	\$10,000
Project Cost Estimates	\$27,874	\$0	\$27,874
Constructability Review	\$4,000	\$0	\$4,000
Plan Form & Project Management	\$185,377	\$90,000	\$275,377
Funds Management	\$10,774	\$0	\$10,774
External ITR*	\$29,476	\$0	\$29,476
Federal Audit	\$10,774	\$0	\$10,774
Value Engineering*	\$30,000	\$0	\$30,000
Required Washington Level Review*	\$53,870	\$0	\$53,870
* Local sponsor portions of these tasks	counted under	PM	
SUBTOTAL	\$1,182,285	\$204,923	\$1,387,207
Contingency (approx 12.5%)	\$147,786	\$25,615	\$173,401
TOTAL STUDY COST	\$1,330,070	\$230,538	\$1,560,608

3. FUNDING

3.1 Reconnaissance Phase

The Reconnaissance Phase is 100% federally funded and it is estimated that it will cost around \$230,000 by the time the FCSA is negotiated and the cost-shared phase begins. Table 3 lists estimated costs for the reconnaissance phase by Fiscal Year through fall 2005. While it is desired that a Reconnaissance Study should cost no more than \$100,000, there is a provision for contingencies, which can raise the cost of the study. Contingencies include complex scopes and the need to re-scope the study as a result of the negotiations leading to the FCSA. All of these have been true for this study. The Feasibility Phase, which is the next step, will be cost shared equally by the Sponsor and the Corps. The Sponsor's share may be wholly in cash or as in-kind services or a combination of both.

Table 3. Reconnaissance Phase Study Costs	FY 03 Cost	FY 04 Cost	FY 05 Cost	FY06 Cost*	Total Cost
Project Management**	\$11,460	\$39,268	\$23,000	\$0	\$73,728
PMP	\$ -	\$34,630	\$45,156	\$1,000	\$80,786
905 (b) Analysis	\$10,910	\$22,600	\$ -	\$ -	\$33,510
FCSA	\$ -	\$5,000	\$24,422	\$1,771	\$31,193
Travel	\$460	\$1,790	\$2,500	\$0	\$4,750
Total	\$22,830	\$103,288	\$95,078	\$2,771	\$223,967

* Through October 2005.

** Includes Plan Formulation work on PMP, 905(b) & FCSA and Program Control.

3.2 Feasibility Phase

The total estimated cost for completion of the feasibility study is estimated at just over \$1,560,000. The total cost of the feasibility study will be shared equally between the Corps and the non-Federal Sponsor, with the city of Greeley credited for in-kind services performed. As indicated in the Feasibility Cost Sharing Agreement, excess study costs will also be cost-shared equally with the city of Greeley. A draft detailed breakdown of the total and the "Decision Point 1" study costs are summarized in Table 4. Table 5 provides the estimated pace of expenditures on this study by Federal Fiscal Year.

Table 4. Feasibility Study Cost Estimate
FEASIBILITY STUDY COST ESTIMATE SUMMARY

Federal Cost-Share (50%):	\$780,304
Non-Federal Cost-Share (50%):	\$780,304
Cash	\$549,766
In-Kind Services	\$230,538
Total Study Cost:	\$1,560,608

DECISION POINT I COST ESTIMATE SUMMARY

Phase 1	
Federal Cost-Share (50%):	\$242,064
Non-Federal Cost-Share (50%):	\$242,064
Cash	\$171,850
In-Kind Services	\$70,214
Initial phase Study Cost:	\$484,127

Table 5. Cost –Shared Feasibility Study Estimated Annual Cash Flow

Organization	FY06	FY07	FY08	FY09	Total
Federal	\$142,000	\$300,000	\$300,000	\$38,304	\$780,304
Non-Federal Sponsor	\$142,000	\$300,000	\$300,000	\$38,304	\$780,304
Cash	\$100,000	\$200,000	\$211,462	\$7,766	\$549,766
<u>In-Kind Services</u>	\$42,000	\$100,000	\$88,538	\$30,538	\$230,538
Total Study Cost:	\$284,000	\$600,000	\$600,000	\$76,608	\$1,560,608

In-kind services were identified that could be done by the city of Greeley in place of a cash payment. They were derived from tasks noted in the individual cost estimates prepared by members of the study team from experience on similar previous studies & negotiated during August and September 2005. The estimate of In-Kind Service tasks was prepared jointly by the city of Greeley and the Corps of Engineers.

4. CRITICAL ASSUMPTIONS AND CONSTRAINTS

A major assumption is that feasibility study funding will be in place to execute tasks that will be developed and identified in the detailed study schedule. For this to happen, both the Federal funding and local funding must be available at the same time and in proportional amounts. Without this timing, the schedule will slip and require adjustments, resulting in cost escalation and interruption of product delivery. The Federal share is dependent upon annual Congressional appropriations. The Sponsor's share is dependent on local budgetary constraints. Additionally, the State of Colorado Water Conservation Board has agreed to provide funding contingent upon the Corps and the city of Greeley negotiating an FCSA in a timely fashion. It is also assumed that both

parties will be able to maintain stable staffing levels and continuity in their employee work efforts during the feasibility study.

