US Army Corps
of Engineers
Kansas City District

PEER REVIEW PLAN

BRUSH CREEK BASIN
WATERSHED PLANNING PROJECT
FEASIBILITY STUDY PHASE

JANUARY 2008

HEARTLAND ENGINEERS

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1. DOCUMENT OBJECTIVE

This Project Review Plan (PRP) is a part of the Project Management Plan (PMP) under the QC/QA element in accordance with EC 1105-2-408 and the Standard Operating Procedures for the Planning Centers of Expertise. This PRP provides guidance to the Project Delivery Team (PDT) on the specific review levels, responsibilities, and process requirements for execution of review on the Brush Creek Basin project.

2. GENERAL INFORMATION

Executive Summary - Study Purpose and Background. The U.S. Army Corps of Engineers Kansas City District along with the two local project sponsors, Kansas City, Missouri and Johnson County, Kansas, are conducting a feasibility study of Brush Creek Basin to determine which array of multipurpose measures, for flood risk management and ecosystem restoration, can evolve from a true watershed planning effort and result in feasible alternatives. The alternatives identified will ideally involve alternatives with measures related to flood risk management and ecosystem restoration project that will also integrate measures which address non-point source water quality problems. The planning effort will also identify a number of projects that the locals construct without federal assistance. A three prong approach is being used, including development of a watershed management plan, an organizational structure for handling watershed activities, and a development of the project sites that will make the most sense systematically, based on the watershed's needs.

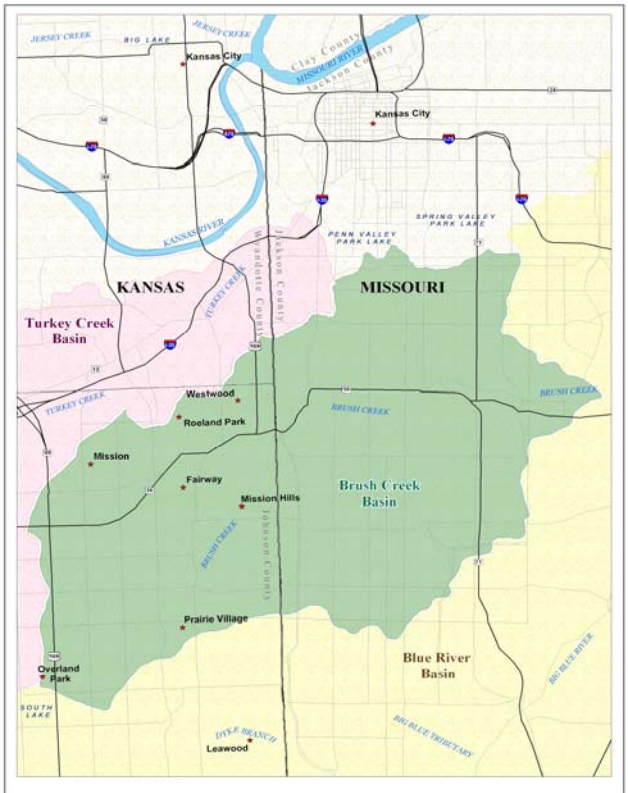

Figure 1. The Brush Creek Watershed.

The Brush Creek has 30 square miles of drainage area and is located in the south part of the Kansas City metro area (see Figure 1). The watershed is infamous for floods that damaged the Country Club Plaza. The Corps has an extensive channelization project in place in this reach. The watershed straddles the Kansas/Missouri state line with combined sewers to the east and separate

sewers to the west. The watershed is a sub-watershed to the Blue River, a right bank tributary to the Missouri River. The Blue River has a large Corps channelization project downstream close to the confluence with the Missouri River and currently is undergoing a General Re-evaluation Report. The Brush Creek watershed has two named sub-watersheds: Rock Creek on the northwest side and Town Fork on the southwest side. The watershed is fully developed.

