REVIEW PLAN

CAP Section 205 City of Independence, OH
Decision Document Review Plan

Buffalo District

MSC Approval Date: 23 SEP 2013
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US Army Corps
of Engineers ®

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1. PURPOSE AND REQUIREMENTS

Purpose. This Review Plan is a supplement to the Project Management Plan (PMP) dated July 2009 for the CAP Section 205 city of Independence, OH Flood Risk Management project and fulfills the requirement of Engineer Circular (EC) 1165-2-214, "Civil Works Review." This Review Plan defines the scope and level of peer review for the Detailed Project Report (DPR) developed under Section 205, Flood Control Act of 1948, as amended. This project is a single purpose, Flood Risk Management project.

Section 205 of the Flood Control Act of 1948, as amended, authorizes USACE to study, design and construct flood risk management projects. It is a Continuing Authorities Program (CAP) which focuses on water resource related projects of relatively smaller scope, cost and complexity. This differs from traditional USACE civil works projects, which are of wider scope and complexity and are specifically authorized by Congress. The CAP is a delegated authority to plan, design, and construct certain types of water resource and environmental restoration projects without specific Congressional authorization. The Federal share of costs for any one Section 205 project may not exceed $7,000,000 in Federal funds.

Applicability. This Review Plan is for the Feasibility phase and will be updated prior to the completion of the Feasibility phase for the design and implementation phase of the project that will be developed in accordance with EC 1165-2-214.

a. References

(1) Engineering Circular (EC) 1165-2-214, Civil Works Review, 15 Dec 2012
(2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
(3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
(4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
(5) Director of Civil Works' Policy Memorandum #1, Continuing Authorities Program Planning Process Improvements, 19 Jan 2011
(6) PMP for the study completed on 31-Jul-2009
(7) ER 1105-2-100, "Planning Guidance Notebook," Appendix F, Continuing Authorities Program, Amendment #2, 31 January 2007.

b. Requirements. This review plan was developed in accordance with EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, implementation, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, CAP decision documents are subject to cost engineering review and certification (per EC 1165-2-214).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for CAP decision documents is typically either a Major Subordinate Command (MSC) or, under appropriate agreements with the MSC, a Planning Center of Expertise (PCX). The Great Lakes and Ohio River Division (LRD) is the MSC for this project. In accordance with EC 1165-2-214, LRD and the Flood Risk Management Planning Center of Expertise (FRM-PCX) have agreed that the FRM-PCX will serve as RMO for the decision document.

The RMO will coordinate with the Cost Engineering Mandatory Center of Expertise (MCX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies. Currently, the project is not multipurpose (i.e., more than one benefit – recreation). If the project becomes multi-purpose, we will also indicate the names of the other relevant PCXs and state that the RMO will coordinate with the other appropriate PCXs to ensure that review teams with appropriate expertise are assembled.

3. STUDY INFORMATION

Decision Document. The CAP Section 205 City of Independence, OH Feasibility Study will be prepared in accordance with ER 1105-2-100, Appendix F. It is authorized by the Section 205 of the Flood Control Act of 1948, as amended. The approval level of the decision document (if policy compliant) is the home MSC. The purpose of the decision document, Detailed Project Report (DPR), is to identify the tasks, schedule, costs, and responsibility required to implement measures to reduce risk from flooding in the city of Independence, OH. An Environmental Assessment (EA)/Finding of No Significant Impact (FONSI) will be prepared along with the decision document.

a. Study/Project Description.

