



Appendix D. Quality Assurance (QA)/ Quality Control (QC) Guidance for NEPA Documents



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Appendix D

Quality Assurance (QA)/Quality Control (QC)

Guidance for NEPA Documents

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1. Introduction

The Colorado Department of Transportation (CDOT) is strongly committed to sound engineering design, application of sound scientific principles in its analyses, and the production of quality documents. This Quality Assurance (QA)/Quality Control (QC) guidance for National Environmental Policy Act (NEPA) documents is designed to provide a functional and easily understood set of guidelines to maintain and ensure quality during the preparation of NEPA documents including Categorical Exclusion (CatEx) documentation, Environmental Assessments (EA), and Environmental Impact Statements (EIS). These documents are public documents referenced by private individuals, companies, government agencies, and non-governmental organizations. The public nature of these documents requires them to be based on accurate technical information and environmental analysis; to be well-written, easy to read; and to provide full and honest disclosure.

QA is the process that is followed to ensure the preparation of quality NEPA documents, while QC refers to the systems in place to evaluate quality.

1.1 Purpose

The purpose of QA is to ensure that the project team's processes are sound and that QC is properly provided on every project. In other words, QA is an oversight (or audit) function to make sure that QC is being properly conducted. The purpose of this QA/QC guidance is to provide a framework to ensure that:

- ▶ Quality work is consistently performed and that quality deliverables are consistently produced
- ▶ Multidisciplinary data acquisition and design efforts are coordinated
- ▶ Design is sufficiently complete to produce a planning-level cost estimate for the purposes of project funding and supporting the impact and mitigation analysis in a NEPA document
- ▶ Project continuity occurs in record-keeping and document review
- ▶ Orderly procedures are established to provide QC for engineering design and scientific calculations, drawings, and specifications
- ▶ Environmental and design attributes meet established industry or agency standards and comply with applicable agency requirements
- ▶ Project documents have undergone the necessary technical editing (including grammar, punctuation, and spelling), proofreading, and editorial process



“To provide the best multi-modal transportation system for Colorado that most effectively moves people, goods and information”

CDOT's Mission Statement



“The ultimate goal is to produce better NEPA documents for public use, improve the legal defensibility of the document and process, comply with the intent of NEPA, and make better project decisions.”

AASHTO/ACEC/FHWA
Improving the Quality of Environmental Documents

1.2 Scope

A QA/QC plan shall be prepared for each project. The intent of the QA/QC plan is to specify all QA/QC activities that will be implemented for work on the project. Just as CatEx, EA, and EIS documents vary in scope and complexity, the QA/QC plan will be project-specific and tailored to meet the needs of the project and project team. Since professional staff at CDOT, consultants working on CDOT projects, and local agency staff are the primary audiences for this Manual, the objective of this guidance is not to be overly prescriptive. The author of the QA/QC plan should be defined in the project-specific scope of work. **Attachments 1 and 2** include sample QA/QC Tables of Contents from project-specific QA/QC plans.

At a minimum, CDOT recommends the QA/QC plan contain the following:

- ▶ Name of the Quality Assurance Manager (defined in **Section 2.2**).
- ▶ Name of a designated staff member to conduct the technical editing of the NEPA document, including technical memoranda, reports, and supporting documentation, prior to CDOT, the Federal Highway Administration (FHWA), and other agency review. This may be the same person as the Quality Assurance Manager.
- ▶ Brief description of the project scope of work and key deliverables.
- ▶ Project leadership organization chart.
- ▶ Names of the Project Manager and each major discipline task manager, including subconsultants and/or vendors.
- ▶ One major point of contact from the project team who will be responsible for coordination among the project team, CDOT, FHWA, and other agencies.
- ▶ Concise discussion of the responsibilities of the Project Manager and each major discipline task manager.
- ▶ Project team contact list.
- ▶ Outline of the filing system to be used for the project, including procedures for geographic information system (GIS) data management, computer aided design and drafting (CADD) data management, and computer file maintenance, as appropriate.
- ▶ Verify that all environmental and design attributes meet established industry or agency standards and comply with all applicable jurisdictional codes and requirements.
- ▶ Ensure engineering design is sufficiently complete to produce a preliminary, planning-level cost estimate for the purposes of project funding (for complete design, construction, and implementation of required mitigation) and to support environmental analysis.
- ▶ Summary of the procedures to be used for document proofreading, quality, and completeness and accuracy. **Chapter 8** of this Manual establishes a procedure for FHWA and CDOT review of documents prepared for CDOT NEPA projects.



