



**SOUTHEAST METRO STORMWATER AUTHORITY (SEMSWA)
FLOODPLAIN MODIFICATION STUDY
& CONDITIONAL LETTER OF MAP REVISION
REPORT REQUIREMENTS CHECKLIST**

This checklist is to be used for all Floodplain Modification Study (FMS) and Conditional Letter of Map Revision (CLOMR) submittals in SEMSWA's jurisdiction. Refer to separate checklists for Drainage Reports (Phase I, II, and III), Letter of Map Revision (LOMR), and As-Built submittals. This checklist provides a detailed outline of the information required for FMS and CLOMR submittals; only submit information from each section as applicable to your project. If you have any questions about the requirements listed, or specific to your project, please contact SEMSWA.

SEMSWA Case
Number: _____

City/County
Case Number: _____

Case
Name: _____

Submittal
Date: _____

SUBMITTALS

SEMSWA prefers electronic submittals during the review process, as outlined in their Electronic (paperless) Review Submittal Requirements (available upon request). **For a CLOMR, provide all revisions made subsequent to SEMSWA approval (i.e., when additional data has been submitted in response to an AD letter from FEMA). For a FMS, provide the as-built floodplain delineations and hydraulic models after construction is completed to supplement the Flood Hazard Area Delineation (FHAD).**

A. Draft Submittal

Ye s	No	N/A	Requirement
			1. Include MT-2 application forms for a CLOMR for projects that cause impacts in FEMA floodplains. (See Note 3 at the end of this checklist for more information on impacts; see Section L. Appendices for MT-2 form details.)
			2. Include the SEMSWA Application for Review (SEMSWA_ApplicationforReview.pdf)
			3. Include the SEMSWA Review Fee (http://www.semswa.org/review-permit-fees.aspx)
			4. Submit all files on CD/DVD, thumb drive, or through a file-sharing website.
			5. For CLOMRs, the draft may be submitted with or without ESA compliance information (See Section L. Appendices, Item 3.)

B. Final FMS Submittal

			1. All submittal requirements listed in the Floodplain Modification Memorandum of Approval that SEMSWA sends out when the draft submittal is ready for approval.
			2. Include the SEMSWA Application for Review (SEMSWA_ApplicationforReview.pdf)
			3. Submit all files on CD/DVD, thumb drive, or through a file-sharing website.

C. Final CLOMR Submittal

			1. All submittal requirements listed in the Floodplain Modification Memorandum of Approval that SEMSWA sends out when the draft submittal is ready for approval.
			2. Include the SEMSWA Application for Review (SEMSWA_ApplicationforReview.pdf)

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			3. Include finalized MT-2 application forms signed and stamped by the Engineer of Record and the Requestor. The final submittal must include a copy of Form 1 signed by each affected community. (See Section L. Appendices for MT-2 form details.)
			4. Must include ESA compliance information (See Section L. Appendices, Item 3.)
			5. Submit all files on CD/DVD, thumb drive, or through a file-sharing website.

D. Final CLOMR Submittal – FEMA/UDFCD (Consultant may submit online to FEMA or electronically to UDFCD; see UDFCD submittal requirements at: [LOMC_Submittals_Update-06-17-2015.pdf](#))

			Consultant to submit FEMA review fee, except for CIP projects. (Verify the correct fee on FEMA's website at: https://www.fema.gov/flood-map-related-fees . Obtain fee from project owner/developer.) For CIP projects, the fee may come from SEMSWA, City, County, or be paid by consultant as negotiated in the approved scope of work for the project. Verify the requirement with SEMSWA.
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REPORT REQUIREMENTS

A. Title Page

Ye s	No	N/A	Requirement
			1. Name of project and location
			2. Property owner and property jurisdiction
			3. Developer/project owner
			4. Engineer of Record
			5. Submittal date and revision dates, as applicable

B. Certification Statement

			Include a Certification Statement page, signed and stamped by the responsible Professional Engineer, registered in the State of Colorado. (Template at Engineers Floodplain Certification Statement)
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C. Project Information

1. Project Description

			A. Describe the purpose of the request
			B. List project stakeholders and/or requestors
			C. Affected jurisdictions and districts
			D. Background and previous projects
			E. Provide a detailed description of the project site, including major/minor drainageways and any known flooding history
			F. Provide a detailed description of the elements of the proposed project (e.g., fill, channelization, structures, bank stabilization, etc.)

