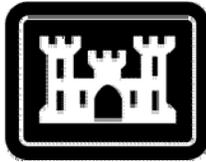


# Aquatic Nuisance Species Interbasin Study, Chicago Sanitary and Ship Canal, IL Ecosystem Restoration Feasibility Study Review Plan

Prepared by:



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## 1. INTRODUCTION

This document outlines the Review Plan for the Aquatic Nuisance Species Interbasin Study. The Chicago Sanitary and Ship Canal (CSSC) is a man-made waterway that connects the Chicago River and the Des Plaines River to the Illinois River, which creates a waterway connection between the Lake Michigan Basin and the Mississippi River Basin. The CSSC connects the Great Lakes (GL) and their 121 tributaries to the Mississippi River (MR) and its 852 tributaries, thereby providing a potential pathway for aquatic nuisance species (ANS) to spread across over 30 states and two Canadian provinces. A temporary electric Demonstration Dispersal Barrier has been operating in the CSSC since 2002 and a second more permanent electric barrier, with a design life of 20 years, is to be implemented in 2 stages. However, neither of these barriers protect against the full range of ANS that can use the CSSC to transit between the two basins. The electric dispersal barriers in the CSSC were designed to stop the movement of fish, but will not be effective for many other species and will not stop ANS that do not swim such as plants, larvae, eggs, or seeds.

The ecologic and economic impacts of aquatic nuisance species are significant. The Great Lakes Regional Collaboration identified ANS as an “invasional meltdown that may be more severe than chemical pollution”. The commercial and sport fisheries of the GL, which could be impacted by invasive species from the MR basin, are valued at 4 to 5 billion dollars annually. The zebra mussel, which moved from the GL into the MR basin are costly to control. According to NOAA the annual cost to control Zebra Mussels in the GL alone are estimated to cost between \$100M and \$400M/ year. A feasibility study is necessary to examine the full range of options and technologies available to prevent the spread of all aquatic nuisance species at all life stages between the GL and MR basins through the CSSC and other aquatic pathways. Up to thirty state/agency/international stakeholders will participate in development of goals, objectives, scope, & alternatives that impact entire MR & GL Basins in scope & scale. Projects may be implemented by Federal, State, local & international agencies. Projects implemented by the Corps of Engineers will require Congressional authorization. The impacts of ANS are far-reaching, affecting native flora & fauna, invertebrates, fisheries, habitat, navigation industry, and water intake structure.

### Study Authority

*Sec. 3061(d), WRDA 2007. “FEASIBILITY STUDY – The Secretary, in consultation with appropriate Federal, State, local and nongovernmental entities, shall conduct, at Federal expense, a feasibility study of the range of options and technologies available to prevent the spread of aquatic nuisance species between the Great Lakes and Mississippi River Basins through the Chicago Sanitary and Ship Canal and other aquatic pathways. “*

The purpose of the Review Plan is to assign the appropriate level and independence of review, establish the procedures, and assign responsibilities for conducting the District Quality Control Review (DQC), Agency Technical Review (ATR) and Independent External Peer

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Review (IEPR). This review plan was developed in accordance with EC 1105-2-410, which establishes the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) decision documents through independent review. The EC outlines three levels of review: District Quality Control, Agency Technical Review, and Independent External Peer Review. In addition to these three levels of review, decision documents are subject to policy and legal compliance review and, if applicable, safety assurance review and model certification/approval.