The long-term goal of this effort is the collaborative development of watershed planning that coordinates planning efforts across a large number of constituencies on a watershed basis. The basic components of the planning effort are watershed management planning, the development of an organizational framework, and project planning. These three components work together to not only formulate specific actions, but also provide a framework that can be used to establish strategies and priorities, leverage funding, facilitate coordination of other actions and decisions, and support long-term watershed management in a sustainable manner. The study is being conducted by the Corps of Engineers in cooperation with a sponsorship team that includes Kansas City (Missouri), Johnson County (Kansas), and non-monetary support and feedback from the Mid-America Regional Council (MARC). Together, this executive committee is called the Sponsorship Team, and often holds meetings with the consultant present.

The study will make strides towards the Corps Actions for Change: A Systems Approach, in space, time, and function; Risk Informed Decision Making; Public Risk Communication; and Professionalism and Technical Expertise. The systems approach will be enabled spatially and temporally. First, the PDT will do this by applying at least three technical tools, including GIS, web services, and a watershed assessment using an appropriate software models for water quantity and especially water quality. The GIS tool is perfect for addressing needed measures and alternatives spatially, so GIS will be used throughout to organize data and communicate planning efforts to the PDT and the watershed's stakeholders. Temporally, the out-year planning horizon, looking 50 to 100 years in the future, can also be enabled by identifying parcels and easements that will need to be obtained for project sites. An example is reclaiming stream way corridors where repetitive loss properties present opportunities for buyouts. GIS attribute files will serve this effort, over time. Modeling tools will be used to determine needs and identify project sites. The modeling tools will serve to make decisions and to communicate risk to the public. The BCB Sponsorship Team is serious about having qualified staff contributing to the planning efforts, and this will include USGS and other federal agencies, as well as professionally qualified consultants.

Study Authority. The legislation authorized under the Flood Control Acts of 1917, 1936, 1938, 1944, (etc) and authorities to investigate flood risk management measures, apply watershed approaches, and conduct collaborative planning per the Water Resources Development Acts, beginning with 1986.

Project Authority. Resolution Docket 2698 of Committee on Transportation and Infrastructure US House of Representatives, 24 Jul 2002.

Feasibility Study Objectives. The Kansas City District is undertaking this feasibility study with the following objectives:

1. Prepare for the feasibility effort by first conducting watershed planning tasks that can lead the many local stakeholders in collaborative solutions to watershed wide problems. The watershed planning and the feasibility study report will be done with a three prong approach:
    a. Watershed management: Develop true watershed planning, doing organizational development, basin-wide management strategies, and applying a database of projects within the watershed. Complete a Watershed Management Plan to track this effort and get consensus on a watershed vision, watershed mission statements, and goals and metrics that tie to these.
    b. Organizational framework: Provide leadership in the formation and maturation of an entity, lead locally with the Corps ultimately disengaging from the inception of this entity. The organized entity, or watershed authority, can coordinate watershed management in Brush Creek. The Corps will be involved until a Charter is drafted for this entity. Currently, a Brush Creek Coordinating Committee (BCCC) has been active for close to 20 years, and this will continue to serve as the forum for communication.
    c. Project planning and implementation: The primary effort for the feasibility study will be for formulated project sites. This will include identifying where and when projects will be formulated with a systems approach to benefit the watershed and establishing these possible local and federal projects for flood risk management, ecosystem restoration, and with strong consideration of multipurpose objectives as outlined by local and federal agencies. These include non-governmental organizations such as the MARC and very active Kansas City Chapter of American Public Works Association (KCAPWA). Federal agencies include FEMA, EPA, USDA's Urban Forestry Initiative, and USGS. To assist local cities, MARC and KCAPWA have been actively creating standards for design for many years, and in the last five they have developed standards for best management practices (BMPs), which are very relevant for water quality. JOCO has nearly completed revising their FEMA flood maps and has coordinated with Corps, providing models (see below). The EPA's emphasis on green infrastructure (reference March 2007 Grumbles memo), including rain gardens and other BMPs, are now reversing the philosophy on stormwater from channel runoff away to trap rainwater where it falls. USDA has not identified with this study effort yet, though their goals for urban tree cover is consistent with reports by USGS, stating loss of stream way corridors and associated tree cover strongly affects the state of water quality. USGS has assisted with monitoring water quality and has written several reports for the southern Kansas City metro area (see below).