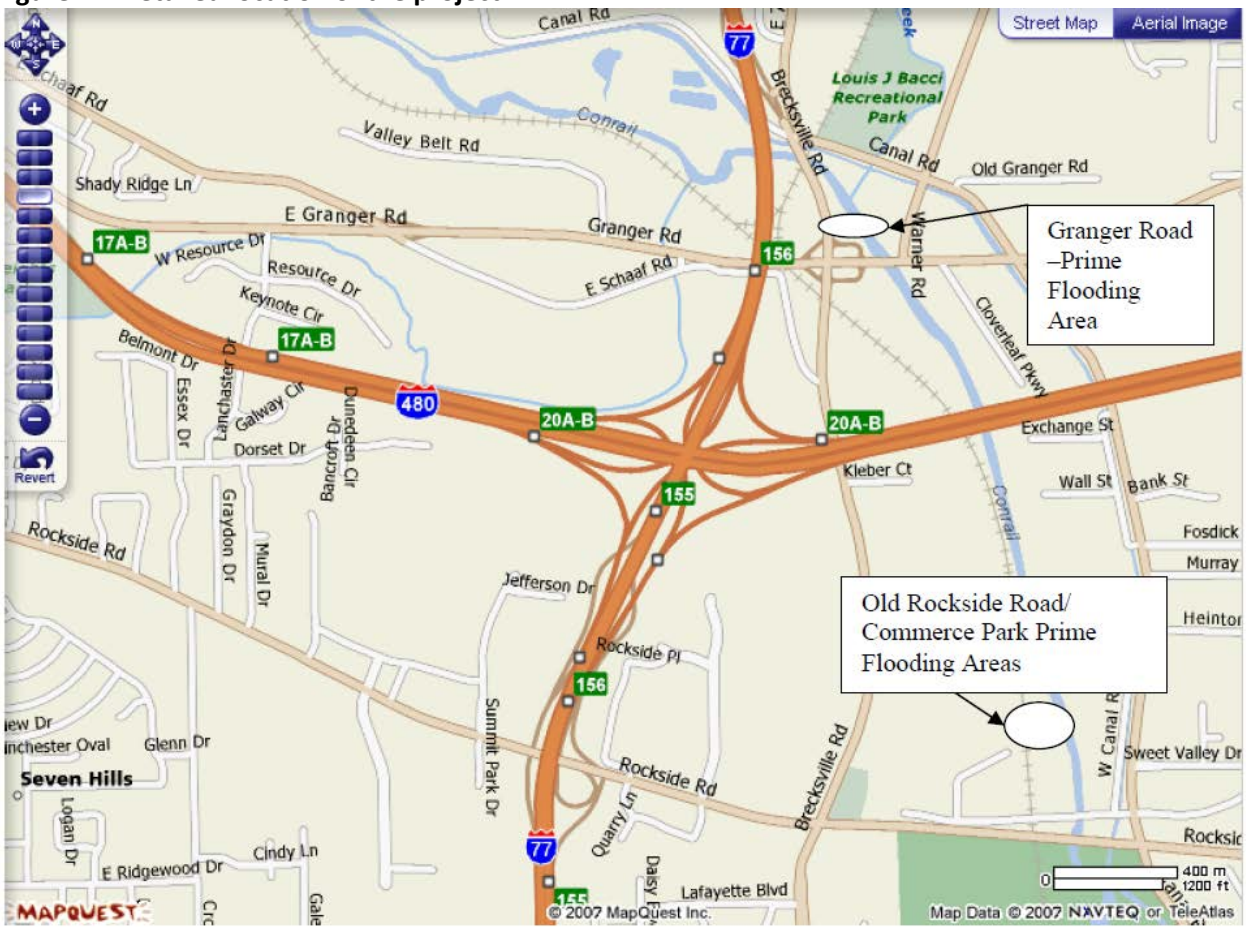
1) Description of the Study Area

The flood risk management study includes the city of Independence, which is adversely impacted by flooding from the Cuyahoga River and its tributaries. The study area is located between river mile 11.5 and river mile 13.8 along the Cuyahoga River in Independence, Cuyahoga County, OH. The primary problem in Independence is frequent and serious flooding which inundates the commercial and industrial business area located in the vicinity of Old Rockside Road and Canal Road. In the last several years flooding events have increased and these floods have subsequently caused extensive damages to businesses which are located in this area. In 2006, the flooding resulted in a Federal Disaster Declaration.

Extensive rescue operations are required during the floods and major cleanup and restoration expenses occur to state, local and Federal governments. The most recent flooding in February 2011 occurred on Canal, Rockside, Granger, Old Brecksville and Old Rockside Roads. The locations in the city are shown in Figure 1.

The primary opportunity at Independence is to provide an economically justified structural, non-structural project, or combination that would significantly reduce the flood damages incurred at Independence during high flow events on the Cuyahoga River.

Figure 1 – Detailed location of the project



2) Type of Measures and Alternatives

LIST OF PRELIMINARY ALTERNATIVES

Alternatives	Brief Description
	No-action plan.
NONSTRUCTURAL ALTERNATIVES	
	Floodproofing, relocation, acquisition, demolition, elevation, and Flood Warning & Early Detection System.
STRUCTURAL ALTERNATIVES	
	Levees
	Floodwalls
	Combination of levee/floodwall systems

3) Estimated Range of Cost

The estimated range of cost is $6-7 million Federal and non-Federal combined.

4) Non-Federal Sponsor

The non-Federal sponsor for this study is the city of Independence, OH.

b. Factors Affecting the Scope and Level of Review.

Challenges: The National Park Service (NPS) sent a letter to the Corps stating that the project should not be built on their property due to the operating principles of National Park Service (NPS) property. This was identified as a constraint and efforts will be made not to have formulated structural measures on NPS property.