- (1) District Quality Control (DQC). DQC is the review of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). It is managed in the home district and may be conducted by staff in the home district as long as they are not doing the work involved in the study, including contracted work that is being reviewed. Basic quality control tools include a Quality Management Plan providing for seamless review, quality checks and reviews, supervisory reviews, Project Delivery Team (PDT) reviews, etc. Additionally, the PDT is responsible for a complete reading of the report to assure the overall integrity of the report, technical appendices and the recommendations before approval by the District Commander. The Major Subordinate Command (MSC)/District quality management plans address the conduct and documentation of this fundamental level of review; DQC is not addressed further in this review plan.
- (2) Agency Technical Review (ATR). ATR is an in-depth review, managed within USACE, and conducted by a qualified team outside of the home district that is not involved in the day-to-day production of the project/product. The purpose of this review is to ensure the proper application of clearly established criteria, regulations, laws, codes, principles and professional practices. The ATR team reviews the various work products and assure that all the parts fit together in a coherent whole. ATR teams will be comprised of senior USACE personnel (Regional Technical Specialists (RTS), etc.), and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team shall be from outside the home MSC.
- (3) Independent External Peer Review (IEPR). 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. IEPR is generally for feasibility and reevaluation studies and modification reports with Environmental Impact Statements (EISs). IEPR is managed by an outside eligible organization (OEO) that is described in Internal Revenue Code Section 501(c) (3), is exempt from Federal tax under section 501(a), of the Internal Revenue Code of 1986; is independent; is free from conflicts of interest; does not carry out or advocate for or against Federal water resources projects; and has experience in establishing and administering IEPR panels. The scope of review will address all the underlying planning, engineering, including safety assurance, economics, and environmental analyses performed, not just one aspect of the project.
- (4) Policy and Legal Compliance Review. Decision documents will be reviewed throughout the study process for their compliance with law and policy. These reviews culminate in Washington-level determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further

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recommendation to higher authority by the Chief of Engineers. Guidance for policy and legal compliance reviews is addressed further in Appendix H, ER 1105-2-100, Planning Guidance Notebook. When policy and/or legal concerns arise during DQC or ATR that are not readily and mutually resolved by the PDT and the reviewers, the District will seek issue resolution support from the MSC and HQUSACE in accordance with the procedures outlined in Appendix H, ER 1105-2-100. IEPR teams are not expected to be knowledgeable of Army and administration policies, nor are they expected to address such concerns. The home district Office of Counsel is responsible for the legal review of each decision document and signing a certification of legal sufficiency.

- (5) Safety Assurance Review. In accordance with Section 2035 of Water Resources Development Act (WRDA) of 2007, EC 1105-2-410 requires that all projects addressing flooding or storm damage reduction undergo a safety assurance review of the design and construction activities prior to initiation of physical construction and periodically thereafter until construction activities are completed on a regular schedule sufficient to inform the Chief of Engineers on the adequacy, appropriateness, and acceptability of the design and construction activities for the purpose of assuring public health, safety, and welfare. A future circular will provide a more comprehensive Civil Works Review Policy that will address the review process for the entire life cycle of a Civil Works project. That document will address the requirements for a safety assurance review for the Pre-Construction Engineering Phase, the Construction Phase, and the Operations Phase. The decision document phase is the initial design phase; therefore, ER 1105-2-410 requires that safety assurance factors be considered in all reviews for decision document phase studies.
- (6) Model Certification/Approval. EC 1105-2-407 requires certification (for Corps models) or approval (for non-Corps models) of planning models used for all planning activities. The EC defines planning models 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 EC does not cover engineering models used in planning. Engineering software is being address under the Engineering and Construction (E&C) Science and Engineering Technology (SET) initiative. Until an appropriate process that documents the quality of commonly used engineering software is developed through the SET initiative, engineering activities in support of planning studies shall proceed as in the past. 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.

## **2. DRAFT PLAN OF STUDY**

A draft Plan of Study was developed to identify tasks in the initial stages of the study that would assist the study team in establishing the critical elements of the study including the draft Project Management Plan (PMP), the Quality Control Plan (QCP). The members of the Corps team will work with a core group of federal and state agencies to lay out the architecture of the larger study

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team. The goal of the team would be to develop an inclusive study architecture that brings all interested parties into the study process. The elements of the Plan of Study are listed below.