“CDOT has committed to complying with the intent and requirements of NEPA for all transportation activities, regardless of whether or not they are federally funded.”

CDOT Environmental Stewardship Guide



Planning is the beginning. Quality in work is not an accident.

1.3 Engineering Design and Environmental Analysis

CDOT is committed to maintaining the quality and integrity of the engineering design and environmental analyses performed in support of the NEPA process. The purpose of this section is to acknowledge that engineering design and environmental analysis have resource-specific QA/QC protocols that need to be applied but are not defined in this guidance. Engineering design will conform to the applicable CDOT standards unless directed otherwise by the CDOT Project Manager. Additional information on the QC processes for engineering design is included in the CDOT Project Development Manual (CDOT, 2013).

Due to the volume and variety of environmental data collected and analyses performed for a NEPA project (wetlands, historic properties, water quality, noise, air quality, hazardous materials, farmlands, etc.), CDOT does not mandate a specific QC process for these activities. However, CDOT expects the environmental analyses performed to be in accordance with industry standards and for these analyses to be conducted by a person(s) who possesses sufficient specific education, training, and experience necessary to exercise professional judgment and develop opinions and conclusions that are sufficient to meet industry standard objectives and performance factors in accordance with the appropriate guidance for each resource. Additional information on specific data requirements and methodologies for these environmental resources is included in **Chapter 9** of this Manual.

2. Project Management

CDOT expects the project team for all NEPA projects to accomplish the work in an effective and timely manner. Proactive project management is essential to plan, monitor, and control all aspects of a project, including the project team, to produce a quality document on time and within budget. Key components of the project management philosophy are:

- ▶ Comprehensive project scoping
- ▶ Collaborative public process
- ▶ Project team identification
- ▶ Dedication to product quality and defensibility
- ▶ Estimating and budgeting
- ▶ Scheduling
- ▶ Monitoring progress and performance
- ▶ Taking corrective action as required

For additional information on project management expectations, the *Generic Scope of Work Basic Contract* (CDOT, 2022) references project management and coordination requirements on a project-specific basis.

2.1 Project Team

The QA/QC plan should be prepared at the beginning of a project. Following review and approval by the CDOT Project Manager, the QA/QC plan should be distributed to all project team members to serve as a virtual blueprint for the project and a reference source for all project team members, CDOT, FHWA, and other agencies. To ensure an understanding of workflow and coordination responsibilities, a project leadership organization chart is recommended for inclusion in the QA/QC plan. An example project leadership organization chart is shown in **Figure 2-1**.