Life Safety:

Flooding of the Cuyahoga River in Independence OH (pop. about 7,200) is currently predictable and occurs gradually without significant threat to loss of life. However, structure and content damages have been significant to commercial and residential properties.

Under current conditions, residents are generally removed from the most threatened flood zones before dangerous flooding occurs, minimizing the threat to life. Business owners and residents generally have some time to sand bag doors and ground level windows minimizing flood intrusion and take actions to remove and/or elevate valuable property. In all likelihood, any flood risk management project that might be recommended for Independence will involve the construction of levees and/or diversion channels. Such structures are not fail safe and at times may give a false sense of security to local residents during times of floods. Catastrophic failure of a levee could potentially cause widespread damage and be a significant life and safety threat to local residents. In addition, dependent upon the level of protection provided, residual flooding may occur in certain areas. Due to these inherent risks, the study will undergo a Type I Independent External Peer Review (IEPR) including the consideration of appropriate Safety Assurance Review (SAR) factors.

Assessment of District Chief of Engineering Concerning Life and Safety – The Buffalo District Chief of Technical Services Division has assessed the potential life and safety issues relative to any potential FRM project in Independence, OH and has concluded that a Type I IEPR, with consideration of Safety Assurance Review (SAR), is appropriate during the Planning stages of this study. In addition, based on current information, the Type II IEPR and Safety Assurance Review would be conducted during the design and construction phases of the project, if the Type I review warrants further life and safety considerations.

Public dispute: The project/study is not anticipated to be controversial nor result in significant public dispute as to the size, nature, or effects of the project or to the economic or environmental costs or benefits of the project.

Project Design/Construction: The anticipated project design will take advantage of prevailing practices and methodologies. It is not expected to be based on novel methods or involve the use of innovative techniques, or present complex challenges for interpretation.

In-Kind Contributions. Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR (if applicable). The in-kind products and analyses to be provided by the non-Federal sponsor include:

- Assist in the collection of residential property values, flood depths and flood damages. Activities may also include notifying residents/business owners of meeting dates and visits.
- Cultural Resources Review
- Ecological Study
- Aesthetics Study
- Recreation Overview Study
- Environmental Resources Inventory Report
- Endangered Species Overview
- HTRW Feasibility Studies
- Public Involvement Workshop (notifying community of meeting, sending out notices, coordinating and providing meeting space.
- Surveys and Mapping of study area
- Provision of GIS information
- Research of Historical Boring Information

4. DISTRICT QUALITY CONTROL (DQC)

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the regional Quality Management System. More information on Quality Control can be found in Attachment 6.

a. Documentation of DQC. Following the completion of the DQC review by the PDT members and their respective counterparts as necessary, the PDT will sign a certification sheet documenting DQC. The Chief of Planning will also sign a certification sheet documenting that District Quality Control has been completed. Upon request, both certification sheets will be provided to the ATR team prior to their review of the draft Feasibility Study.

b. Products to Undergo DQC.

(1) Review Plan
(2) Alternative Formulation Briefing Documentation
(3) Feasibility Study and all Appendices - Internal Review by Program/Appropriation Advocates at 25%, 50%, and 75% complete.

c. Required DQC Expertise. Additional DQC of all products will be accomplished by senior (GS-12 or above) staff not directly involved in preparation of the products from the following disciplines:

(1) Planning
(2) Programs and Project Management
(3) Project Management
(4) Hydraulics and Hydrology Engineering
(5) Coastal/Geotechnical
(6) Design

(7) Cost Estimating
(8) Operations
(9) Environmental
(10) Office of Counsel
(11) Real Estate

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC.

a. Products to Undergo ATR.

ATR will be performed for the Draft Report (including NEPA and supporting documentation). Additional ATR of key technical and interim products, MSC-specific milestone documentation, and In-Progress Review (IPR) documentation will occur depending on the study needs and the requirements of regional Quality Management System. Where practical, technical products that support subsequent analyses will be reviewed prior to being used in the study and may include: surveys & mapping, hydrology & hydraulics, geotechnical investigations, economic, environmental, cultural, and social inventories, annual damage and benefit estimates, cost estimates, etc.

Supporting analysis and documents, including but not limited to the following, will also be subject to ATR:

(1) Economic analysis and appendices
(2) Cost estimates
(3) Geotechnical analysis
(4) Supporting environmental analysis (cultural resources, resource inventories, etc.)