**FY '09-Initiate Study**

- Review Plan – Review & Approval (ECO-PCX & LRD)
- Draft PMP and QCP
- Draft MOA between LRC/LRD/LRE/LRB/MVD/MVR/MVP
- Draft Communications Plan
- Establish Basic PDT, Committees and Study Support Teams
- Implement Strategy to Identify and Recruit Stakeholders
- Release Public Notice of Feasibility Study Initiation
- Release Public Notice of Intent to Prepare an EIS

**FY '10 Study Activities**

- Execute MOA between LRC and LRD/MVD, LRB, LRE, and MVR
- Update Study PMP and detailed study cost estimate
- Standup Full PDT, Committees and Support Teams
- Initiate NEPA Scoping Process for EIS
- Coordinate a Phased Implementation Plan with MSC and HQ
- Develop Study Acquisition Strategy
- Ongoing Coordination with Key Stakeholders
- Facilitate Committee Meetings on key elements of the Feasibility Study
- Execute Contracts based on available funding

The Ecosystem Restoration Study will evaluate risks related to the transfer of aquatic invasive species between the Great Lakes and Mississippi River Basins. The PDT will develop a Feasibility Study with an integrated Environmental Impact Statement that will require approval by the Chief of Engineers and Congressional Authorization. The PDT anticipates that there will be a high level of complexity in some of the areas of study. Development of the PMP will provide the PDT with an opportunity to layout the study analyses in a step-wise manner in order to better identify those areas of high complexity and/or controversy. When the RP is revised, complex and controversial issues will be identified and impacts on the review processes will be discussed.

The Ecosystem Restoration Feasibility Study will include the following study tasks:

- Identify all potential pathways of Interbasin Transfer of ANS
- Evaluate Risks associated with ANS –from GL or MR Basins (Baseline)
- Evaluate Technologies to prevent transfer of ANS between Basins
- Evaluate the capability of existing technologies to reduce Residual Risks to an acceptable level
- Develop alternatives to minimize risk of interbasin transfer
- Evaluate Environmental & Economic Impacts of alternatives in the following areas:

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- Navigation (Commercial & Recreation)
- Impacts to Natural Resources, including Aquatic Habitat & Fisheries
- Flood Control/Water Control
- Water Supply
- Hydropower
- Water Quality
- Wastewater/CSOs
- Commercial and Recreational Fisheries
- Other Impact Areas to be determined
- Tradeoff Analysis of Residual Risks versus Environmental and Economic Impacts
- Implementation of Interim Feasibility Studies/Projects to address high risk areas
- Overall Study Recommendation

**3. PROJECT STUDY TEAM**

Basic PDT will include staff from within LRD and MVD Districts in Project Management, Planning, and Technical Services. Project/Study Management will be the responsibility of the Chicago District. An Executive Steering Committee will be formed in collaboration with LRD and MVD. PDT membership will be expanded to include subject matter experts from across the Corps et al for specific areas of study after the completion of the PMP and the study cost estimate.

There will be a large number of interested stakeholders that will want to participate in the study from around the region. Interested agencies include: USEPA, USFWS, USCG, Illinois DNR, Illinois EPA, Indiana DNR, IDEM and MWRDGC, and the Barrier Advisory Panel. It is anticipated that agencies will be part of the overall Study PDT. LRC will pursue MOA's or other agreements with interested agencies. The study process will also include input from other stakeholders to include NGOs and other interested GL stakeholders. It is anticipated that these stakeholders will be part of a Coordinating Committee, and not part of the project development team. The Coordinating Committee will be briefed on project status and have opportunities to provide comments on the process. LRC staff will work with Office of Counsel staff to address potential FACA issues during the development of the Coordinating Committee structure

**Table 2.1 – Draft Study Team Structure**

Study Team Component	Agency or NGO
<i>Executive Steering Committee</i>	U.S. Army Corps of Engineers, Chicago District (USACE-LRC)
	U.S. Army Corps of Engineers, Buffalo District (USACE-LRB)
	U.S. Army Corps of Engineers, Detroit District (USACE-LRE)
	U.S. Army Corps of Engineers, Rock Island District (USACE-MVR)
	U.S. Army Corps of Engineers, Lakes and Rivers Division (USACE-LRD)
	U.S. Army Corps of Engineers, Mississippi Valley Division (USACE-