2. Investigate multipurpose measures with special attention to possible ecosystem restoration measures, especially where overlap occurs with the local BMPs by KCAPWA, such as streamway corridor open space, as related to water quality as appropriate in an urban environment. Multipurpose measures could include recreation as a large network of trails has spread across the metro area with MARC's Metro-Green initiative. The USGS studies in this watershed reported on water quality (reference Water Quality in the Blue River Basin, Kansas City Metropolitan Area MO & KS, July

1998 to Oct 2004 and Effects of Non-point and Selected Point Contaminant Sources on Stream-Water Quality and Relation to Land Use in Johnson County, Northeastern KS Oct 2002 through June 2004). In addition, the Corps has done planning on the Rock Creek sub-watershed to Brush Creek via a Planning Assistance to States project, has neared completion and is monitoring BMPs (reference 95% draft Rock Creek Watershed Planning Feasibility Report, PAS study).

3. Investigate opportunities for both structural and non-structural flood risk management measures in combination with ecosystem restoration and watershed authorities, as applicable in an urban environment. As an example, the restoration of a stream way corridor is supported in the KCAPWA standards and could be combined with flood plain buyouts, where acceptable to the local sponsors and stakeholders. This presents opportunities for reconnecting flood plains to their streams and creation of wetlands, where deemed acceptable. Structural measures will likely include channelization. Locals have expressed interest in a flood warning system to be formulated as well.

Summary Study Scope and Execution Parameters. The Project Management Plan for this study is based on a phased approach to performing the feasibility study with no changes to the standard stages F1- F9. The current level is after F2, Public Workshop. A Feasibility Scoping Meeting has not been conducted yet. The study will be conducted in phases or steps defined by carefully documented decision points. At the identified decision points, reviewers will certify concurrence in the assumptions and rationale for a decision. The phases are explained below. The PDT will be required to look at multipurpose alternatives, and the independent technical review (ITR) team will have a watershed subject matter expert (SME) identified at this point to review the initial watershed planning efforts. At that time, the PDT will choose models, including water quality, hydraulic, hydrology, and habitat, and those requiring certification will be submitted. On completion of a watershed management plan and the first iteration of plan formulation in Phase II, the ITR team will conduct a review and will be invited for a field visit. The PDT will consider ITR input for the following iterations of plan formulation.

PHASE I (in-progress). Phase I begins with execution of the FCSA and receipt of non-Federal funds. It ends at the end of the Feasibility Scoping Meeting (FSM). The FSM involves the entire vertical team including the sponsor, other Federal Agencies and division and headquarters policy contacts. We will begin Phase I by conducting a watershed planning effort that will guide the formulation of alternative plans in later phases. This will involve not only specifying water quantity and water quality problems and assessing existing conditions, but the Sponsorship Team will establish a watershed vision and mission statements based on consensus from stakeholders, and finally, specific goals and metrics. These are yet to be decided. A watershed assessment will compile the description of base conditions for water quality improvements, hydrology and hydraulics, and economics sufficiently to document existing damages for the various estimated flood heights. This information will determine the maximum allowable costs for potential flood risk management alternatives. A NEPA/Team/Sponsor scoping meeting will be included in this phase as will a public announcement of the start of the Feasibility Study and at least one public workshop.

PHASE II. Phase II begins with refinement of the PMP to focus on development of alternatives consistent with the results of the FSM. A public workshop will be held following the FSM, to inform the public of anticipated further study direction, and to gather business and public concerns and opportunities as a guide for study implementation. Based on that PMP we will develop and screen alternative plans composed of specific flood risk management and environmental restoration measures. We will develop information necessary for analysis of costs and benefits and potential environmental/cultural and hazardous, toxic and radiologic waste (HTRW) effects. Alternatives will be designed during Phase II to the level of detail that supports identification of the National Economic Development (NED) plan and the National Environmental Restoration (NER) plan. An Alternative Formulation Briefing (AFB) will be held with District, Division and Headquarter and Sponsors. This phase ends with the completion of analysis for Phase II alternatives and identification of the NED plan, the NER plan, and the Locally Preferred Plan (LPP), if it differs from the other plans.