Supporting Analysis and Documents provided as work in-kind will also be subject to Agency Technical Review as well as anything used for the AFB meeting.

b. Required ATR Team Expertise. This section will provide an estimate of the number of ATR team members and briefly describe the types of expertise that should be represented on the ATR team (not just a list of disciplines). The expertise represented on the ATR team will reflect the significant expertise involved in the work effort and will generally mirror the expertise on the PDT. The PDT will make the initial assessment of what expertise is needed based on the PMP and the factors affecting the scope and level of review outlined in Section 3 of the review plan and may suggest candidates. The appropriate RMO, in cooperation with the PDT, vertical team, and other appropriate centers of expertise, will determine the final make-up of the ATR team. The names,

organizations, contact information, credentials, and years of experience of the ATR members should be included in Attachment 1 once the ATR team is established.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional preferably with experience in preparing Section 205 decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. Typically, the ATR lead will also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc). The ATR Lead MUST be from outside the Lakes and Rivers Division, but be familiar with issues common to urban communities in the Midwest United States.
Planning	The Planning reviewer should be a senior water resources planner with experience in the formulation of CAP Flood Risk Management Projects.
Economics	The Economics Reviewer should be familiar with the application of FDA and developing economic analyses for Section 205 projects.
Environmental Resources	The Environmental Resources Reviewer should be familiar with the biology of meandering rivers exhibiting a variety of substrates in the Atlantic flyway, the NEPA process and threatened and endangered species in this part of the country.
Cultural Resources	The suggested reviewer is familiar and knowledgeable regarding Cultural Resource concerns.
Hydrology/Hydraulic Engineering	The hydraulic engineering reviewer should be proficient in the field of hydraulics and knowledgeable in hydrologic and flood plain engineering applications. The hydraulic engineer should have a thorough understanding of HEC-RAS, including its application to non-standard situations involving interaction with the HEC-HMS model. The hydraulic engineer should also have a working knowledge of hydrologic engineering tools and issues including the HEC-HMS model and flood frequency analysis methods, as well as interior / exterior drainage and floodplain issues including the use of nonstructural solutions.
Civil Engineering	The civil engineering reviewer should be proficient in the design and layout of levees and floodwalls, including road raises and seepage berms. The civil engineering reviewer should also have a working knowledge of related software, including INROADS and GIS.
Cost Engineering	Cost MCX Staff or Cost MCX Pre-Certified Professional with experience preparing cost estimates for Section 205 levee projects.
Flood Risk Analysis	The flood risk analysis reviewer should have extensive experience with multi-discipline flood risk analysis to ensure consistent and appropriate identification, analysis and written communication of risk and uncertainty. The flood risk analysis reviewer may also

	serve as a reviewer for a specific discipline (for example, hydraulics or economics).
Real Estate	Real estate specialist should have experience in the preparation and evaluation of gross appraisals and experience in dealing with transportation features including highways and railroads.

c. Documentation of ATR. DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

(1) The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures;
(2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed;
(3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
(4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed, based on work reviewed to date, for the AFB, draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-214, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted.

- Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-214.

- Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

  For Section 103 and 205 decision documents, Type II IEPR may or may not be required. The decision on whether Type II IEPR is required will be verified and documented in the review plan when updated for the design and implementation phase of the project.

a. Decision on IEPR.

It is the policy of USACE that Section 205 project decision documents should undergo Type I IEPR unless ALL of the following criteria are met:

- Federal action is not justified by life safety or failure of the project would not pose a significant threat to human life;

- Life safety consequences and risk of non-performance of a project are not greater than under existing conditions;
- There is no request by the Governor of an affected state for a peer review by independent experts;
- The project does not require an EIS;
- The project/study is not likely to involve significant public dispute as to the size, nature, or effects of the project;
- The project/study is not likely to involve significant public dispute as to the economic or environmental cost or benefit of the project;
- The information in the decision document or anticipated project design is not likely to be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices;
- The project design is not anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule; and
- There are no other circumstances where the Chief of Engineers or Director of Civil Works determines Type I IEPR is warranted.

The decision on whether the above criteria are met (and a Type I IEPR exclusion is appropriate) is the responsibility of the MSC Commander. Additional factors the MSC Commander might consider include in deciding if an exclusion is appropriate include, but are not limited to: Hydrograph / period of flooding, warning time, depth of flooding, velocity of flooding, nature of area protected, and population protected.

Decision on IEPR – In accordance with Section 2034 of the Water Resources Development Act of 2007, and implementing guidance contained in EC 1165-2-214, that a Type I IEPR is warranted for the decision document to be completed for the study (Feasibility Report and Environmental Assessment). This study has met one of the threshold criteria requiring a Type I IEPR as described below (note: meeting only one threshold criteria mandates conducting a Type I IEPR). The life safety decision as well as other decision points is included to provide thorough coverage of the guidance.