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			G. Include a project vicinity/location map
			H. Describe special requirements or considerations pertinent to the project

2. Floodplain

			A. <i>Unmapped Floodplain</i> – Summarize resources and methodology used for delineation of the floodplain.
			B. <i>Mapped Floodplain</i> – Discuss the source of the floodplain information and level of detail:
			- UDFCD Flood Hazard Area Delineation (FHAD) Report, Development Plan, etc. AND/OR
			- Flood Insurance Rate Map (FIRM)
			C. Summarize proposed floodplain modifications, including level of encroachment, velocities, depths, stabilization measures, water surface elevations, etc.

3. Study Limits

			Upstream and downstream tie-in locations
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D. Analysis Criteria

1. Regulations

			A. County and/or City criteria, when applicable
			- Floodplain Development Permit requirements
			- Floodplain Modification Study requirements
			- Conditional Letter of Map Revision (CLOMR) requirements
			B. UDFCD criteria and optional provisions, when applicable
			C. CWCB criteria, when applicable
			D. FEMA criteria, when applicable
			E. Other criteria (e.g., CDOT, etc.)

2. Drainage Studies, Master Plans, Site Constraints

			A. Discuss previous drainage studies or master plans for the site or project that influence the site design and/or floodplain analysis.
			B. Discuss floodplain impacts from adjacent developments and the effects on the project design and/or floodplain analysis.
Yes	No	N/A	Requirement
			C. Discuss UDFCD Outfall Systems Plans, Master Drainageway Plans, and/or Stabilization Plans and how recommendations in those studies affect the site design and/or floodplain analysis.
			D. Discuss impacts to the project and the floodplain analysis caused by constraints such as streets, utilities, light rail rapid transit, existing structures, existing canals/ditches, etc.

3. Additional Permitting Requirements

			A. Compliance with Section 404 of the Clean Water Act (e.g., USACE 404 Permit)
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			B. Grading, Erosion, and Sediment Control (GESCC)
			C. UDFCD Maintenance Eligibility Review
			D. Compliance with the Endangered Species Act (See Section L. Appendices, Item 3 for more information)
			E. Other local, state, or federal requirements, including but not limited to:
			- South Suburban Parks and Recreation District
			- State Dewatering Permit
			- Right of Way Permit

E. Topographic Mapping Discussion

1. Existing Data

			A. Discuss source
			B. Discuss contour interval
			C. Describe any benchmarks used for survey
			D. Discuss vertical and horizontal datum (All mapping and elevations must be reported in NAVD88 and NAD83 . If the original source data are not in these datums, they must be converted. See Item E.3 for reporting of vertical datum conversion, if needed.)
			E. Discuss coordinate projection system (e.g., State Plane, UTM, Modified State Plane, etc.)
			F. If a modified, truncated, or local projection system is used, discuss the source of the projection system
			G. Provide equation(s) for conversion to SEMSWA' s standard projection (NAD_1983_StatePlane_Colorado_Central_FIPS_0502_Feet), as needed

2. Proposed Topography/Grading

Discuss any differences from existing data listed above.

3. Vertical Datum Conversion, as applicable

			A. Discuss source (Only Vertcon or Corpscon are accepted.)
			B. Provide equation defining conversion (e.g., NGVD29 + X.XX = NAVD88.)

F. Hydrology

1. FEMA FIS Flows (if using FEMA flows)

			A. Discuss source of flows from FIS report
			B. Provide table summarizing FEMA FIS flows

2. Peak Flows (from UDFCD MDP, FHAD, or Outfall Systems Plan)

			A. Discuss source of peak flows used
			B. Design storm recurrence intervals

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3. Hydrologic Analysis, if applicable (i.e., hydrology is new or changed from published values)

			A. On-site and off-site major drainage basin characteristics and flow patterns and paths
			B. Existing and proposed land uses within the basins
			C. Calculation method(s), including version/build (e.g., CUHP 2005, EPASWMM 5.0 Build 5.0.022, HEC-HMS 3.5)
			D. Design rainfall
			E. Input parameters
			F. Provide summary output table