PHASE III. In Phase III, we will document design of the final array of Plans. A non-structural plan and a No Federal Action plan must be evaluated to the same level of detail as any other plans in the Final Array. Work in Phase III will also resolve any issues expressed in the Project Guidance Memorandum (PGM) that results from the AFB. We will prepare a public review draft report and conduct public involvement activities necessary to obtain public and agency review and comment on the action that may be recommended. Independent technical review of the draft report occurs throughout the planning process and concludes in this phase with resolution of independent review comments and certification of the report and supporting products by the Independent Review Team. Phase III ends with identification of one plan from the final array as the Recommended Plan.

PHASE IV. In Phase IV we complete the steps necessary to environmental compliance and prepare final detailed design information for the Recommended Plan, including MCACES baseline cost estimate, real estate plan, and a draft construction phase Project Management Plan. The products of this phase receive certification of independent technical review and legal review. This phase ends with submitting the final draft report together with the results of quality/independent review, and responses to comments obtained form the agencies and the public to the Division headquarters for review and release of a Division Engineer's Notice of Report Completion.

Local Sponsorship and Funding. Feasibility funding source is 50% Federal General Investigations (GI) - Civil Works Appropriation & 50% local cost share funding. All local funding will be provided equally from both the City of Kansas City, Missouri and Johnson County, Kansas. The two sponsors signed an FCSA with the Corps 30 Sept 2005.

Description of Existing Overall Project and Problem. The study area is the Brush Creek Basin in Johnson County, Kansas, and Kansas City, Missouri, and includes areas of Jackson County, Missouri. Brush Creek basin is a watershed encompassing parts of Johnson County, Kansas, including Prairie Village, and parts of Kansas City, Missouri, including the well known JC Nichols Country Club Plaza area.

This feasibility study will examine a full range of structural and nonstructural measures to address multipurpose needs, including the reduction in recurring flood damages in the Brush Creek Basin and related ecosystem restoration. The feasibility study will take a multipurpose watershed approach in considering opportunities for environmental ecosystem restoration, water quality improvement and compatible recreation improvements.

Despite completion of the federal flood risk management project in Kansas City, Missouri, severe flood damages still occur within the basin. The most recent October 1998 flood event caused seven fatalities and millions of dollars in damages in Kansas City, Missouri. Although consider fully developed, Brush Creek's increasing impervious areas are a significant threat to the level of flood protection, natural resources, and water quality in the basin. A comprehensive, bi-state watershed study is needed to bring agencies and communities together in the common goal of flood protection, resource conservation, and sustainable economic development.

The City of Kansas City, Missouri, and other communities and regional organizations have indicated strong support for this effort. Cities, counties and other cooperating agencies in Kansas and Missouri are embarking on a path of comprehensive urban basin planning. Organizations such MARC and the Brush Creek Community Partners are taking a leadership role in these activities. A communication forum also exists, known as the Brush Creek Coordinating Committee (BCCC).

In 2005, the Reconnaissance Phase Study for the Brush Creek Basin was completed, which included a Brush Creek Watershed Summit meeting. The Brush Creek Watershed Summit meeting was conducted as a regional effort to foster increased understanding of the watershed's resources, challenges, and opportunities; strengthen commitment to regional policies, goals and watershed-based planning; create a cooperative framework for partners working in the watershed; and define strategies to overcome challenges and capitalize on opportunities. The Summit brought together over 50 attendees including local, municipal and county representatives, local and regional organizations, city leaders, neighborhood associations, state and federal agencies and political representatives.

The Reconnaissance Phase Study included a preliminary assessment of ecosystem restoration and flood risk management opportunities within the basin that appear to be economically justified, environmentally acceptable, supported by local sponsors and consistent with Corps policies, costs and benefits. The Corps determined that there was federal interest in conducting a feasibility study to further evaluate ecosystem restoration and flood risk management opportunities within the basin. Through collaborative planning on a watershed basis, the feasibility study would also enable previous, on-going and planned activities in the basin to be maximized through a comprehensive, basin-wide approach serving the greater Kansas City metropolitan area.