1. SIGNIFICANT THREAT TO HUMAN LIFE

a) Life safety consequences and risk of non-performance of a project are not greater than under existing conditions. – Catastrophic failure of a levee could potentially cause widespread damage and be a significant life and safety threat to local residents. In addition, dependent upon the level of protection provided, residual flooding may occur in certain areas. Due to these inherent risks, the study will undergo a Type I Independent External Peer Review (IEPR) including the consideration of appropriate Safety Assurance Review (SAR) factors.

b) Project does not involve the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices. – The feasibility is in Step 5 of the six-step Planning Process (Compare Alternative Plans) and all alternatives being compared are simple, straight-forward engineering solutions that feature no unusual or innovative methods.

c) Project design does not require redundancy, resiliency, and/or robustness. – Flood depths projected for the 1 percent annual exceedance probability chance flood, in the areas at risk in Independence sites one and three, are generally less than two feet, thus above-average consideration of redundancy, resiliency, and robustness, beyond the conservative and sensible design methods in standard Corps practice are not anticipated. Flood depths projected for the 1 percent annual exceedance probability event at Independence 1 are generally between 3 to 7 feet. Flood depths projected for the 1 percent annual exceedance probability event at Independence 3 are generally between 2 to 13 feet.

d) Project does not require unique construction sequencing or a reduced or overlapping design construction schedule. – Implementation of the alternatives proposed do not require unique construction sequencing and should follow the normal design, bid and construct sequence.

e) Risks of non-performance and residual flooding are fully disclosed in feasibility report and public forum. – Risks of non-performance and residual flooding will be fully disclosed during the Public Involvement process and when the project is completed, in a public forum and in the Operation and Maintenance manual.

f) Sponsor to develop Floodplain Management Plan including: risk management plan and flood response plan during feasibility phase (and evaluation plan if appropriate for the conditions). – A Floodplain Management Plan is being developed during the feasibility phase.

g) Sponsor explicitly acknowledges the risks and responsibilities in writing in a letter or other document (such as the Floodplain Management Plan) submitted to the Corps of Engineers along with the final decision document. – The sponsor has verbally noted their awareness of the risks and responsibilities during public meetings. This acknowledgement will be followed up with a written statement which will be submitted with the final decision document.

h) Other Factors for MSC Consideration : Hydrograph / period of flooding, warning time, depth of flooding, velocity of flooding, nature of area protected, population protected. –Hydrologic and hydraulic characteristics of the basins and waterways that threaten the town with flooding, topography and man-made features serve to accentuate the threat to property and yet minimize the threat of loss of life at Independence, Ohio.

Hydrologic Factors

Areas of Independence, Ohio, have the potential to flood by the Cuyahoga River. A USGS stream gage (04208000) is located on the Cuyahoga River in Independence. The adjacent communities use the real-time data from this gage to help with flood warnings and preparations. The drainage area at this gauging station is approximately 707 square miles. According to the local communities and records of past events, the warning time allowed by the use of information from this gauging station has minimized the threat of loss of life during flooding events in the recent past.

Hydraulic Factors

The Cuyahoga River through the south part Independence, Ohio had been straightened in the past (from upstream at Rockside Rd to downstream of Route 480). The relatively wide, straight channel allows for higher velocities within the channel, but the proposed protected regions lie in flat, wider floodplain regions that allow for significantly lower velocities compared to channel velocities.

Depth of flooding for the 1% annual exceedance probability event varies in these areas from approximately two to thirteen feet. Hydraulic modeling shows that velocities are in the order of one foot per second in these areas, due to the fact that the proposed protected areas are in the left overbank of the Cuyahoga in these areas along the river.

Additional Community Factors

Flooding in the area in recent history has increased in frequency and severity. The flood of record for the Cuyahoga River in this area was reached in June 2006; the second highest crest was recorded in February 2011, and December of 1990 had the fifth highest crest. Damages from these floods continue to be recorded along with these floods. Public awareness for this situation with the desire to mitigate damages from these floods is very high making this project the only source of relief that is possible in the foreseeable future.

2. ESTIMATED TOTAL COST OF THE PROJECT, INCLUDING MITIGATION COSTS, IS GREATER THAN $45 MILLION. -- The total cost for implementing the selected plan at Independence is estimated to be approximately $6-7 million.

3. REVIEW REQUESTED BY GOVERNOR OF AFFECTED STATE. – No review has been requested by the Governor of the State of Ohio for this project.

4. WHERE THE DIRECTOR OF CIVIL WORKS OR THE CHIEF OF ENGINEERS DETERMINES THAT THE PROJECT STUDY IS CONTROVERSIAL DUE TO SIGNIFICANT PUBLIC DISPUTE OVER EITHER THE SIZE, NATURE OR EFFECTS OF THE PROJECT OR THE ECONOMIC OR ENVIRONMENTAL COSTS OR BENEFITS OF THE PROJECT. – Neither the DCW nor the Chief of Engineers has received any indication of any controversy concerning this project.