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	MVD)
	TBD <sup>1</sup>
<i>Coordinating Committee</i>	TBD <sup>1</sup>
<i>Project Development Team</i>	
	U.S. Army Corps of Engineers, Chicago District (USACE-LRC)
	U.S. Army Corps of Engineers, Rock Island District (USACE-MVR)
	U.S. Army Corps of Engineers, Buffalo District (USACE-LRB)
	U.S. Army Corps of Engineers, Detroit District (USACE-LRE)
	U.S. Coast Guard
	U.S. Environmental Protection Agency (USEPA, Region V)
	U.S. Environmental Protection Agency Great Lakes National Program Office (USEPA – GLNPO)
	U.S. Fish and Wildlife Service (USFWS)
	Illinois Department of Natural Resources (IDNR)
	Illinois Natural History Survey
	Metropolitan Water Reclamation District of Greater Chicago (MWRDGC)
	City of Chicago, Department of Environment
<i>Technical Advisory Committees</i>	TBD <sup>1</sup>

<sup>1</sup> Extent of additional membership in the committees, or the composition of the committees will be developed in the PMP.

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**Table 2.2 – Potential Study Committee Structure**

Committee	Current Chair	Office/Agency
Communications & Outreach	TBD	TBD
Aquatic Nuisance Species		
Navigation (Commercial & Recreational)	TBD	TBD
Fisheries (Commercial & Recreational)	TBD	TBD
Stormwater and Flooding	TBD	TBD
Hydrology & Hydraulics		
Geographic Info Systems (GIS)	TBD	TBD
Water Quality	TBD	TBD
Habitat & Restoration	TBD	TBD

\* TBD – To be determined further in feasibility study when resources are needed

**Table 2.3 – Study Project Delivery Team**

Discipline	Office/Agency
Project Manager	CELRC-PM-PM
Quality Manager	CELRC-PM-PL
Lead Planner	CELRC-PM-PL-E
Planning	CELRC-PM-PL
Environmental Formulation & Analysis	CELRC-PM-PL-E
Environmental & Social Analysis	TBD
Environmental Analysis (Fisheries)	TBD
Environmental Analysis (Habitat)	
Environmental –NEPA Compliance	TBD
Economic Analysis	CELRC-PM-PL-F
Economic Analysis (Flood & Storm Damage)	TBD
Economic Analysis (Navigation)	TBD
GIS	CELRC-TS-D-C
Design	CELRC-TS-D
Civil Design & Cost Analysis	CERLC-TS-D-C
Structural Analysis	TBD
Hydrology and Hydraulic Engineering	CELRC-TS-D-HH
Water Quality	CELRC-TS-D-HH

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**Table 2.4 – Major Subordinate Command Planning and Policy Team**

Discipline	Office
Great Lakes and Ohio River Division	
Chief, Planning & Policy	CELRD-PDS-P
Chicago District Liaison	CELRD-GL-E-EW-Q
Planning & Policy (Ecosystem)	CELRD-PDS-P
Planning & Policy (Navigation)	CELRD-PDS-P
Mississippi Valley Division	
Planning & Policy	TBD
Planning & Policy	TBD

**Table 2.5 – Planning Centers of Expertise Team**

Discipline	Office
Mississippi River Valley Division	
ECO-PCX	CEMVD-RB-T

**4. GENERAL REVIEW PROCESS**

The review process for this study will consist of a Product Development Team review. This will be consistent with the study wide QCP, and equivalent to District Quality Control (DQC). The review will also include Agency Technical Review (ATR), vertical team review (Policy Compliance and Legal Review), and Independent External Peer Review (IEPR).

The QCP will be developed for the study concurrent with the development of the PMP. The QCP will include detailed information on the composition of the PDT and the ATR teams and will be consistent with Regional Business Processes for Quality Management and ER 1110-1-12, Quality Management. The ECO PCX will be consulted to identify an ATR lead from outside LRD and MVD, as well as to identify potential ATR reviewers for the remainder of the ATR team. The QCP will also include PDT and ATR checklists for the review. It is anticipated that there will be reviews at various checkpoints in the study including the Feasibility Scoping Meeting and Alternative Formulation Briefing. These checkpoints, as well as any additional review points will be detailed in the PMP and the QCP. When the PMP and QCP are completed and approved, the RP will be updated to reflect all the review milestones. Dr. Checks will be used for both DQC and ATR reviews. The ECO-PCX will manage the IEPR, which will be conducted by an Outside Eligible Organization (OEO).