In an effort to reduce study costs, the Sponsor has requested that existing data and information be used to define project feasibility, instead of initiating large scale new data collection and modeling efforts. In some cases, this may lead to less accurate definitions of both the problem and potential solutions. If discrepancies are encountered that require additional study or data collection, it could become necessary to modify the Cost Share Agreement at that time and resolve the technical issue.

Some of the specific assumptions and technical constraints that were noted in preparation of the current cost estimate include:

1. Of the 17 mile reach of the Cache la Poudre River noted in the Reconnaissance Report, the primary focus of this study will be on the flood plain between Birch Avenue and N 47th Street. The economic analysis for determining the feasibility of flood damage reduction measures will be heavily weighted towards the roughly 2 to 3 miles of high damage potential near Highway 85.
2. It is assumed that 2 or 3 viable flood damage reduction alternatives will emerge from the first phase of this Feasibility Study that will be carried forward for detailed hydraulic and economic analysis.
3. Existing data will be used where ever possible. Sufficient analysis should be performed to verify that the existing data is reasonable and sensitivity analysis performed on computations used in evaluating alternatives where applicable.
4. Each member of the PDT will log items of concern where they feel that additional analysis are needed before Plans and Specifications can be developed, relative to their area of expertise. These items will be presented to all members of the team, (Federal and local) when limitations in the scope of this feasibility study result in uncertainty that additional study would alleviate.
5. The city of Greeley will provide existing survey data needed for hydraulic modeling.
6. Stable channel analysis of the Cache la Poudre River will not be included in this scope of work.
7. Evaluation of the off-channel storage will be performed by Hydrology utilizing rating curves to be furnished by Hydraulics. Two off-channel storage sites are assumed for the purpose of estimating the cost of this feasibility study.
8. No tributary evaluation will be performed under the present scope of work.
9. Existing survey information will be used to create a TIN or DTM model. The GIS work will be performed as a creditable in-kind service and it is assumed that existing mapping has 2-ft contour interval accuracy. If mapping with 1-foot contour accuracy is available, a change in scope will be needed to generate a new HEC-RAS model rather than use the existing HEC-2 model.
10. Floodway calculations will not be performed. The existing floodway will be used when analyzing alternatives

5. SCHEDULE

The Feasibility Study is expected to last around three years depending primarily on funding. Estimates of key milestones are provided below. During the course of the study, the schedule will be revised as necessary to show current conditions and forecasted changes. Revisions to the schedule will be coordinated with the study team and Sponsor as provided in the Change Control Plan. More schedule details for interim tasks are provided in Appendix B.

KEY STUDY MILESTONES

• 905(b) Report submitted for Approval	14-Jul-05
• Letter of Intent submitted by Sponsor	17-Aug-05
• 905(b) Report Approval	Sep-05
• Sign FCSA, Initiate Feasibility Study	Nov-05
• Decision Point 1	Dec-06
• Draft Feasibility Report / EA	Mar-08
• Final Feasibility Report / EA	Dec-08

6 FEASIBILITY STUDY PROCESS.

6.1 General. This section includes a general overview of the feasibility study process. This process forms a logical method of determining the best plan for a community through a process of comparison and selection. A feasibility study is broken down into 6 Parts as listed below and briefly discussed in the following sections. The parts, although discussed concurrently, can occur iteratively and sometimes concurrently. For this study, the first 3 parts will be conducted to reach “Decision Point 1”.

- Identifying Problems and Opportunities
- Inventorying and Forecasting Conditions
- Formulating Alternative Plans
- Evaluating Alternative Plans
- Comparing Alternative Plans
- Selecting a Plan

6.2 Identifying Problems and Opportunities. Problem and opportunities statements will be framed in terms of the Federal objective and specific study planning objectives. These statements will reflect the priorities and preferences of the Federal Government, the non-Federal Sponsors, and other stakeholders. Problems and alternatives statements will be defined in a manner that does not preclude potential alternatives to solve the problems and achieve opportunities. Problem and opportunity statements will also encompass current as well as future conditions and are dynamic in nature.

Once the problems and opportunities are defined, study-planning objectives will be developed. Preliminary problems and opportunities and study objectives were provided above. These objectives guide efforts to solve the problems.

6.3 Inventorying and Forecasting Conditions. An inventory and forecast of critical resources relevant to the problems and opportunities under consideration will be performed. This information is used to further define and characterize the problems and opportunities. A quantitative and qualitative description of these resources is made, for both current and future conditions, and is used to define existing and future without-project conditions. Existing conditions are those at the time the study is conducted. The forecast of the future without-project conditions reflect the conditions expected during the period of analysis. The future without-project condition provides the basis from which alternative plans are formulated and impacts assessed. Gathering information about future conditions requires forecasts, which should be made for selected years over the period of analysis to indicate how changes in economic and other conditions are likely to have an impact on problems and opportunities.

Tasks to be accomplished during this phase include the following.