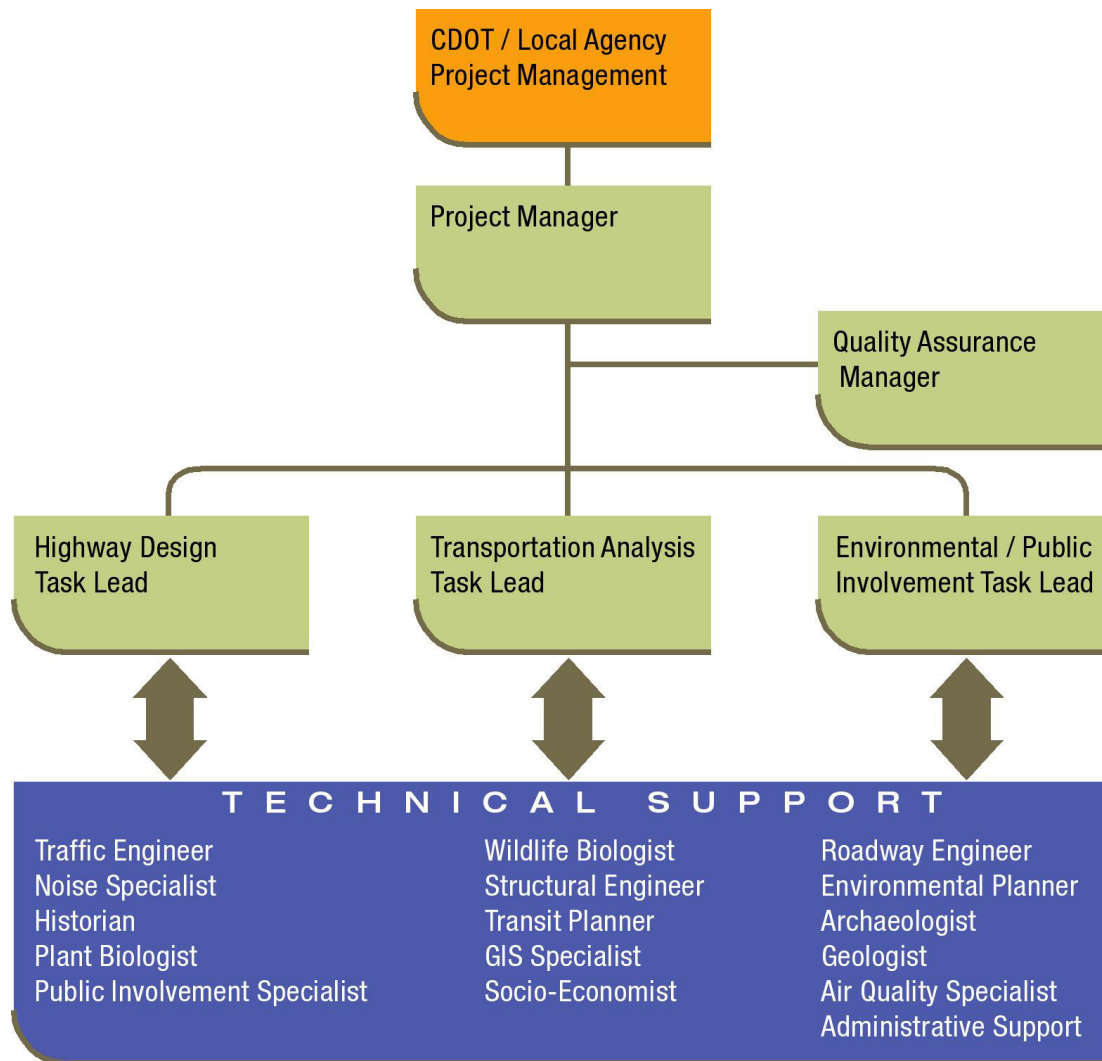


“The best way to eliminate quality problems is to minimize the chance of making mistakes with good planning, adequate preparation, and the necessary support.”

PSMJ Resources, Inc. *The Ultimate Project Management Manual*



Figure 2-1 Project Leadership Organization Chart



2.2 Project Team Responsibilities

It is important that each party in a NEPA project understand their role and role definition to meet the quality expectations of the project. It is the responsibility of project team members to follow the procedures outlined in their project-specific QA/QC plan and work efficiently with one another during the preparation of the NEPA documents. As an example, specific positions and associated responsibilities are summarized in the following subsections.

2.2.1 Project Manager

The Project Manager shall:

- ▶ Prepare periodic project schedule updates
- ▶ Hold internal staff meetings, as necessary, to keep the project on schedule
- ▶ Communicate with the CDOT or Local Agency Project Manager, QA Manager, and Highway Design, Transportation Analysis, and Environmental/ Public Involvement Task Leads
- ▶ Organize monthly project management meetings, prepare agendas, and prepare meeting notes
- ▶ Prepare “to do” action item lists
- ▶ Develop and maintain project files to document the NEPA process and important decisions
- ▶ Coordinate with the CDOT or Local Agency Project Manager on preparation of the Administrative Record, if necessary
- ▶ Prepare monthly invoicing
- ▶ Notify the CDOT or Local Agency Project Manager immediately when tasks beyond the scope may be necessary
- ▶ Ensure that QC procedures are followed for engineering design, environmental analyses, and NEPA document preparation

2.2.2 Quality Assurance Manager

The QA Manager shall:

- ▶ Coordinate the QA/QC processes with the Project Manager
- ▶ Maintain and ensure product quality during preparation of the NEPA documents
- ▶ Track when and how technical reviews have occurred
- ▶ Ensure that QA/QC processes have been followed



“Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in Environmental Impact Statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusion in the statement.”