The Review Plan will be reviewed and recommended for approval by both the National Planning Center for Ecosystem Restoration (ECO-PCX) and Lakes and Rivers Division (LRD). The Review Plan will be posted on the Chicago District web site.

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## **5. ASSESSMENT OF PROJECT RISK**

The study is considered high risk overall. The items that contribute to the high risk are:

- Projected Cost of the study (\$10M); projected total project cost will exceed \$45M.
- Complexity of the issues being studied is high, especially considering the interaction of different waterway and lake uses versus interbasin transfer of ANS
- Scale of the Study (Addressing ANS transfer between two large watersheds – Great Lakes & Mississippi River Basins;
- The anticipated level of controversy is high, with concerns being voiced by many different industries and interest groups; and,
- High level of interest in the issue, inclusion in the GL Regional Collaboration.

The PDT will consider the high level of risk in developing the PMP, and the overall study team structure. Every effort will be made to include significant stakeholders within the study process as the effort moves forward to minimize as much as possible elements of project risk related to the conduct of the study. Risk related to the complexity of the issues to be evaluated will be managed by the inclusion of Subject Matter Experts (SMEs) as part of the PDT.

## **6. OPPORTUNITIES FOR PUBLIC INPUT INTO PEER REVIEW PROCESS**

In addition to the public access provided to the Peer Review Plan on the District and the ECO-PCX web site, the PDT may solicit input through a number of different communications avenues including the Great Lakes Information Network (GLIN), and other avenues. Additionally, the District will solicit input from the members of the Coordinating Committee, and other stakeholder groups. In order to satisfy requirements of the National Environmental Policy Act (NEPA), an environmental compliance document will be developed as part of the feasibility study process and released for public review. Comments related to the review process received through these activities will be reviewed, incorporated into the RP where appropriate.

Due to the highly visible nature of the Aquatic Nuisance Species Interbasin Study, it is anticipated that there will be multiple opportunities for significant and relevant public comment on the content of the study as well as from interested stakeholder and scientific groups. The District will include documentation on public meetings as part of the NEPA process. Significant and relevant comments on the study process will be provided to the ATR and IEPR teams as part of the review package.

## **7. AGENCY TECHNICAL REVIEW (ATR)**

The Agency Technical Review Team (ATR team will be integral in the Feasibility Study process, and will participate in a review of several interim products prior to Policy Compliance and Legal Review by the vertical team. The entire feasibility study report and the EIS, will

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undergo ATR. Dr. Checks will be utilized by the review teams. Cross labor charge codes will be provided for the members of the ATR team by the Chicago District for the review. ATR team disciplines identified to date are listed in *Table 6.1*. Team members and additional disciplines will be added to the ATR Team after the PMP is completed and in consultation with the ECO-PCX. The Review Plan will be updated at that time to update the ATR listing. Cost estimates of project features will be ATR'd by the Cost Engineering Center of Expertise located at the Walla Walla District.

**Comment [MS1]:** Add comment on how ATR details will be developed (similar to Model Cert statement).

**Table 6.1 – Agency Technical Review Team**

Discipline	Name	Office/Agency
Plan Formulation – ER <sup>2</sup>	TBD	TBD
Compliance	TBD	TBD
Economic Analysis (NAV)	TBD	TBD
Economic Analysis (FRM)	TBD	TBD
H&H Engineering	TBD	TBD
Environmental (Habitat)	TBD	TBD
H&H Engineering	TBD	TBD
Cost Engineering	TBD	Walla Walla Cost Engineering CX
Civil Engineering	TBD	TBD
Structural Engineering	TBD	TBD
Environmental Engineering	TBD	TBD
Mechanical Engineering	TBD	TBD
Electrical Engineering	TBD	TBD
Geotechnical Engineering	TBD	TBD