- The study area will be subdivided into reaches based on hydraulic independence and economic considerations. For each reach, maps of the flooded area will be prepared along with discharge-frequency, stage-damage, and damage-frequency curves. These will be displayed in a manner that facilitates understating of the flood problem. Future flood damages, based on changes in hydrology, hydraulics, land use or other conditions expected to change during the project life will be developed.
- The base condition of the study area will be established by inventory and analysis of the historical and regional setting, institutional, physical, socioeconomic, and environmental characteristics; existing water resource projects; and planning by others. Tasks include gathering and analyzing baseline data to estimate flood frequencies, durations, depths, and aerial extent; fully defining the extent and magnitude of the flood problem; defining and inventorying the other consequences of flooding such as damage to environmental and cultural resources; and defining structure types, locations, first floor elevations, and values to be used along with the hydraulic information to estimate economic flood damages.

6.4 Formulating Alternative Plans. Alternative plans will be formulated to identify specific ways to achieve planning objectives, within constraints, to solve the problems and realize the identified opportunities. Alternative plans can be either structural (e.g., levees) and/or nonstructural (e.g., flood proofing) systems. A full array of alternative plans will be identified, and screened or refined through the planning process. Projects must be formulated to reasonably maximize benefits to the national economy, to the environment, or to the sum of both, although locally preferred plans will also be evaluated. Appropriate mitigation of any adverse effects will be an integral component of each alternative plan that survives screening.

6.5 Evaluating Alternative Plans. The evaluation of alternatives is a comparison of the future without-project condition and the future with-project condition for each alternative.

In summary, the major tasks are:

- Screen potential solutions to reduce flood damages and improve the ecosystem to determine those that are most feasible and documenting those that do not warrant further consideration, and
- Evaluate effects of alternative plans (assesses effects of each plan to the without-project condition).

6.6 Comparing Alternative Plans. Plans, including the no action plan, are compared with each other during this phase, with emphasis on the outputs and effects that will have the most influence in the decision making process. Both the beneficial and adverse effects are compared. The comparison step can be defined as a reiteration of the evaluation step, with the exception that in this step each plan is compared against each other and not against the without-project condition. The output of the comparison step is a ranking of the plans. In summary, the major tasks are:

- Compare alternative plans (focus on differences between plans such as cost, flood damage reduction benefits, benefits to the environmental and other resource effects, etc.);
- Identify the National Economic Development (NED) plan (the plan that provides the maximum net annual economic benefits to the nation);
- Identify the locally preferred plan if different from the NED plan;
- Select a plan (based on evaluation and comparison of alternatives); and
- Prepare a draft feasibility report that documents problem identification, formulation and evaluation of alternatives, and the selection and recommendation of a plan(s).

6.7 Selecting a Plan.

The final step is the selection of a recommended plan from all those that have been considered. The recommended plan must be shown to be preferable to taking no action or implementing any of the other alternatives that were considered. The culmination of the planning process is the selection of the recommended plan or the decision to take no action.

6.8 Review and Approval. The final aspect of the Feasibility Phase is the review and approval of the feasibility report. Initially, an internal draft feasibility report/Environmental Assessment (EA) will be prepared for internal quality control review (QCR) by the project development team (PDT).

Independent Technical Review (ITR) must be performed on each major study process. This must be performed by another Corps District or another qualified external independent entity, such as a Corps Lab or AE Firm. The cost of the internal ITR is included in the estimates of each technical discipline. The cost of the external ITR, as

mandated by EC1105-2-408 dated May 31, 2005, is included as a separate line item in the cost estimate.

General Investigation studies must be reviewed by a team in Headquarters USACE in Washington, DC. The review effort may include travel to Greeley by Washington level reviewers and from Omaha or Greeley to Washington to participate in the review the feasibility study. Local expenses associated with this process can be credited as In-Kind Services. The amount budgeted for the combined Sponsor and Federal efforts in this regard is, by guidance 5% of the study federal labor cost and has been estimated to be about \$53,000.

Following this review and incorporation of comments, a draft feasibility report/EA will be submitted to the Corps' Headquarters and others for review and comment. After comments received have been satisfactorily addressed, a final feasibility study/EA report will be developed and submitted for approval. Approval by the Corps' Headquarters results in a positive report from the Corps' Chief of Engineers. That is submitted to the Assistant Secretary of the Army for Civil Works. A transmittal letter is then prepared to send the report to the House and Senate for consideration of project authorization for implementation, i.e., design and construction. It is also sent to Office of Management and Budget where its approval enables funding to be placed in Administration Budgets

Review comments received at each level of review must be addressed by the PDT and may require additional work or study. The amount of work required from the Omaha District, Corps of Engineers and the Sponsor, during review is estimated and will be determined by the number and nature of the review comments actually received.

7. PROJECT DELIVERY TEAM MEMBERSHIP INFORMATION

The Project Delivery Team or "PDT" has the responsibility for technical study conduct and content related to problem identification, plan formulation and development of the feasibility report. This is accomplished under the leadership and direction of both the Corps and local Project Managers who are responsible for assuring that the study is conducted in a timely manner and within established budget limits, resulting in a quality product. The Corps Project Manager will assign study tasks to appropriate representatives of the Corps' technical divisions and will be responsible for developing scopes of work, negotiating contracts and reviewing work to be completed by consultants or other State or Federal agencies for specific tasks identified in the PMP. The local Project Manager has similar responsibilities, especially for any work to be completed as in-kind services. A listing of PDT members is provided on the following tables.