Council on Environmental Quality (CEQ) Regulations
40 Code of Federal Regulations (CFR) 1502.24

2.2.3 Highway Design Task Lead

The Highway Design Task Lead shall:

- ▶ Communicate with the Project Manager on meeting the project schedule in relation to highway design tasks
- ▶ Hold internal staff meetings as necessary in relation to highway design tasks
- ▶ Develop and maintain project files in relation to highway design tasks
- ▶ Oversee refinement and screening of the alternatives that will generally satisfy current and projected transportation needs
- ▶ Coordinate between roadway, structures, and hydraulic design team members for the alternatives
- ▶ Ensure QC procedures are followed during engineering design in accordance with applicable CDOT standards

2.2.4 Transportation Analysis Task Lead

The Transportation Analysis Task Lead shall:

- ▶ Communicate with the Project Manager on meeting the project schedule in relation to transportation analysis tasks
- ▶ Hold internal staff meetings as necessary in relation to transportation analysis tasks
- ▶ Develop and maintain project files in relation to transportation analysis tasks
- ▶ Oversee transportation analysis for refinement and screening of the alternatives that will generally satisfy current and projected transportation needs
- ▶ Ensure QC procedures are followed during transportation analysis in accordance with applicable CDOT standards

2.2.5 Environmental/Public Involvement Task Lead

The Environmental/Public Involvement Task Lead shall:

- ▶ Communicate with the Project Manager on meeting the project schedule in relation to environmental/public involvement tasks
- ▶ Hold internal staff meetings as necessary in relation to environmental/public involvement tasks
- ▶ Develop and maintain project files in relation to environmental/public involvement tasks
- ▶ Oversee the evaluation and documentation of the social, economic, and environmental impacts of the alternatives
- ▶ Facilitate preparation of the NEPA document and associated technical reports/technical memoranda



“Environmental Impact Statements shall be written in plain language and may use appropriate graphics so that decision-makers and the public can readily understand them. Agencies should employ writers of clear prose or editors to write, review, or edit statements, which will be based upon the analysis and supporting data from the natural and social sciences and the environmental design arts.”

CEQ Regulations 40 CFR 1502.8



- ▶ Oversee the environmental resource specialists and subconsultants for identification of existing conditions, environmental impacts, and mitigation
- ▶ Coordinate public involvements tasks, such as maintaining the project mailing list, with the project team
- ▶ Ensure QC procedures are followed for environmental analysis in accordance with established industry or agency standards

2.2.6 Technical Editor

The Technical Editor shall:

- ▶ Develop a consistent “look and feel” for the NEPA documents
- ▶ Review and edit each NEPA document for ease of understanding, spelling, grammar, punctuation, and overall flow, consistency, and use of one voice
- ▶ Provide QC for NEPA documents

3. Records and Documents

In accordance with the American Association of State Highway and Transportation Officials (AASHTO) Practitioner’s Handbook 01 *Maintaining A Project File And Preparing An Administrative Record For A NEPA Study* (AASHTO, 2006), the term “project file” refers to the files maintained by the project team during the NEPA process. The term “administrative record” refers to the documents that are actually submitted by an agency upon request of another party. The goal in managing the project file will be to facilitate development of the Administrative Record if necessary.

The project team must manage document storage, search existing documents, and extract information as necessary to streamline workflow and acquire important information. Document management requires the implementation of document control procedures to track documents generated, file documents, and provide access to previously generated documents. The project file consists of both hard copy and electronic files. CDOT does not currently have a policy for the retention of draft documents. The QA/QC plan should be project-specific and tailored to meet the needs of the project and project team. The following subsections provide an example of document retention guidelines, as well as potential electronic file naming protocols.

3.1 Guidelines for Document Retention

- ▶ Copies of all documents related to the project and the NEPA process are to be forwarded to the Project Manager or their designee who is responsible for document control. This includes all correspondence, data, reports, substantive emails relating to the process or the project, telephone records, meeting minutes and notes. It also includes digital files, such as GIS and CADD data, which will be maintained in accordance with the procedures outlined in the CDOT CADD Manual (CDOT, 2011). The CDOT GIS program defines standards for GIS data to coordinate efforts for GIS data creation and compilation to eliminate duplicative efforts, increase data accuracy, streamline project reviews, and document the history of design/construction data. The CDOT CADD Manual (CDOT, 2011) provides standardized procedures for CADD and associated electronic files to facilitate the exchange of information among CDOT regions, specialty groups, and consultants. These documents will be logged in and become a part of the project’s document control files.
 - Public involvement documents. Documents related to public involvement including notices of meetings, committee meeting minutes, and correspondence. Public comments will be included in document control and may be included in the Administrative Record depending on their content. Project management or technical support personnel will determine appropriate correspondence to include.



