HYDRAULIC MODELING REPORT GUIDE *These items should be included in the written report as applicable*

Requirements	Description
General	
1. Report Cover/Title Page	
Project Title	
Applicant	
Engineer (include P.E. Stamp)	
Submittal Date or Revision Date	
2. Table of Contents	
Project Description	
1. Purpose	Describe the purpose of the project
2. Site Description	Provide a detailed description of the project site including location map
3. Project Participants	List requestors/stakeholders
4. Special Considerations	Describe special requirements pertinent to the project
Background	
1. Flood Source	Identifythe flooding source
2. Flood History	Describe the background of the flooding source and any pertinent history
3. Previous Studies	List previous studies (including CLOMR/LOMRs which impact the project reach)
Study Limits	
1. Impacted Effective Studies	List FIRM panels, flood zones, County-regulated floodway as applicable
2. Upstream and Downstream Limits	Description of the upstream and downstream limits of the model by effective study cross section number
Survey and Topographic Data	
1. Datum	Describe the horizontal and vertical datum used for the project
2. Topographic Data	Provide the source of topographic data
3. Survey Data	Provide the source of survey data
Hydrology	
1. Discharges	Describe the flood discharges used in the hydraulic analysis
Hydraulics	
1. Hydraulic Model Description	
Applicable Models	Identify the hydraulic models applicable for the analysis (duplicate effective, corrected effective, existing condition, proposed condition, pre-flood condition)
Model Descriptions	Define each applicable model and specify what information is included (e.g., pre-flood condition, immediate post-flood condition, emergency repair, proposed work)

2. Modeling Software	Provide a description of the hydraulic modeling software system including version (e.g. HEC-RAS 4.1.0)
3. Cross Sections	
Overview Map	Provide a map showing cross-sections contained in the model (with station number labeled)
Flood Impact	Explain any ground elevation change caused by flood or emergency repair work
Changes to Effective Model (as applicable)	Explain any technical correction to the effective cross sections (stationing, cross-section lengths, cross-section added or removed)
4. Tie-Ins	Describe how water surface elevations tie into existing conditions or effective conditions
5. Roughness Coefficients	
Determination of Roughness Coefficients	Discuss manning's n-value used in each model
6. Structure (as applicable)	
Pre-Flood Structure	Specify the parameters of the pre-flood structure and source of reference
Existing Structure	Specify the parameters of the existing structure and source of reference
Proposed Structure	Specify the parameters of the proposed structure
Modeling Method	Describe low flow and high flow methods used in the analysis
Model Parameters	Specify parameters used at structures
7. Boundary Conditions	Describe upstream/downstream boundary conditions in each model
8. Floodway Revisions (as applicable)	Describe methods used for floodway analysis
9. Summary of Hydraulic Models	A brief summary of all the models including differences in topographic and survey data, cross section placement, and hydraulic parameters.
Scour evaluations (as applicable)	
1. Design Standard	Discuss the flood frequency used for scour analysis
2. Scour Calculations	
Lateral Stream Migration	Discuss the lateral stream migration trends
Long-Term Aggradation/Degradation	Discuss the long-term aggradational/degradational trends
Contraction Scour	Calculate contraction scour
Local Scour - Piers	Calculate pier scour
Local Scour - Abutments	Calculate abutment scour
3. Scour Mitigation	Discuss scour countermeasures
Discussion of results	
1. Hydraulics	Provide a table comparing water surface elevation from the effective, duplicate effective, corrected effective, existing conditions, proposed conditions, pre-flood conditions (as applicable)
2. Floodway (as applicable)	Describe any anticipated impacts to the floodway
3. Impacts	Discuss any impact to structures and upstream/downstream property

4. Regulation Compliance	Discuss applicable sections and adherence to NFIP regulations, Boulder County Land Use Code, Boulder County Storm Drainage Criteria Manual, and Boulder County Multimodal Transportaion Standards
HEC-RAS Modeling Files	
1. File Naming	HEC-RAS plans should be named the following: Existing Conditions, Proposed Conditions, Pre-Flood Conditions, Effective Conditions
References	
1. List of references materials	