Table 6. Corps PDT Members

NAME	ORG	TITLE	PH (402)	E-MAIL
Mark E. Nelson	PM-AP	Project Mgr.	221-3109	Mark.E.Nelson@nwo02.usace.army.mil
Kara Reeves	PM-AE	Economist	221-4639	Kara.M.Reeves@usace.army.mil
Katie Reed	PM-AE	Enviro. Spec.	221-4891	Margaret.K.Reed@usace.army.mil
Sandra Barnum	PM-AE	Cultural Res.	221-4895	Sandra.V.Barnum@usace.army.mil
Curtis Miller	ED-HD	Hydraulics	221-7739	Curtis.J.Miller@usace.army.mil
Jeff McClenathan	ED-HD	Hydraulics	221-4578	Jeffrey.T.Mcclenathan@usace.army.mil
Randy Behm	ED-HB	Flood plain	221-4596	Randall.L.Behm@usace.army.mil
Joel Knofczynski	ED-HE	Hydrologist	221-4580	Joel.D.Knofczynski@usace.army.mil
Ron Beyer	ED-HE	Hydrologist	221-4475	Ronald.S.Beyer@usace.army.mil
Dennis Gaare	ED-GB	Geotech	221-4553	Dnnis.S.Gaare@usace.army.mil
Ty Sabin	ED-GD	Surveys	221-4202	Ty.J.Sabin@usace.army.mil
Victoria French	RE-M	Real Estate	221-4206	Victoria.S.French@usace.army.mil
Rich Stricker	ED-C	Cost Est.	221-4458	Richard.A.Stricker@usace.army.mil
	OC	Off. Council	221-4019	
Richard Rappe	PM-P	Program An.	221-4624	Richard.D.Rappe@usace.army.mil

Table7. Sponsor Team Members

NAME	ORG	TITLE	PHONE	E-MAIL
David Wells	Greeley	Civil Engineer	(970) 350-9796	dave.wells@greeleygov.com
Steve Bagley	Greeley	City Engineer.	(970) 350-9792	steve.bagley@greeleygov.com
John Briggs	Greeley	Public Works	(970) 336-4156	john.briggs@greeleygov.com
Greg Flebbe	Greeley		(970) 350-9782	gregg.flebbe@greeleygov.com
Ron Hoagland	Greeley	Storm Water Management	(970) 336-4031	ron.hogland@greeleygov.com
Karen Scopel	Greeley	Communications Division	(970) 350-9783	karen.scopel@greeleygov.com
Paul Weiss	Greeley	Water Resources Management	(970) 350-9291	paul.weiss@greeleygov.com
Royce Simpson	Greeley	GIS Administrator	(970) 350-9791	royce.simpson@greeleygov.com
Terri Kohls	Greeley	Storm Water Management	(970) 336-4072	terry.kohls@greeleygov.com
John Kolanz	Greeley	City Attorney	(970) 350-9757	john.kolanz@greeleygov.com
Bert Lieautaud	Greeley	Stormwater Management.	(970) 336-4121	bert.leautaud@greeleygov.com
Joe Kunovic	Greeley	Water Pollution Control	(970) 350-9363	joe.kunovic@greeleygov.com
Betsy Kellums	Greeley	Cultural Resources		betsy.kellums@greeleygov.com

Tom Welch	Greeley	Island Grove Park Mangr.	(970) 351-7123	tom.welch@greelevgov.com
Kim Ogle	Weld Co	Planning	(970) 353-6100	kogle@co.weld.co.us
Tom Browning	Colorado	WC Board	(303) 866-4804	tom.browning@state.co.us
Larry Rogstad	Colorado	Division of Wildlife	(970) 352-2143	

8. QUALITY CONTROL PLAN AND OBJECTIVES

Quality study management and independent technical review are integral to the PMP. An overriding objective is to integrate both while completing the feasibility study within a reasonable time period and within budget. An initial quality control plan (QCP) is provided in Appendix C. Quality review milestones for important study decisions in the planning process will be provided in the Appendix as the study enters the Feasibility Phase. These milestones are important so that the technical results can be relied upon in further work. The Corps and the Sponsor will share responsibility for quality control, including independent technical review. Policy related problems or issues would be elevated to the appropriate higher authority for resolution as they develop.

Independent technical review (ITR), a form of peer review, is conducted on all study products to a degree commensurate with study scope, scale and level of risk. The level of technical review is influenced by the degree of technical difficulties, policy issues, customer expectations, study scope and cost, individual project management processes. To insure timely ITR, review teams are generally formed early in the study process through coordination with the project manager, the PDT, appropriate supervisors and the Northwestern Division (NWD). At the local level, the Sponsor utilizes a Project Peer Review Process to deal with policy and technical quality issues, including independent technical review. Generally, ITR review needs to be performed by individuals who have senior-level competence in the specific type of work performed. Selected individuals will have the appropriate knowledge, skills and experience necessary to perform the task. The person might be in a Corps Division office, a Corps Laboratory, the technical and planning offices of another Federal Agency such as the USGS, or a private contractor not involved in technical work on the project. For products developed under contract, the contractor is responsible for initial quality control and ITR. New Corps of Engineers policy, as detailed in EC1105-2-408 dated May 31, 2005, is that for new feasibility studies, the ITR will be conducted by specialists from organizations outside of the district responsible for the study.