G. Hydraulics

1. Analysis Method

Yes	No	N/A	Requirement
			A. Describe analysis method used, including version (e.g., HEC-RAS 5.0.3)
			B. Discuss specific application of method for study (e.g., steady-state, subcritical flow)
			C. Describe models submitted:
			- Duplicate Effective (required)
			- Corrected Effective, as applicable
			- Existing Conditions, as applicable
			- Proposed Conditions (required)

2. Input Parameters

			A. Discuss boundary conditions
			B. Discuss Manning's roughness coefficients (n values)
			C. Discuss contraction/expansion coefficients
			D. Discuss structures (bridges/culverts, weirs, etc.) and flow controls (ineffective flow areas, levee points, etc.)
			E. Discuss any elements within the models that may vary from standard modeling practices (e.g., flow regime, coefficients, bridge modeling methods, etc.) and explain why the variation is appropriate.
			F. Provide a table correlating stream stationing and cross section ID, as applicable. (If cross section ID is not based on stream stationing, or if stationing is not consistent between submitted models (e.g., for a channel modification project), correlate the cross section ID and/or stream stationing between all models submitted, and if necessary, the effective floodplain mapping.)

3. 0.5-Foot Floodway Analysis, as applicable (If there is an existing floodway determined, a floodway model must be submitted even if the analysis shows the floodway to be coincident with the 100-year floodplain).

			A. Discuss encroachment method(s) used
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			B. Describe any modifications to the floodway encroachment analysis as compared to the effective floodway encroachment analysis.
			C. Describe any variances from surcharge criteria (0.50 ft. \geq surcharge criteria \geq 0.00 ft.). Address any negative surcharges, etc.
			D. Provide a Floodway Data Table summarizing floodway data by cross section, including:
			- Water surface elevations
			- Floodway top width (Calculate from floodway encroachment stations; do not use HEC-RAS output.)
			- Flow area
			- Velocity
			- Computed surcharge

4. Results

			A. Discuss floodplain impacts from the proposed project (compared to effective and existing conditions)
			B. Provide summary output tables for each submitted model, including:
			- 100- and 500-year analyses (required at a minimum)
			- Multiple Profile analysis (10-, 50-, 100-, & 500-year events, i.e., the same profiles as shown in the effective FIS)
			- 0.5-Foot Floodway analysis, as applicable
			C. Provide an overall comparison table. (Include quantitative comparisons of the following data from each submitted model. Include all cross section locations from each submitted analysis. Interpolate as needed to provide comparison values at every location. Indicate interpolated values with shading, bold text, or some other means. See template at Hydraulic Comparison Table .)
			- Water surface elevations
			- Floodplain top width
			- Velocity
			- Hydraulic Depth (Channel)

H. Sediment Transport & Fluvial Morphology (Only if applicable. CLOMRs require an explanation as to why, if not applicable.)

1. Analysis Method

			A. Describe analysis method used, including version (e.g., HEC-RAS 5.0.3)
			B. Discuss specific application of method for study
Yes	No	N/A	Requirement
			C. Describe models submitted:
			- Existing Conditions

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- Proposed Conditions

2. Input Parameters

- A. Discuss analysis inputs
- B. Provide a table summarizing input data

3. Results

- A. Discuss impacts due to proposed project (compared to existing conditions)
- B. Provide summary output tables for each submitted model

I. Floodplain Mapping

1. Existing Conditions Mapping

- A. Describe method used to delineate floodplain and/or floodway boundaries
- B. Describe any changes in floodplain and/or floodway boundaries shown on the map as compared to effective and corrected effective boundaries, as applicable

2. Proposed Conditions Mapping

- A. Describe method used to delineate floodplain and/or floodway boundaries, if different from method used for Existing Conditions
- B. Describe any changes in floodplain and/or floodway boundaries shown on the map as compared to existing conditions and effective boundaries, as applicable