Project does not require an EIS. The feasibility-level investigation of environmental resources (i.e. wetlands, species of concern) identified no threatened and endangered species that would be impacted by the alternatives proposed, no significant environmental impacts, no significant socio-economic impacts, and no significant environmental justice impacts, and therefore it is anticipated that the study will include an integrated DPR, Environmental Assessment (EA) and not an EIS.

Products to Undergo Type I IEPR. The primary products to be reviewed as a result of the Feasibility Study are the Feasibility Study Report and Environmental Assessment. The draft report and EA will be submitted for Type I IEPR. All supporting documentation (e.g. technical appendices) to the feasibility study report and the EA will also undergo Type I IEPR. At this time, it is not envisioned that Type I IEPR will be required for the Alternative Formulation Briefing (AFB) documentation.

Required Type I IEPR Panel Expertise. The expertise/disciplines represented on the IEPR team should reflect the significant disciplines involved in the planning effort. The PDT has determined that the expertise needed for review shall include Flood Damage Reduction; Environmental Planning and Analysis; Economic Analysis; Hydraulics and Hydrology; and, Civil Engineering in the areas of design and Cost. This expertise is based on information obtained from the PMP and the factors affecting the scope and level of review of this review plan and is illustrated in the table which follows.

IEPR Panel Members/Disciplines	Expertise Required
Environmental Planning and Analysis	Panel member will be experienced in the NEPA process and analysis, and have a biological or environmental background that is familiar with the project area and ecosystem restoration.
Economic Analysis	Panel member will be experienced in civil works and related flood risk reduction projects and have a thorough understanding of HEC-FDA.
Hydraulics and Hydrology	Panel member will be an expert in the field of hydrology & hydraulics and have a thorough understanding of open channel dynamics, enclosed channel systems, application of detention/retention basins, application of levees and flood walls, non-structural solutions involving flood warning systems and flood proofing, etc and/or computer modeling techniques that include expertise in HEC-RAS 4.0, HEC-HMS, and HEC-GeoHMS.
Civil Engineering; Project Design and Costs	Panel member will be experienced in design and construction of both structural and non-structural flood risk management measures. In addition the Team member will be familiar cost estimating for similar civil works projects using MCACES.

b. Documentation of Type I IEPR - The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-214, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section 4.c above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions; and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

8. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION

All decision documents shall be coordinated with the Cost Engineering MCX, located in the Walla Walla District. The MCX will assist in determining the expertise needed on the ATR team and Type I IEPR team and in the development of the review charge(s). The MCX will also provide the Cost Engineering MCX certification. The RMO is responsible for coordination with the Cost Engineering MCX.

9. MODEL CERTIFICATION AND APPROVAL

EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

Per Director of Civil Works Policy Memo #1, Continuing Authority Program Planning Process Improvements, dated 19 Jan 2011, approval of planning models under EC 1105-2-412 is not required for CAP projects; however, MSC commanders remain responsible for assuring the quality of the analyses used in these projects and use of existing certified or approved models is strongly encouraged.

EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used

whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

a. Planning Models. The following planning models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
HEC-FDA 1.2.5 (Flood Damage Analysis)	The Hydrologic Engineering Center's Flood Damage Reduction Analysis (HEC-FDA) program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate and compare the future without- and with-project plans along the Cuyahoga River in Independence, OH to aid in the selection of a recommended plan to manage flood risk.	Certified
QHEI	The Qualitative Habitat Evaluation Index (QHEI)is designed to provide a measure of habitat quality that generally corresponds to those physical factors that affect fish communities and which are generally important to other aquatic life (e.g. invertebrates). . A QHEI measurement can have a maximum score of 100 with scores less than 30 identifying a very poor quality stream and scores of 70 or higher characterizing excellent quality streams. The standard QHEI was adjusted for use in evaluating lake shore environment. This index will be one of the metrics used to characterize existing conditions and evaluate ecosystem restoration plans. The index is under review by the ECO-PCX. It is anticipated that it will be approved for use in its appropriate range (i.e. Ohio, New York) however final Headquarters approval has not been granted at this time. The study area for this project is included in the range of this model. Therefore, a specific model approval plan is not required. Agency Technical Reviews (ATR) of the study should include the review the model's application on this study."	Regional Approval under review by HQ
Michigan FQAI	Floristic Quality Assessment Index is a tool to assess the floristic and, natural significance of any given area. Applications of this system include the	Regional/One time Approval Required.