Quality products start with good data collection methods that utilize standard and acceptable technical methods and reliable technology to arrive at the information required. Assumptions made will be in accordance with established guidance and policy, and any deviations clearly identified and properly approved. Data from the scientific and “gray” literature will be appropriately referenced and all methods described so that the effort can be understood and repeated by others if necessary. The results obtained by

these methods should have a level of confidence so that they can be extended to river reaches that were not specifically sampled.

9. ACQUISITION STRATEGY

An acquisition plan will be developed in the future for any work that will be obtained by contract. The PM must ensure that any acquisition is coordinated with appropriate functional elements and the contracting office of the agency. No contracts were initiated by the Corps of Engineers during the Reconnaissance Phase. During the Feasibility Study Phase, contracts may be used when specialized expertise is needed to complete the analysis of unique local conditions, schedule requirements require additional resources, perform Independent Technical Review, or upon the recommendation of the local Sponsor as part of the cost-shared work effort.

10. RISK ANALYSIS

Risk is the exposure to chance of failure. Risk management seeks to reduce risk by identifying the risks and placing controls on it. In the context of the study goals, a number of procedures are in place through this PMP to assist in reducing the risk of unrealistic scope, cost estimates, schedule changes and study resources. These will help to maintain schedule within cost limitations and under the project manager's span of control authority. Non-performance of a key study task by a member of the PDT is of concern, but if identified early on, can be remedied by contracting for the services. Contingency funds are also budgeted. A risk also exists in that either one of the signatories to the FCSA, for various reasons, may decide to terminate the agreement. This would result in wasted Federal resources, unless another partner can be located. Controls that help reduce risk of study termination are frequent meetings and contacts with the Sponsor, the monthly PRB meetings held at the Omaha District, project managers working at both the District and local levels, and vertical coordination meetings with HQ and NWD.

11. SAFETY PLAN

The Corps, the Sponsor and their contractors will comply with all local, State and Federal safety rules and regulations to protect the safety and health of employees engaged in official study activities. Appropriate safety reviews and considerations will be implemented throughout the life cycle of this project from study phases through construction. During the study phases a major safety consideration is identifying potential hazards relative to site conditions, including water safety concerns, driving safety, climate related hazards, presence of dangerous wildlife, vectors, and plants, and needed safety equipment. Appropriate safety briefings prior to any field activity, such as site visits, will be conducted to apprise groups of any potential hazards. Initially the PM and the Sponsor will generate a list of potential hazards and conduct a Preliminary Hazard Analysis (PHA). More detailed safety plans may be developed for specific contract work. The PMP will be amended as needed to incorporate these plans.

a. **SAFETY SUPPORT:** The Omaha District PM will coordinate with the Omaha District Safety and Occupational Health Manager (SOHM). The SOHM has overall responsibility for planning, organizing, overseeing, and evaluating the Safety and Occupational Health Program within the Omaha District. The SOHM will assist the PM in developing the Safety and Occupational Health Plan (SOHP) for the project. The SOHM or personnel from CENWO-ED-G reviews the Site Safety and Health Plan (SSHP), if required. The SOHM or staff conducts periodic safety surveys, inspections, evaluations of all work and procedures associated with the project to include operational procedures, programmatic safety and occupational health requirements, environmental hazardous that could be encountered, construction, recreational and public protection from safety hazards, and personal protective equipment requirements. The SOHM ensures compliance with all applicable safety regulations and provides support to the PM for overall safety on the project site.

b. **SAFETY REQUIREMENTS:** Safety is our primary concern for the activities on-site. A Government representative is required to monitor contractor activities from a quality assurance viewpoint. This includes the contractor's safety program. Under the terms of the contract, FAR 52-212-3 Stop-Work Order clause of the basic contract, the Contracting Officer has full authority to require a contractor to take any steps deemed necessary for maintaining safe operating conditions.

The contractor is obligated by the terms of the contract to protect the lives and health of persons exposed to their operations and to safeguard property and equipment from accidental loss or destruction. All work will be performed in accordance with the safety and health provisions of the contract, EM 385-1-1 (US Army Corps of Engineers Safety and Health Requirements Manual), and Federal State and local codes and standards. When a difference in standards exists, the most stringent standard applies.

In addition to being a contract requirement, a well-planned and conscientiously applied accident prevention program is essential to the efficiency, quality, and scheduling of work and the minimization of costs. The prime contractor is responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance; coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts; and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. Public safety is paramount. Sites must be secured from public access.

Unsafe practices will not be tolerated. Reckless behavior or disregard of safety and health requirements will not be allowed to exist on Corps of Engineers projects. If any contractor employee endangers his own life, the lives of others, or property by disregard of safety and health requirements, the contractor shall be informed of the employee and his unacceptable attitude towards accident prevention. The contractor will be reminded of the contract requirements and be instructed to immediately resolve the problem.