J. Conclusions

1. Compliance with Standards

- A. Arapahoe County and/or City of Centennial criteria
- B. UDFCD criteria
- C. CWCB criteria, as applicable
- D. NFIP Regulatory Requirements (See details on MT-2 Form 2)
 - Compliance with Section 65.12 of the NFIP regulations
 - Certification re: local ordinances and reasonably safe from flooding
 - Potential for impact on endangered species
- E. Master Drainage Plans

2. Variances to Floodplain Criteria, if applicable

- A. Identify provisions by City or County code section number for which a variance will be requested or has been approved by SEMSWA, or the City or County
- B. Provide justification for each variance requested

3. Impacts to Adjacent Properties

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			<p>A. Discuss any potential impacts to adjacent properties (For CLOMRs, impacts are determined by comparing the Proposed Conditions model with the Existing Conditions model. See Note 3 for definition of "impact." However, property owner notification letters must include information regarding impacts vs. both existing conditions and effective models.)</p>
			<p>B. Discuss measures proposed to mitigate potential impacts, if applicable</p>
			<p>C. For CLOMRs, discuss impact notification requirements and compliance therewith (See Section L. Item 2.D.)</p>

K. References

Include reference citations for all criteria, master drainage plans, reports, or other technical information used in development of the concepts discussed in the study report

L. Appendices (Include a descriptive file name on all model files, and include a description within the model files.)

1. Appendix A – Photos

Project Area Photos

2. Appendix B – FEMA MT-2 Application Forms, as applicable (also refer to the FEMA MT-2 instructions)

Yes	No	N/A	Requirement
			<p>A. Provide a copy of Form 1 for every jurisdiction impacted by the change in flood hazard, including all impacted jurisdictions outside of SEMSWA's boundary, such as Aurora, Denver, and/or Douglas County. (Every impacted community needs to sign a copy of Form 1. Requestor and Engineer of Record signatures should be completed. The Requestor should be the primary point-of-contact for the project who receives project correspondence. This can be the project owner, developer, consultant, etc. This may be the SEMSWA Project Manager for SEMSWA CIP projects.)</p>
			<p>B. Complete Section D (Common Regulatory Requirements) of Form 2.</p>
			<p>C. Forms 3-6, as applicable. (Provide only those forms that apply to the project. For Form 3, only provide those pages of the form that are applicable to the project, e.g., there is no need to submit the levee forms if the project does not include levees. If the project includes a dam/detention basin, include a copy of the Operation and Maintenance Plan. Refer to the FEMA Instructions for MT-2 Forms for more information.)</p>
			<p>D. Copies of Impact Notification Letters sent to each property owner impacted by the modified floodplain/floodway or a sample letter and a list of affected property owners, listed by parcel number. (See the MT-2 Instructions for letter requirements and templates. SEMSWA prefers not to provide notification through newspaper notices. SEMSWA prefers that each property owner be provided individual notification for all impacts (i.e., both floodplain and floodway) in a single letter. Include a property-specific map showing the impacts. Submit the letters to SEMSWA for review with draft submittal. For CIP projects, the consultant will prepare the letters for signature by the SEMSWA Floodplain Manager, and SEMSWA will send via certified mail. For non-CIP projects, the consultant or project owner should sign and mail the letters, and SEMSWA must be shown as copied on the correspondence. Include digital copies (PDFs) of the executed letters in the final submittal to FEMA/UDFCD.)</p>
			<p>E. Certification of Impact Notification. (The consultant's responsible professional engineer must provide certification that all impacted property owners have been individually notified of the impacts to their properties. For projects in the FEMA regulatory floodway, this certification will be signed by SEMSWA and must include certification that no structures are impacted.)</p>

3. Appendix C – Endangered Species Act (ESA) Compliance for CLOMRs (See [Endangered Species Act \(ESA\) Compliance for Conditional Letters of Map Change](#) and FEMA Guidance on documentation at: [ESA_Guidance_May_2016.pdf](#). Submit one of the following documents, as applicable. Also include materials submitted to USACE/USFWS.)