Over the last year green infrastructure has entered the spot light. The PDT has understood that alternatives will not be limited to improvements on management of water quantity, although the approach for how to address the water quality aspects of possible projects has been unclear until recently. Since the spring of 2007, many relevant events have occurred in the watershed planning arena and have affected the course of the study. As a result, the Sponsorship Team

began to see how to better engage initiatives that KCMO had already begun regarding the water quality needs. The EPA memo issued in March 2007 (Grumbles) made many constituents in the Kansas City area and all those involved on the project stop and think about how rushing towards a set of alternatives for various project sites did not really integrate the types of water quality project sites that would more accurately address the water quality needs of the watershed. These needs were not tied only to the combined sewer overflow (CSO) problems. Rather, as supported in the fall of 2006, USGS and KCMO produced the Blue River Study (Wilkinson et al), the study presented a scientific foundation for the water quality needs extending to non-point sources. Within the Corps, watershed planning has been gradually rising in importance since 1999. The spring of 2007 has shown this with the drafting of a new engineering circular for planners working with watershed-wide problems (*Watershed Planning*). Prior to that in Fiscal Year (FY) 2006, Congress authorized Corps Headquarters "at full federal expense, comprehensive analyses that examine multi-jurisdictional use and management of water resources on al watershed or regional scale." BCB barely missed this opportunity and was not considered simply because any study that had already begun was ineligible. Finally, for several years, both Congress and the Executive Branch expressed a need to give projects with a systems approach, such as a project tied to a watershed perspective, a higher priority among those that had a good benefit/cost ratio. Multipurpose projects also receive higher priority. In summary, the Sponsorship Team has realized that a better approach is needed, and this has brought the team to consensus that a watershed planning study is really what the basin is demanding. The feasibility study will be subject to the decisions that are to come from the watershed planning effort.

Public review will continue to be part of the watershed planning and the feasibility study's processes, and this will address requirements of NEPA. The Brush Creek Summit will serve as a model for future meetings. The Brush Creek Coordinating Committee (BCCC) will be an on-going forum for communication with meetings occurring quarterly. The Sponsorship Team will keep the public involved with progress, primarily with the BCCC. As Phase II wraps up, the PDT will have started an environmental assessment to complete NEPA requirements, and the ITR team will be provided with outlines and drafts as the EA develops. Throughout all phases, Regulatory has been and will continue to be involved in progress for situational awareness and for chances to offer insight on any opportunities, such as a special area management plan (SAMP).

3. LEVELS OF REVIEW

The level of review established below will need concurrence from the vertical team once the watershed planning effort has matured and the plan formulation process has at least started the formulation of alternative plans. Since the reconnaissance report did not present an opinion of probable costs for any alternatives, the determination on whether this project's construction cost triggers an external review must be tied to other planning efforts in the Brush Creek watershed. Recently, a Planning Assistance to States planning study was done on Rock Creek, which is one of the sub-watersheds. Projected costs for BMPs on Rock Creek, including private and public project sites, totaled $3,910,000. Since Brush Creek's land use is similar throughout the watershed, and since Rock Creek is about a sixth of Brush Creek's area, a rough estimate of cost of alternatives is $30 million, with planning and design costs. The decision on level of review below is based on this.

Internal Peer Review (IPR). Internal Peer Review will be conducted on the project feasibility study. As part of the Quality Management Plan on any project, there are internal reviews or design checks that constitute quality control for each deliverable product. Each product development team member, their supervisors, and the project manager have the responsibility to ensure that every product receives an internal quality control review. The supervisor or section chief for each team member is responsible for ensuring that a qualified internal peer review is selected and conducts a review of their product prior to delivery to the project manager, or prior to completion.

Independent Technical Review (ITR). ITR will be conducted on the Brush Creek feasibility study. ITR is an independent review, outside of Kansas City District, of the deliverables for the project and constitutes an independent review of the entire project. In accordance with EC 1105-2-408 dated 31 May 2005, and CECW-CP Memorandum dated 8 November 2006, all outside independent review teams for qualifying projects is coordinated through the Corps of Engineers' Flood Risk Management Center of Expertise (CX, South Pacific Division) by the District. The CX works collaboratively with the Division staff and the District project manager to find team member staff outside the Kansas City District with the requisite experience and qualifications to review the project. Review comments will be documented, processed, and resolved through the Dr. Checks software package.