When a Corps of Engineers employee identifies an immediate endangerment to life

or health (imminent danger), a Stop-Work Order may be issued. Situations in this category include, but are not limited to, workers being crushed, buried, electrocuted, suffocated, thrown from moving equipment, falling, drowning, being blown up, etc. If any of the aforementioned safety concerns should arise, the following steps will be taken:

The PM or Corps employees on-site will instruct the contractor to immediately remove workers from the area of danger or to desist from the dangerous operation or practice. If a representative of the contractor is not at the site, the PM or Corps employee on-site will order the workers to remove themselves from the dangerous location or to cease the dangerous operation or practice. The PM or Corps employee on-site will ensure that the work is not resumed in the area of danger and that workers will not be involved in the dangerous operations or practices until recommendations for corrections have been fully complied with. Defective equipment will not be operated until all deficiencies are corrected and the equipment meets inspection and testing requirements.

c. SAFETY EXPOSURE REPORTING: It is necessary that the Omaha District Safety Office receive monthly contractor man hours so that we may determine our lost time frequency rates. This data must be received telephonically, electronically, or by mail by the 5th of every month. The information needed is the number of man-hours worked by the prime and subcontractors at any particular project for the previous month. The District Safety Office needs only the total man-hours, not separated by contract.

12. CHANGE MANAGEMENT

A procedure is necessary for defining how changes to project scope, schedule and budget can be made from the FCSA and the PMP. Changes must have the approval of the study Sponsor and the Corps. Changes or anticipated changes would be reported monthly to the Sponsor. If there are no significant changes in scope, costs, and schedule, the project managers can approve the change and record it in a project logbook. A modification to the PMP would also be made.

If there are changes that would result in an increase in total study cost or a delay in completion of the overall study, the Corps will follow a procedure known as the Project Schedule and Cost Change Report (SACCR). After concurrence from the Study Management Team, the Corps PM will prepare the SACCR in concert with a program analyst with the Planning, Programs and Project Management Division. This provides a justification for the changes. Action is taken on SACCR's at the Omaha District and Northwestern Division project review boards. To be approved by the Corps at the District and the Division level, a SACCR must first be approved and signed by the study Sponsor if the study is in a cost-shared phase. At the local level, the request for change and costs would be reviewed by the City Manager and City Council. The SACCR process was employed three times during the Reconnaissance Study to allow for the development of a PMP, confront changes in scope and the negotiation of the Feasibility Cost Share Agreement. None of the changes involved cost-shared funds.

As indicated earlier, both the Corps and the Sponsor have veto power over any proposed scope and cost changes. This provides both parties protection against commitments that

would be unacceptable to either party; the intent is that issues would be resolved at the Study Team Level as much as possible. There will be monthly opportunities for thorough communication about potential issues at the Corps in PRB meetings and at the Sponsor level at regular agency meetings. Issues that cannot be resolved at the level of the Study Team would be raised to the Executive Committee. The Omaha District would assign the Deputy to the Omaha District Commander, currently Mr. Erik Blechinger, as the Corps representative on the Executive Committee. Any matter that could not be resolved at this level would first be raised to the NWD and possibly HQ level before any final decision would be made. During this time period, the Sponsor would be welcome to participate in discussions and meetings to resolve any issues.

13. COMMUNICATION STRATEGY

The study will be conducted with full and open communications within the Corps and between the Corps and the Sponsors. The PDT will hold periodic meetings to discuss and resolve issues, update study status, and review study reports, etc. As appropriate, the Sponsor will be invited to participate via conference call. In addition to the PDT meetings, the Sponsor will be updated periodically on the status of the study and will be provided financial information consistent with public law, regulations, and good business practices. The Corps' upper management will also be kept informed of the study status through reports to the Project Review Committee (PRC) and Project Review Board (PRB) and at Quarterly Reviews with NWD. These reports are prepared by the Corps' PM and will discuss accomplishment of project objectives, identify issues, and forecast changes to schedules and costs. Such internal reports will be prepared monthly, quarterly, or annually, according to established District procedures. Fact sheets with condensed information about the project are maintained and updated periodically by the Corps' PM to provide background information to higher authority or to respond to other inquiries.

The City of Greeley has proposed the establishment of a Poudre Study Advisory Committee. If established, it will participate in the detailed feasibility study for the purpose of providing agency and public input to the formulation process. Representation on this committee includes city, county and state officials, land owners and officials from the water conservancy district. It is anticipated that regular meeting will be held with this advisory committee during the course of the Feasibility Study.

Given the distance between Greeley, CO and Omaha, NE, software that facilitates team participation, such as GROOVE, may be worth considering. This software allows collaboration on documents and even instant messaging and rapid file transfer that can enhance telephone conference calls. The Corps presently provides free licensed copies to local cost share Sponsors. Additionally, the sponsor has developed a project web site and will be eligible to obtain In-Kind Services credit for work done on the site after the FCSA is signed. Presently, the web site is not included in the feasibility scope and cost estimate, but has been discussed in In-Kind Services negotiations under both GIS and Project Management.