			<p>A. For projects that involve federal construction, funding, or permitting (e.g., a USACE 404 permit):</p> <ul style="list-style-type: none"> - A "No Effect" determination made by, or concurred by, USFWS or USACE
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			- A “Not Likely to Adversely Affect” determination with concurrence from USFWS
			- A biological opinion with a “no jeopardy” determination or with accepted reasonable and prudent alternatives
			- A copy of a federally issued permit (e.g., USACE 404 permit) with justification that the proposed development for which a CLOMR is sought is covered by the permit
			B. For projects that do not involve any federal agencies, the requester must document that:
			- No potential for “Take” exists to threatened and endangered species. The requester will be responsible for the potential for take determination and the determination is not required to come from, or be concurred by, USFWS
			- If the requester determines a “Take” will or has potential to occur, they can contact USFWS to discuss potential project revisions to eliminate the “Take”
			- If neither of the above are possible and the project has the potential to “Take” listed species, an Incidental Take Permit may be submitted showing the project is the subject, or is covered by the subject, of the permit

4. Appendix D – Effective Floodplain Information

			A. Effective Map (FIRM or FHAD)
			B. FIS Report information, as applicable
			- Summary of Discharges Table
			- Floodway Data Table
			- Profile

5. Appendix E – Hydrologic Reference Data (if using published flows from a FHAD or Master Drainage Plan, or other non-FIS source, etc.) OR Hydrologic Computations (if submitting new analysis) (Include a descriptive file name on all model files, and include a description within the model files.)

			A. If using published flows from a FHAD, Master Drainage Plan, etc., submit the following:
Yes	No	N/A	Requirement
			- Copies of the applicable tables, graphs, and profiles.
			- Electronic copies of the applicable analyses (CUHP, SWMM, etc.)
			B. If submitting new analysis, provide the following:
			- Determination of runoff coefficients and times of concentration
			- Land use assumptions for off-site areas
			- Other input parameter determinations (curve numbers, routing elements, etc.)
			- Peak flow rate calculations
			- Rainfall information
			- Model input and output (electronic copies of any executable files needed to run the model, input and output files in PDF format)

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			- Hydrograph data, if applicable
			- Connectivity diagram showing relationship/connectivity of basins, conveyance facilities, detention ponds, and design points
			- Basin Map, including design point summary

6. Appendix F – Hydraulic Computations (Provide information for all models submitted. Include a descriptive file name on all model files, and include a description within the model files.)

			A. Manning's n determination, if applicable
			B. Executable electronic files for all submitted models
			C. Cross section and profile outputs (graphs), with water surface elevations, for all submitted models

7. Appendix G – Plans & Work Maps (See Exhibits Checklist for details.)

			A. Design and grading plans for proposed project
			B. Overall drainage plan, as applicable
			C. Comparison work map, showing effective, existing, and proposed conditions (Required)
			D. Existing Conditions Floodplain work map (If needed to provide a clear understanding of impacts, e.g., when there are Effective, Corrected Effective, and Existing Conditions models.)
			E. Provide completed mapping agreement table for each map submitted. (See sample table in UDFCD DLOMC Guidelines, and find Excel templates at http://udfcd.org/services/floodplain-mapping/)
			F. Water surface elevation profiles for all submitted models
			G. Annotated FIRM
			H. Annotated Profile
			I. Annotated Floodway Data Table

8. Appendix H – Referenced Information

			Copies of pertinent portions of all referenced materials, if not already included in the appendices.
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Notes:

1. Floodplain Modification Study reports may be stand-alone documents, or they may be incorporated into other submittals, such as Drainage and/or Design Reports.
2. SEMSWA, the City, and County require a CLOMR submittal for any project that impacts a FEMA-designated floodplain (Special Flood Hazard Area) unless it can be demonstrated, through technical analysis, that there is no impact to the floodplain from the proposed project. (See SEMSWA Manual and County Manual)
3. An impact to the floodplain is defined as:
 - a. An increase in the 100-year water surface elevation (BFE). An increase in BFE is any increase (i.e., any rise over 0.00 ft.).
 - b. An increase in width and/or shift of the floodplain boundary.
4. Decreases in BFE are considered impacts if they are equal to or greater than 0.3 ft., as provided for in the Colorado State Floodplain Regulations.
5. There is no distinction in the level of analysis and/or submittal requirements for projects that are proposed in:
 - a. A floodplain with no defined floodway
 - b. A floodplain with a defined floodway
 - c. The floodplain fringe
 - d. Unmapped floodplains