“Maintaining an accurate and up-to-date project file is an important task in any NEPA study, regardless of whether litigation is anticipated.”

AASHTO Practitioner’s Handbook 01 Maintaining a Project File and Preparing an Administrative Record for a NEPA Study



Draft reports should be labeled draft and include “Working Draft - Do Not Cite or Distribute” in the header or footer.



- Correspondence between FHWA and CDOT. Important issues related to final FHWA decisions will be resolved by letter. Emails between FHWA and CDOT will be included in document control and may be included in the Administrative Record depending on their content. Project management or technical support personnel will determine appropriate correspondence to include.
 - Correspondence among CDOT, FHWA, and other agencies.
 - All reports, data, and memoranda that were prepared to provide detail to supplement information presented in the NEPA document.
 - All documents related to internal processes that lead to a decision or a change in direction for the project.
 - NEPA documents and any amendments or supplements.
- ▶ When documents are sent to the Project Manager or their designee, project team members must give these documents designations in keeping with the Document Filing Codes (**Table 3-1**). For example, members must consider which documents were used as a resource to conduct analyses, create mapping, etc. The Project Manager or their designee will decide whether the document will be allocated to the Administrative Record.
- ▶ All emails relating to the process or the project that are determined to be non-substantive by individual contributors are to be saved in separate folders labeled “emails.” Then on a weekly or monthly basis individual contributors import all of these stored emails. This process is necessary because some emails will be subject to requests made under the Colorado Open Records Act, even if they are not part of document control or the Administrative Record.
- ▶ All documents that project staff consider as confidential, or that a third party has asked to keep confidential, such as locations of certain cultural resources, should be marked “CONFIDENTIAL” and kept in a separate file. The team is required by law to produce a “Vaughn” list regarding those documents. A Vaughn list includes the type of document, the date of the document, who prepared the document, a brief description of the subject matter or the document’s contents, who has received copies of the document, and the grounds for claiming that the document is confidential.



“The project file allows the project team to locate important documents quickly, which reduces inefficiency and duplication of effort, while also reducing the risk of overlooking information. The project file also enables an agency to respond to document requests under the Freedom of Information Act (FOIA) and similar State public records laws.”

AASHTO Practitioner’s Handbook 01 Maintaining a Project File and Preparing an Administrative Record for a NEPA Study



“Poor organization and format are frequent criticisms of NEPA documents. Organization and format should help the reader easily understand document content.”

NCHRP 25-25(01)



3.2 Format for Titles of Electronic Files

Documentation related to NEPA projects includes letters, memoranda, facsimiles, phone logs, electronic mail, transmittal letters, meeting agendas, meeting minutes, technical reports, and NEPA process documents. Table 3-1 provides suggested protocols for the naming of electronic files.

Table 3-1 Format for Titles of Electronic Files

Document Type	Formatting	Example
Letters	LTR - Subject-Author-Date	LTR - Water quality SJS 040404.doc
Reports	RPT - Subject Author Rev Date	RPT - Draft EIS TA 040404.doc
Memo	MEM - Subject Author Date	MEM - Open House 2 HM 050104
Facsimile	FAX - From-Subject Date	FAX - VH Open house 050104
Email	EMA - From Subject Date	EMA - Sub-Consultant Agreement 050104
Drawing	DWG - name-date	DWG-Alternative 1-060907
Presentation	PPT - Subject date rev	PPT - Small Grps 050104 Rev 2
Agenda	AG- Title Date	AG- TAC 070604.
Meeting Minutes	MM- Title date	MM- PM 061004
Agreements	AGM - Company Date	AGM - FHU 061004
Directories	DIR - Title Date	TAC - Member Directory 061004
Small Groups	SMG - Group Date	SMG - Ft. Collins Chamber 040104
News Releases	NEW - Title Date	NEW - New Highway 010404
Public Open Houses	OPN - Description Date	OPN - Comments Sheet 061004
Purpose & Need	PAN - Description Date Rev	PAN - Draft 060404 Rev 4

3.3 Audit

To verify that the QA/QC plan has been followed, it is recommended that a third-party not involved in the project conduct an audit of the project. The objective of the audit is to identify strengths and weaknesses in the QA/QC plan and to develop protocols to improve the QA process. The project audit should verify that the QA/QC plan was followed, review documentation maintained by the designated QA Manager, and provide recommendations to improve QA.