External Peer Review (EPR). External Peer Review (EPR) does not apply to the Brush Creek project and will not be conducted. EPR is an additional national level independent review process, outside the Corps of Engineers, to ensure that the projects are of national or regional interest and meet the requirements of Federal participation. Specific criteria that trigger the development and implementation of EPR are projects where novel methods are utilized, where the project presents complex challenges, where the use of precedent setting methods or models, where the project will be likely to present landmark conclusions that will affect policy, or where the project is centered or focused on an issue or proposal that is highly controversial.

The Brush Creek project is a basic investigation. There are currently no features or components of this project that are anticipated to be highly controversial or significant to national policy. The anticipated overall cost of the project is considered to be well below any threshold that might trigger EPR under any future provisions of the Water Resources Development Act (WRDA). In the proposed study of the Brush Creek area, Corps of Engineers criteria, methods, and models to be utilized are recognized standard criteria and methods with no novel or precedent setting methods anticipated. Based on the proposed standard approach, the project plan, and the criteria established for development of EPR, no External Peer Review process will be developed for this project.

Architect-Engineer (A-E) or Consulting Contacts. Contracts used on this project will undergo a Quality Assurance Review of each deliverable product by assigned District PDT members. Additionally, any products developed by contract will also undergo ITR along with other products as outlined in the ITR paragraph above. All contractors are required to develop a Quality Management Plan to be submitted as the first deliverable for the contract. This will detail the firm's internal quality management and design check review processes, and is subject

to prior approval by the Project Manager and PDT in accordance with the established Kansas City District Business Quality Procedures (BQPs).

4. SELECTED REVIEW PROCESS(S)

The selected review process level for the Brush Creek project is the ITR, although the vertical team may change this after the watershed planning process has matured and alternative formulation has started. The ITR will be developed in coordination with the CX for Flood Risk Management, and the CX representative. This process will be coordinated through the Northwestern Division Planning Office. Internal peer review (IPR) or internal design checks will be conducted in accordance with the approved District Business Practices, as outlined above. A-E contracts are anticipated to be utilized for development of technical products for this project. Contracts will be procured in accordance with the prior approval of the District Acquisition Strategy Board, as outlined in the approved District BQPs.

ITR References:

- Refer to ER 1110-1-105, the primary Corps ITR regulation (see enclosed exhibit for summary of the major ITR requirements described in this regulation).

- EC 1105-2-408 dated 31 May 2005

- CECW-CP Memoranda dated 8 November 2006 and 30 March 2007.

- Refer to Kansas City District BQP 5.5.04 (Quality Plans). Pertinent excerpts are quoted below.

  5.6 ITRT Members:
  - *Verify compliance with established policy, principles and procedures*
  - *Verify criteria applied*
  - *Verify assumptions, methods, procedures, and material used in analyses*
  - *Evaluate alternatives*
  - *Verify the appropriateness of data used and level of data obtained*
  - *Verify completeness of design and documents*
  - *Verify reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing Corps policy.*
  - *Conduct spot checks for interdisciplinary coordination*
  - *Identify the specialized knowledge, experience, or training required to competently complete the product*
  - *Verify comments are resolved by:*
    - *Verifying incorporation of their comments or,*
    - *Accepting the verification conducted by either the PM or ITRT Leader or,*
    - *Withdrawing the comment*

  6.1.7.7.3 Independent Technical Review: Qualified staff verifies the work meets reasonable professional levels and satisfies the client's need and expectation. For

small, simple, low complexity, low risk projects, independent technical review can be accomplished at the section level. Independent technical review can be managed at branch levels when a few disciplines are involved, the project is of moderate cost and complexity and the risk for life safety is relatively low. Independent technical review for all other projects should include individuals who do not have a vested interest in the project and are not involved in the day-to-day direction of the product. The PMP should define the level of independent technical review. Independent technical review is not a detailed check but a broad overview including:

- *Review of criteria applied*
- *Review of the methods of analysis and design*
- *Compliance with client and/or program requirements*
- *Completeness of design and documents*
- *Spot checks for interdisciplinary coordination*
- *Biddability, constructability, operability and environmental*

6.1.7.7.4 Independent reviewers are brought on board early on to participate in establishing criteria selection and broad approaches to be taken in addressing potential issues thus ensuring seamless review.