## 8. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

An Independent External Peer Review (IEPR) will be performed as part of the feasibility study process. The timing of the IEPR will be considered in the development of the PMP and the QCP for the study. The PDT will work with the vertical Corps Team and the ECO-PCX, as well as the Executive Steering Committee to set the time frame for the IEPR after the completion of the PMP. The District will work with the ECO-PCX and HQUSACE to determine the appropriate mechanisms to provide opportunities for public stakeholder and scientific groups input into the composition of the IEPR team. Recommendations received from this process will be coordinated with the ECO-PCX

The IEPR will be conducted by and OEO and will include a multi-disciplinary team of engineers and scientists. The scope of the review will address all of the underlying planning, engineering, including safety assurance, economics, and environmental analyses performed, not just one aspect of the project. The review will be conducted to identify, explain, and comment upon assumptions that underlie public safety, economic, engineering, environmental, and other

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analyses, as well as to evaluate the soundness of the models and analytic methods. The panel should be able to evaluate whether the interpretations of analyses and conclusions are reasonable.

The OEO will prepare a Review Report containing the panel's economic, engineering and environmental analysis of the project study, including the panel's assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses. The PDT and the vertical team will develop written response for all reviewer recommendations contained in the Review Report. The Review Report, including recommendations and responses shall be made available to the public via posting in the District web site, as well as inclusion in the Feasibility Study.

## **9. MODEL CERTIFICATION**

During the development of the PMP, the PDT will identify the tools that will be utilized during the study to evaluate conditions and make recommendations. The PMP will include a listing of models to be utilized and will also identify those models that will need certification or approval as part of the Planning Model Improvement Program. The Review Plan will be updated to include that information. The certification and/or approval process will be coordinated with the ECO-PCX.

## **10. KEY REVIEW ASSUMPTIONS**

- ◆ All reviews, documents, and information sharing will be handled electronically via electronic mail, ftp website, or CD storage;
- ◆ Dr. Checks will be utilized for the DQC and ATR;
- ◆ Technical staff will provide a response to ATR comments. Disputes will be resolved in accordance with Regional Business Processes for Quality Management. A signoff will be provided by the PR team after review of District responses;
- ◆ DQC, ATR and Vertical team review will be performed at pre-specified checkpoints in the study consistent with ER1105-2-100 such as the FSM and AFB;
- ◆ ATR documentation will be part of the submittal package for the FSM, AFB, and draft and final Feasibility Study and EIS;
- ◆ Model Certification documentation will be part of the submittal package for the Feasibility Study;
- ◆ IEPR will be performed by an OEO. A Review Report will be prepared by the review panel. PDT response to the Review Report will be coordinated through the vertical team including HQUSACE. The finalized Review Report will be posted on the District web site and bound into the Feasibility Study released to the public.

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**11. STUDY AND REVIEW SCHEDULE**

There are several key milestones scheduled for this study that require a review of documentation by the Agency Technical Review Team as indicated below. A detailed study schedule, study cost estimate, and review costs estimates will be developed as part of the PMP. The Review Plan will be updated to include detailed study costs, review costs and schedules after the approval of the PMP:

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Initial Study Milestones:

Approved Review Plan (RP) – 01 June 2009

Draft PMP Approved (PMP) - TBD

QCP approved - TBD

Memorandum of Agreement Executed -TBD

Feasibility Scoping Meeting- TBD

Alternative Formulation Briefing - TBD

Draft Report Submittal - TBD

**12. CHICAGO DISTRICT CONTACTS**

Susanne Davis, Chief Planning Branch, 312-846-5580

Chuck Shea, Project Manager, 313-846-5568

David Bucaro, Economic Section Chief, 312-846-5583

Eugene Fleming, Environmental Section Chief, 312-846-5585

**13. BUDGET**

An estimate of costs for the DQC, ATR, Policy and Legal Compliance Reviews and IEPR reviews will be developed as part of the PMP/QCP development.