3.4 Open Records Request

All of the documents discussed in **Section 3.2**, including personal notes and emails are subject to the Colorado Open Records Act and/or Freedom of Information Act (FOIA). If a records request is made, CDOT and the entire project team may be required by law to respond to the request within 72 hours. Therefore, it is important that all team members stay current on sending a copy of all documents related to the project and the NEPA process to the Project Manager or their designee. Implementation of a QA/QC plan should facilitate requests under the Colorado Open Records Act and/or FOIA.

All requests for information under the Colorado Open Records Request Act and/or FOIA are to be processed in the following manner:

- ▶ The request is sent to the CDOT Project Manager and to the CDOT Legal Assistant, with no action taken by the project team unless directed by them or their designee.
- ▶ Once directed, the project team develops an estimate of the cost to provide the requested information.
- ▶ Once CDOT receives the funds from the requesting party to cover the cost of providing the information, the project team prepares the information and a copy of it for CDOT records.
- ▶ The project team also develops a complete listing of the information provided and gives that list to CDOT.
- ▶ The project team keeps track of all costs associated with the production of the information and provides a full accounting of the costs along with the information



“CDOT will support and enhance efforts to protect the environment and quality of life for all of Colorado’s citizens in the pursuit of providing the best transportation systems and services possible.”

CDOT’s Environmental Ethics Statement



Colorado Open Records Act.
24 Colorado Revised Statutes (CRS) § 72

Freedom of Information Act.
5 United States Code (USC) § 552

4. Quality Assurance Process

A QA/QC plan provides a means to identify and correct errors and omissions before the NEPA documentation is provided to the public and other agencies for review. The project's size and complexity will determine the detail required of the plan. For simple projects, the plan may be only a few sentences outlining the required reviews, individuals to conduct the reviews, and the review milestones. The following section provides an example of a QA process for NEPA documents.

4.1 NEPA Document Review Quality Assurance Process

Sound QA procedures dictate that reports and other important documents are reviewed by someone other than the author. An example process to be followed for NEPA documents is as follows and shown on **Figure 4-1**.

Step 1# - Draft Review

- ▶ The Resource Specialist (author) prepares the technical reports/memoranda.
- ▶ The Technical Editor, Environmental/Public Involvement Task Lead, and/or peer review the report and return comments to the Resource Specialist (author).
- ▶ The Resource Specialist responds to comments received.

Step #2 – Final Review

- ▶ The Environmental/Public Involvement Task Lead verifies that comments have been responded to and conducts a final review of the document.

Step #3 – Report Submittal

- ▶ The Environmental/Public Involvement Task Lead or the Project Manager submits the document to FHWA and CDOT staff for review and approval