- Reviewers will be required to use the Dr Checks web-based system for comments. Refer to https://www.projnet.org/projnet/home/version1/index.cfm for additional Dr. Checks access information.

5. PRIMARY DISCIPLINES AND EXPERTISE NEEDED FOR THE ITR

Discipline-Specific Guidance & Requirements. ITR Team representation is required in the disciplines listed below. In general, the ITR team members will each have a minimum of 15 years experience in their respective discipline. A statement of qualifications is required for each team member prior to acceptance as an ITR Team member and for any subsequent changes thereto.

Hydrology & Hydraulics: Team member will be an expert in the field of urban hydrology & hydraulics, have a through understanding of the dynamics of the both open channel flow systems, enclosed systems, application of detention / retention basins, effects of BMPs and low impact development on hydrology, approaches that can benefit water quality, application of levees and flood walls in an urban environment with space constraints, non-structural measures especially as related to multipurpose alternatives including ecosystem restoration, non-structural solutions involving flood warning systems, and non-structural alternatives related to flood proofing. The team member will have an understanding of computer modeling techniques that will be used for this project (HEC-HMS, HEC-RAS, UNET, and TABS). This team member should be familiar with some water quality modeling. A certified flood plain manager is recommended but not required.

Ecosystem Restoration Specialist: This ITR team member will be familiar with ecosystem restoration, in general, and shall also be specifically familiar with ecosystem

restoration for multipurpose projects focused on flood risk management. This ITR team member should also be familiar with general BMPs as related to watershed health.

Watershed Specialist: This ITR team member is not required, although highly suggested.

Structural: Team member will have a thorough understanding of non-structural measures, levee, flood wall, and retaining wall design, and structures typically associated with levees (pump stations, gatewell structures, utility penetrations, stoplog & sandbag gaps, and other closure structures). A certified professional engineer is recommended though not required.

Mechanical: Team member shall be familiar with levee pump station and closure structure design. *Engineering disciplines other than Mechanical may be acceptable for review of this area of work subject to meeting the experience requirement stated above.*

Electrical *(if deemed necessary)*: Team member shall be familiar with levee pump station and electrical utilities design. Electrical ITR requirements for this study are very minimal.

Geotechnical: Team member will have experience with both structural and non-structural measures for flood risk management design, post-construction evaluation, and rehabilitation. This is a critical ITR team member, and a certified professional engineer is recommended.

Economics: Team member will have extensive experience in related flood risk management multipurpose projects, and have a thorough understanding of HEC-FDA, and be able to provide guidance on trade-off analysis.

Plan Formulation: Team member will be familiar with current flood risk management planning and policy guidance, and have experience in plan formulation for multipurpose projects, specifically integrating measures for flood risk management, ecosystem restoration, recreation, a watershed approach, water quality improvement, and planning in a collaborative environment.

Civil / Site / Utilities / Relocations: This discipline may require a dedicated team member, or may be satisfied by structural or geotechnical reviewer, depending on individual qualifications. Team member will have experience in utility relocations, positive closure requirements and internal drainage for levee construction, and application of non-structural flood risk management, specifically flood proofing. A certified professional engineer is suggested.

Cost Estimating: Team member will be familiar with cost estimating for similar projects using MCACES. Team member will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer. These efforts will be coordinated with Cost Engineering Center at the Walla Walla District.

Other disciplines/functions: The planning process typically involves other PDT members whose work may need ITR. The notable disciplines that need ITR by subject matter experts (SMEs) on this project include the disciplines of Water Quality, Environmental/NEPA, Real Estate, Cultural Resources, Hazardous/Toxic Waste, and Legal. In each case, any required ITR within these disciplines may be accomplished within Kansas City District or by other independent sources. The general experience requirements and principles contained in this document also apply to these disciplines/functional areas. *(Exception: Legal review is not under the purview of the ITR Team Leader but is instead responsible to the Corps of Engineers Ofc of Counsel chain-of-command).*

ITR Team Leader. One member of the ITR Team will act as the team leader, and this leader will come from outside the Division (NWD). The lead will choose the names of the ITR team members as the watershed planning effort gets further along in the plan formulation process. Team leader designation will be finalized based on input from ITR Team members and the CENWK Project Manager, the PDT, and CENWK staff. The leader shall, in addition to discipline-specific requirements, be responsible for