	identification of remnant habitats of native floristic significance, comparisons between different sites, long-term monitoring of floristic quality, monitoring the progress of habitat restoration, and the use of National Wetland Categories to assist in the identification of wetlands.	

b. Engineering Models. The following engineering models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
HEC-GeoHMS 4.2.93	The Hydrologic Engineering Center's Geospatial Hydrologic Modeling Extension, HEC-GeoHMS, is a public domain extension to ESRI's ArcGIS software. It allows the user to visualize spatial information, document watershed characteristics, perform spatial analysis, delineate sub basins and streams, and construct inputs to hydrologic models. Here it was used to create hydrologic inputs used directly with the HEC-HMS software.	HH&C CoP Preferred Model
HEC-HMS 3.4	The Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS) program provides the capability to perform rainfall-runoff and transform computations, simple channel routing computations, and reservoir storage computations. The program was used to create a rainfall-runoff model of the Cuyahoga River watershed. The hydrograph outputs were used in conjunction with the HEC-RAS models to evaluate existing conditions and with-project conditions along the Cuyahoga River.	HH&C CoP Preferred Model
HEC-SSP (Version 2.0)	The Hydrologic Engineering Center's Statistical Software Package can be used to perform frequency, duration, coincident frequency, and curve combination analyses on flow data and other hydrologic data. SSP was used to perform flow frequency analysis on flow data from a USGS stream gage on Tinkers Creek.	HH&C CoP Preferred Model

HEC-GeoRAS 4.2.93	The Hydrologic Engineering Center's Geospatial Hydraulic Modeling Extension, HEC-GeoRAS, is a public domain extension to ESRI's ArcGIS software. HEC-GeoRAS allows the user to create a HEC-RAS import file containing geometric attribute data from an existing digital terrain model (DTM) and complementary data sets. Water surface profiles results may also be processed to visualize inundation depths and boundaries. HEC-GeoRAS was used in conjunction with HEC-RAS to develop the geometry for the hydraulic model(s) and to process the outputs from HEC-RAS to create spatially georeferenced water surface boundaries.	HH&C CoP Preferred Model
HEC-RAS 4.1.0	The Hydrologic Engineering Center's River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program was used for both steady and unsteady flow analysis to evaluate existing conditions and future with-project conditions along the Cuyahoga River and Tinkers Creek.	HH&C CoP Preferred Model
MII	Microcomputer-Aided Cost Estimation System; Used to generate detailed cost estimates for each alternatives.	Approved

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost.

ATR Schedule**:**

Task	Date
Kickoff meeting	1 day
ATR Comment period begins	1 day
ATRT Comments due in DrChecks by	2 weeks
PDT Evaluations due by	2 weeks
ATRT Back check by	2 weeks
ATR Review Report sent to LRB by	2 weeks

2) ATR Cost
a) ATR Lead - [redacted]
b) Plan Formulation - [redacted]
c) Economist - [redacted]
d) Environmental Specialist - [redacted]
e) Real Estate Specialist - $[redacted]
f) Geotechnical Engineer w/ Civil experience - [redacted]
g) Hydraulic / Hydrologic Engineer - [redacted]
h) Cost Estimator - [redacted] (including Cost MCX Certification)
i) Risk Analysis - [redacted]

TOTAL ANTICIPATED ATR COST = [redacted]

Type I IEPR Schedule and Cost.

IEPR Schedule and Cost. The Flood Risk Management PCX will coordinate the IEPR for the Draft Report. The following Table contains current IEPR costs as estimated by the PDT:

Item to Undergo IEPR	Schedule	Estimated Cost (by PDT) for IEPR
Draft Report and DEIS	TBD	[redacted]

b. Model Certification/Approval Schedule and Cost. Not applicable for CAP studies per Director of Civil Works Policy Memo #1. Only approved models were used in studying this project.

11. PUBLIC PARTICIPATION

State and Federal resource agencies may be invited to participate in the study covered by this review plan as partner agencies or as technical members of the PDT, as appropriate. Agencies with regulatory review responsibilities will be contacted for coordination as required by applicable laws and procedures. The ATR team will be provided copies of public and agency comments. Public review will take place after the Draft DPR has been reviewed by CELRD, and all comments have been incorporated into the

document. Official letters will go out to public agencies and sponsors with copies of the Draft DPR and EA for their review and comments.

There are public comment meetings scheduled for the remainder of this feasibility study, prior to sending the Feasibility Report to CELRD for approval. Due to commercial damages being the most prevalent for Independence, it is anticipated that meetings will occur during normal business hours to obtain the majority of those affected by the project.