QA Manager Process Oversight

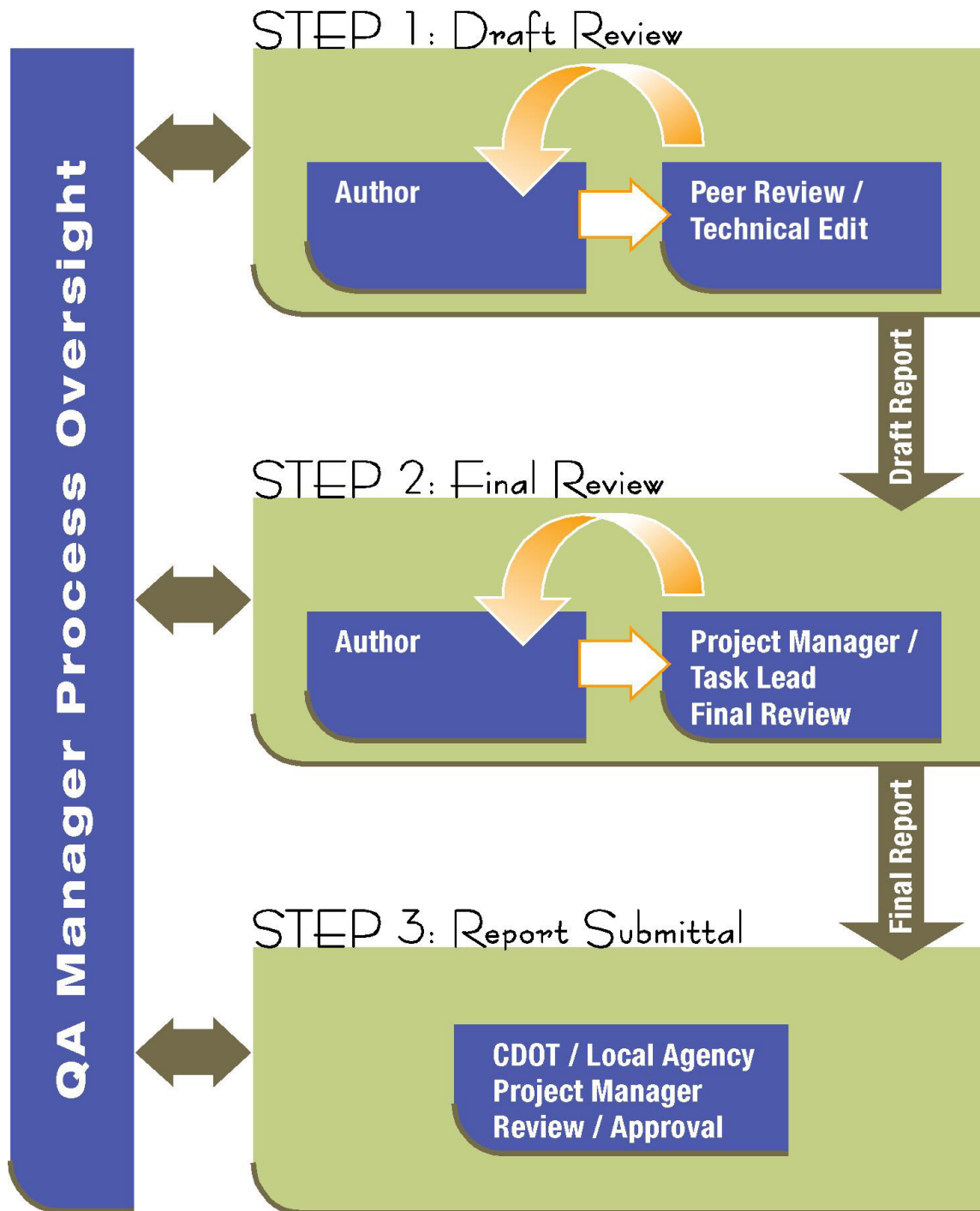
- ▶ Maintain and ensure product quality during preparation of the NEPA documents
- ▶ Track when and how technical reviews have occurred
- ▶ Ensure that QC processes have been followed
- ▶ Provide verification to Project Manager that QC processes have been followed, such as a hard copy with suggested changes



No matter how well a NEPA project is managed, some mistakes and omissions will occur.



Figure 4-1 Quality Assurance Process



5. Summary

A QA/QC plan shall be prepared for each NEPA project and will cover all QA/QC activities that will be implemented for work on the project. The project's size and complexity will determine the detail required of the plan. This QA/QC guidance for NEPA documents is designed to provide a functional and easily understood set of guidelines to maintain and ensure quality during the preparation of NEPA documents and outline potential components of a project-specific QA/QC plan.



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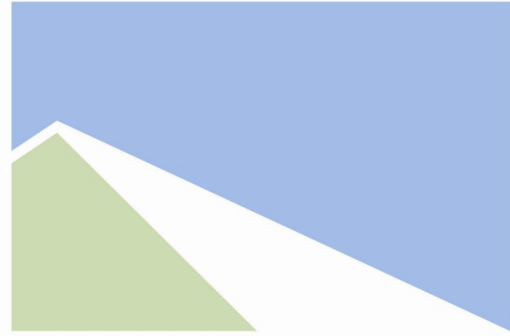


Attachment 1 North I-25 EIS Quality Assurance Program Table of Contents



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NORTH I-25 EIS



information. cooperation. transportation.

QUALITY ASSURANCE PROGRAM

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October 23, 2007
FHU Reference No. 07-190

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Attachment 2

Quality Assurance/Quality Control Plan for the North Meadows Extension to US 85 and I-25 Environmental Assessment



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Quality Assurance/Quality Control Plan for the North Meadows Extension to US 85 and I-25

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