- Acting as a liaison between the Product Development Team and the ITR Team
- Performing, in conjunction with the PM, active coordination of the ITR process and study findings with the Corps Flood Risk Management Center of Expertise (FRM-CX) in San Francisco District, and ensure compliance with an adequate level of FRM-CX review.
- Distributing information for review and coordinating efforts of the ITR Team
- Ensuring that individual ITR Team members are operating in accordance with the guidelines established for ITR by ER 1110-1-105 (see enclosed exhibit for summary of the major ITR requirements described in this regulation).
- Organizing the ITR team. The ITR team is *not* geographically co-located. Therefore, it is of paramount importance that the ITR Team Leader be capable of organizing the total ITR efforts across District and Division boundaries.
- Being available for the as much of the project's review as possible. A substitute ITR Team Leader from the ITR team will be named by the ITR team leader for periods of extended (over 60 days) absence.

Independent Technical Review Team Members and Organization. Team members and organization of the Brush Creek Basin project's ITR Team is presented in Appendix A to this PRP.

The ITR team members will be contacted on a regular basis by the corresponding PDT members so as to be kept aware of criteria selection and the broad approaches employed in this study thus ensuring a seamless review when products are submitted for ITR.

6. ITR SCHEDULE

The feasibility phase was initiated in 2005. The feasibility phase schedule was mildly impacted by constrained levels of Federal funding, and received limited funding in several past fiscal years. Federal funds have been allocated in April 2007 and the feasibility study is continuing.

Existing conditions and stakeholder interviews have been done. Assembly of inventories of data is continuing. Some preliminary projects sites are to be identified in the next three months.

ITR Team Site Visit. An initial site visit needs to be done with the ITR members. Timing is subject to adequate project funding and adequate establishment and availability of the ITR team. This site visit will provide each reviewer with the opportunity to view existing conditions and to meet corresponding Product Development Team members.

Phase I Schedule. The Existing Conditions development (also called Feasibility Phase I) will be accomplished by Dec 2007. The public workshop, the Brush Creek Watershed Summit, which was held 20 Oct 2004. ITR of the existing conditions findings and associated analysis products could be done in Jan 2008.

Phase II Schedule. Anticipated milestones related to Phase I and Phase II activities and associated product reviews are as follows (subject to change):

- Mar 2008 Finish establishing watershed vision and mission statements
- May 2008 Begin watershed assessment and watershed management plan
- Jul 2008 Finish establishing models and submit those requiring certification
- Aug 2008 Begin Formulation of Alternatives
- 2010 Alternatives Formulation Briefing

7. ITR BUDGET

ITR is currently budgeted at $20,000 and is identified in the current project management plan budget.

8. PUBLIC COMMENT OPPORTUNITIES

Public review of the PRP will be possible by accessing the Kansas City District website, link as follows: http://www.nwk.usace.army.mil/projects/brushcreek.

Public and Agency Review for this project will be conducted in accordance with NEPA, as well as the provisions of the Water Resources Development Act (WRDA) 2000, and as outlined in ER 1105-2-100. As such the review plan will be available through all public and agency scoping and other processes for the project.

As mentioned earlier, public review will continue to be part of the watershed planning, not just to satisfy NEPA, but to create and maintain a strong collaboration in the Kansas City metro area. The Brush Creek Summit, which served as the first public scoping meeting, will serve as a model for future meetings. On a quarterly basis, and depending on status of work products from the project's PDT, the Brush Creek Coordinating Committee (BCCC) will be the on-going forum for communication as it has for the past 20 years. The Sponsorship Team will keep the public involved with progress, primarily with the BCCC, and the Sponsorship Team will actively seek feedback on tasks such as the watershed's vision, mission statements, and goals or metrics. The Planning Branch has engaged the Regulatory Branch to be involved in several projects with active watershed planning, at least for situational awareness, and conversely, the Regulatory Branch seeks input on permits that may be an integral part of feasibility studies such as this one.

9. AVAILABILITY OF PUBLIC COMMENTS TO REVIEW TEAM

Public input from the NEPA workshops and the public scoping meetings will be available to the ITR members to ensure that public comments have been considered in the development of reviews and final reports.