12. REVIEW PLAN APPROVAL AND UPDATES

The Great Lakes and Ohio Rivers Division (LRD) Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

13. REVIEW PLAN POINTS OF CONTACT

Public questions and/or comments on this review plan can be directed to the following points of contact:

USACE Buffalo District (LRB) Points of Contact

- [redacted]
- [redacted]

Great Lakes and Ohio River Division Points of Contact

- [redacted]
- [redacted]

Review Management Organization Points of Contact

- [redacted]

ATTACHMENT 1: TEAM ROSTERS

Project Development Team

Name	Function	Organization	Phone	Email
[redacted]	Project Manager	USACE-Buffalo	[redacted]	[redacted]
[redacted]	Plan Formulator	USACE-Buffalo	[redacted]	[redacted]
[redacted]	Environmental Analysis	USACE-Buffalo	[redacted]	[redacted]
[redacted]	H&H	USACE-Buffalo	[redacted]	[redacted]
[redacted]	H&H	USACE-Buffalo	[redacted]	[redacted]
[redacted]	Civil/Structural Design	USACE-Buffalo	[redacted]	[redacted]
[redacted]	Economics	USACE-Buffalo	[redacted]	[redacted]
[redacted]	Real Estate	USACE-Buffalo	[redacted]	[redacted]
[redacted]	Legal Counsel	USACE-Buffalo	[redacted]	[redacted]
[redacted]	Outreach Coordinator	USACE-Buffalo	[redacted]	[redacted]
[redacted]	Cost Engineering	USACE-Buffalo	[redacted]	[redacted]

ATR TEAM

Name	Organization	Contact Information	Discipline
[redacted]	CEMVP-PD-F	[redacted]	ATR Lead/Planning
[redacted]	CELRH-PM-PD-F	[redacted]	Planning
[redacted]	CELRH-PM-PD-F	[redacted]	Economics
[redacted]	CELRH-PM-PD-R	[redacted]	Environmental Resources
[redacted]	CELRL-PM-P	[redacted]	Cultural Resources
[redacted]	CELRL-ED-T-H	[redacted]	Hydraulics/Hydrology
[redacted]	CELRH-EC-DC	[redacted]	Civil Engineering
[redacted]	CENWW-EC-X	[redacted]	Cost Engineering
[redacted]	CELRH-RE-P	[redacted]	Real Estate

VERTICAL TEAM

Name	Location	Phone	Email
[redacted]	[redacted]	[redacted]	[redacted]

SPONSORS AND MAJOR STAKEHOLDERS

Name	Location	Phone	Email
[redacted]	Independence, City Engineer	[redacted]	[redacted]
[redacted]	Mayor, Independence, OH		
[redacted]	Director, Cuyahoga County Planning Commission		
[redacted]	Cuyahoga Valley National Park	[redacted]	[redacted]
[redacted]	NE OH Regional Sewer District (WIK)	[redacted]	[redacted]

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the Feasibility Study (Detailed Project Report) for CAP Section 205 City of Independence, OH. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks[sm].

_____ _____
[redacted] Date
ATR Team Leader
CEMVP-PD-F

_____ _____
[redacted] Date
Project Manager
CELRB-PM-PM

_____ _____
[redacted] Date
Review Management Office Representative
CESPD-PDS-P

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: **Describe the major technical concerns and their resolution.**

Per email by Hank Jarboe on 01 DEC 2011, "The submitted decision document for Section 205 Independence, OH has undergone all the appropriate levels of review (District Quality Control, Agency Technical Review, Independent External Peer Review, and Policy and Legal Review) as required by EC 1165-2-214."

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

_____ _____
[Insert name] Date
Chief, Engineering Division (home District)
TD-D

_____ _____
[Insert name] Date
Chief, Planning Division (home District)
PM-PL

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number
XX XXX XX	MSC Approval	N/A

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
AFB	Alternative Formulation Briefing	OEO	Outside Eligible Organization
ATR	Agency Technical Review	PCX	Planning Center of Expertise
DPR	Detailed Project Report	PDT	Project Delivery Team
DQC	District Quality Control/Quality Assurance	PMP	Project Management Plan
DX	Directory of Expertise	PL	Public Law
EA	Environmental Assessment	QMP	Quality Management Plan
EC	Engineer Circular	QA	Quality Assurance
EIS	Environmental Impact Statement	QC	Quality Control
FRM	Flood Risk Management	RMC	Risk Management Center
Home District/MSC	The District or MSC responsible for the preparation of the decision document	RMO	Review Management Organization
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RTS	Regional Technical Specialist
IEPR	Independent External Peer Review	SAR	Safety Assurance Review
MSC	Major Subordinate Command	USACE	U.S. Army Corps of Engineers
NED	National Economic Development		
NEPA	National Environmental Policy Act		