In addition to internal PDT communication, an early priority for the study is to provide for public participation. This includes obtaining timely input from other Federal and State agencies and interested local communities, residents and other stakeholders. This will be accomplished through periodic public meetings and/or workshops, formal and informal interagency coordination, and by allowing all stakeholders the opportunity to review and comment on decision documents (e.g., the feasibility report).

A “Public Involvement Plan” will be developed by the PDT in the Feasibility phase. The purpose of a Public Involvement Plan is to provide information to the public to encourage informed participation in the project and to obtain information from the public so that better planning decisions can be made. The local Sponsor often assumes a lead role in developing the plan. Presently, the City of Greeley is considering the establishment of a Poudre Study Advisory Committee. The establishment of that committee by the City of Greeley would be useful in encouraging widespread public involvement.

A permanent project file for this study will be developed and maintained by the PM at the Omaha District in accordance with current District policies. This record file will include all formal correspondence, decision documents, and financial documents relevant to the study in electronic and/or hard copy format, as applicable.

14. VALUE ENGINEERING MANAGEMENT

Value Management is a process to facilitate and encourage the understanding, consideration, and integration of the needs of all customers, PDT members, partners and stakeholders. Value management seeks the highest value for a project by balancing resources and quality and should be applied continuously throughout the life cycle of the project. Value Management is maintaining important functions in regard to efficiency, effectiveness and cost control during the study. At least one VE study shall be performed during the feasibility phase of the project, as part of the plan formulation process prior the selection of final alternatives.

The criteria for Value Engineering are spelled out in EC 11-1-114 “Army Programs Value Management / Value Engineering”, which covers current applications of the methodology under the Project Management Business Process. The basis for the current Value Engineering process is mandated by Public Laws 104-106, Section 4306 (1996) and Public Law 99-662, Section 911 (1986).

For this General Investigation Study, this means that a Value Management Plan will be developed to make sure that Value Management / Value Engineering tasks are properly scheduled and staffed during the Feasibility Phase. During this phase, a Value Engineering Officer will become part of the PDT. The purpose of the VE Officer is to make sure that VE activities are accomplished and the appropriate documentation prepared. During the feasibility phase, at least one VE study will be conducted as part of the plan formulation process, prior to the selection of the final alternative.

15. CLOSEOUT.

15.1 Delineation of Phases

- a. **RECONNAISSANCE PHASE:** The Reconnaissance Phase is completed when the Sponsor and the Omaha District Commander sign the Feasibility Cost Share Agreement. If, for any number of reasons, further analysis is not recommended and the study is terminated, the Corps will provide the Sponsor with all the data and results of the 905(b) analysis.
- b. **FEASIBILITY PHASE:** The Feasibility Phase is completed with closeout of the study and its activities, including but not limited to completion of the feasibility report, checking of contractor performance, evaluations of the process, seeing the feasibility report through Washington level review, and fiscal completion.

The PM is responsible for closeout; however, the required actions may require participation of the PDT members, especially for closeout of financial cost accounts. The closeout would also apply in situations where the project might be terminated. All outstanding obligations and commitments will need to be cleared. The Sponsor's PDT member responsible for keeping financial records will assist the PM in carrying out an audit of feasibility study cost expenditures, including funds used for contracted services and those for in-kind services. The PM shall also insure that all contracted services products have been accepted prior to making any final payments.

Omaha District procedures for closeout shall follow standard operation procedures. The amounts of Federal and non-Federal costs will be determined and a balancing of expenditures based on the approved study cost share ratio will be determined. The outcome will determine the direction and amount of any funds to be transferred between the Sponsor and the Federal Government.

The cost of the closeout is to be included in the PMP scope per guidance in Article VI, Part B of the current model FCSA.

15.2 Feasibility Phase

The process covers closeout of the study and its activities, including but not limited to completion of the feasibility report, fiscal completion, checking of contractor performance, and evaluations of the process. The PM is responsible for closeout; however, the required actions may require participation of the PDT members, especially for closeout of financial cost accounts. The closeout would also apply in situations where the project might be terminated. All outstanding obligations and commitments will need to be cleared. The Sponsor's PDT member responsible for keeping financial records will assist the PM in carrying out an audit of feasibility study cost expenditures, including funds used for contracted services and those for in-kind services. The PM shall also insure that all contracted services products have been accepted prior to making any final payments.

Omaha District procedures for closeout shall follow standard operation procedures. The amounts of Federal and non-Federal costs will be determined and a balancing of expenditures based on the approved study cost share ratio will be determined. The outcome will determine the direction and amount of any funds to be transferred between the Sponsor and the Federal government. The cost of the closeout is to be included in the PMP scope per guidance in Article VI, Part B of the current model FCSA.

16. REAL ESTATE

During the Feasibility Phase, alternative plans that would resolve the water resource problems and realize the opportunities will be identified. Ultimately a recommended plan will be selected. The associated lands needed for the identified project area along with the real estate interest that would need to be acquired will be presented in the Real Estate Plan. The Sponsor must agree to provide without cost to the United States all lands, easements, rights-of-way, and relocationns and suitable borrow and disposal areas (LERRD), as determined by the Federal government to be necessary for the construction of the project. The value of the LERRD will be included in the total project costs and credited toward the Sponsor's share of the project costs. Water rights are treated similar to real property. The local sponsor will be given credit for all water rights that are required as part of the project. This would include both the water rights previously owned by the city and those that the city must acquire in order for the project to be completed.

17. APPROVALS

The Project Management Plan is valid when it has been reviewed and signed by the Members of the Project Delivery Team and when the FCSA, of which it is a part, is executed by both the Sponsor and the Federal government. The signature sheet is located in Appendix C "Quality Control Plan".

18. GLOSSARY OF TERMS AND FEDERAL ACRONYMS

905(b) Report – A reconnaissance level report that defines the nature of the problem to be solved and estimates the degree of Federal interest in solving it. The report is named after a section of a Federal Law that defines the need for and character of the report.

CLOMR (Conditional Letter of Map Revision) – A detailed letter sent to the Federal Emergency Management Agency requesting that flood insurance rate maps be revised (downward) to reflect the success of a flood control project in reducing the flood damage threat.

EA (Environmental Assessment) – An evaluation of the environmental impact of a proposed project, with special emphasis on positive or negative impacts to threatened or endangered species and unique ecosystems.

EIS (Environmental Impact Study) – An environmental study that is more rigorous and detailed than an EA.

FCSA (Feasibility Cost Share Agreement) – The contract between the Local Sponsor and the Corps for conducting a Feasibility Study which spells out the costs, duties and legal requirements of all parties.

FONSI (Finding Of No Significant Impact) – A favorable ruling on the environmental impacts of a proposed project which is signed by the Corps District Commander.

FWS (Fish and Wildlife Service) – The Federal agency that may need to be consulted as part of an Environment Assessment.

HEP (Habitat Evaluation Procedure) - The method and related software that uses Habitat Suitability Indices to define the quality of a particular habitat for a species.

HQUSACE (Headquarters, U. S. Army Corps of Engineers) --- The Washington office at the top of the chain of command for the Corps. It is often abbreviated HQ.

HTRW (Hazardous, Toxic and Radiological Waste) – Substances that if found on a project site, must be removed or contained before a flood control or ecosystem restoration project can be built.

In-Kind Services – Work that is done by the Local Sponsor on the Feasibility Study. The work is negotiated ahead of time, and can be done by the Sponsor instead of submitting a portion of the cost-share cash requirement.

ITR (Independent Technical Review) – A review of a Feasibility Study performed by experts in the technical fields that were not part of the PDT that wrote the report.

LERRD (Lands, Easements, Rights-of-way, Relocations and Disposal areas)—Real Estate tasks or values that are provided by the local Sponsor and are credited to the Sponsor for each cost shared phase of a project.

LOI (Letter Of Intent) – The letter from the local Sponsor indicating the willingness and ability to sign an FCSA.

NED (National Economic Development) -- When applied to a flood control solution plan, it is the one that provides the greatest net benefit to the economy of the nation.

NEPA (National Environmental Policy Act) – A collection of Federal laws and procedures governing the protection of endangered species and other impacts of a water project on the environment.

NWD (Northwestern Division) – The office to which the Omaha District reports to in the chain of command.

PCA (Project Cooperation Agreement) – The documents signed before proceeding into the preparation of plans and specifications and beginning construction.

PDT (Product Delivery Team) -- The group of Corps and Sponsor personnel that are working on the Feasibility Study.

PED (Preconstruction Engineering and Design) – Preparation of plans and specifications, that follows a Feasibility Study and precedes project construction.

PHA (Preliminary Hazard Analysis) – A preliminary list of hazards that is to be developed by the PM and the Local Sponsor for use by those individuals working on the project site.

PM (Project Manager) – The individuals at the Corps and at the Sponsor who have responsible charge over the completion of the Feasibility Study.

PMP (Project Management Plan) – A working document for Corps Civil Works Projects that provides details on the project and team. It is the portion of the FCSA contract that spells out the scope of work and cost estimate for the phase of study.

PRB (Project Review Board) – An executive committee at the District that meets monthly to review the progress of projects assigned to the District.

Program Control – Funds Managers for the Corps of Engineers.

QCP (Quality Control Plan) – A plan developed to make sure that quality review milestones are met.

QCR (Quality Control Review) – A project review performed by the PDT prior to completing the feasibility report.

R-O-E (Right-Of-Entry) – Legal permission to enter private land for a public project.

S&A (Supervision & Administration) – Overhead costs charged to projects by senior managers for general review of project documents and overall program direction and the cost of secretarial support.

SACCR (project Schedule And Cost Change Report) – A required report that must be filed to Division in order to get permission to change the project funding or schedule.

SOHM (Safety and Occupational Health Manager) – District official that helps the PDT develop any needed safety plans.

SMT (Study Management Team) – The supervisors of the employees working in the Product Delivery Team.

TCP (Traditional Cultural Properties) – Places, buildings or objects important to people, due to their connection with traditional practices. Traditional referring to those beliefs, customs and practices of a living culture that have been passed down through the generations.

VE (Value Engineering) – A review process to determine whether significant cost savings could be found in the execution of a particular project phase.

WBS (Work Breakdown Structure) – A list of the team members and their duties by each component part of the study.