FMS & CLOMR REPORT CHECKLIST

SEMSWA Case Number:



**SOUTHEAST METRO STORMWATER AUTHORITY (SEMSWA)
FLOODPLAIN MODIFICATION STUDY
& CONDITIONAL LETTER OF MAP REVISION
EXHIBIT REQUIREMENTS CHECKLIST**

This checklist is to be used to prepare exhibits for all Floodplain Modification Study (FMS) and Conditional Letter of Map Revision (CLOMR) submittals in SEMSWA's jurisdiction. Refer to separate checklists for Drainage Report, Letter of Map Revision (LOMR), and As-Built exhibits. This checklist provides a detailed outline of the information required for FMS and CLOMR exhibits; only submit information from each section as applicable to your project. Submitted plans must follow the requirements listed in the Land Development Plan Checklist, which is available upon request. If you have any questions about the requirements listed, or specific to your project, please contact SEMSWA.

SEMSWA Case Number: _____

City/County Case Number: _____

Case Name: _____

Submittal Date: _____

EXHIBIT REQUIREMENTS

General Requirements for All Plans and Work Maps

Yes	No	N/A	Requirement
			1. 24" x 36" in size for SEMSWA, 22" x 34" for the County (22" x 34" also acceptable for SEMSWA when half size sets will be produced)
			2. Title block, legend, submittal date, and revisions, if applicable
			3. Engineer's Certification Statement, signed & stamped (Template at Engineers Floodplain Certification Statement)

A. Drainage Plan (Only if submitting new hydrology.)

			1. Show boundaries of entire development or project
			2. Existing or proposed streets, roadways, or highways
			3. Show limits of all major basins, including off-site basins where feasible
			4. Jurisdictional boundaries (Required)
			5. Topographic information
			6. Overlay or figure showing layout of Project Plan sheets

B. Project Grading Plans

			1. Basin designations, design points, flow rates, volumes, release rates, consistent with City and/or County standards (Only if submitting new hydrology.)
			2. Scale 1" = 20' to 1" = 100', as required to show sufficient detail
			3. Vertical datum (e.g., NAVD88)
			4. Horizontal datum and spatial projection (e.g., NAD83 and State Plane)
			5. Date of aerial photography or survey

			6. Existing (dashed or screened) and proposed (solid) contours with a maximum contour interval of 2 feet. In terrain where the slope exceeds 15%, the maximum interval is 5 feet. Contours must extend a minimum of 100 feet beyond property lines. Include contour labels.
			7. Existing utilities and structures
			8. All jurisdictional and property boundaries and easements with type of easements noted
			9. Adjacent developments or ownerships
			10. Location and elevation of all existing and proposed 100-year floodplain boundaries, including the source of designation. All floodplain designations that exist for the site should be included, i.e., FEMA FIS/FIRM, FHAD, and others.
			11. Summary Discharge Table, shown on the applicable plan sheet (Only if submitting new hydrology.)

C. Comparison Floodplain Work Map (Required) MUST be submitted electronically as shapefiles or geodatabase.

1. Page Setup and Title Block

			A. Scale 1" = 20' to 1" = 100', as required to show sufficient detail
			B. Vertical datum (e.g., NAVD88)
Yes	No	N/A	Requirement
			C. Horizontal datum and spatial projection (e.g., NAD83 and State Plane)
			D. Date of aerial photography or survey

2. Reference Data

			A. Existing (dashed or screened) and proposed (solid) contours with a maximum contour interval of 2 feet. In terrain where the slope exceeds 15%, the maximum interval is 5 feet. Contours must extend a minimum of 100 feet beyond property lines. Include contour labels.
			B. Jurisdictional boundaries
			C. Stream centerlines and stationing
			D. Existing or proposed streets, roadways, or highways
			E. Existing utilities and structures
			F. All property boundaries and easements (right-of-way) with type of easements noted
			G. Adjacent developments or ownerships

3. Floodplain Data. (Include the source of each set of boundaries. The Corrected Effective or Existing Conditions, and Proposed Conditions boundaries must extend upstream and downstream of all modifications to cross sections where an acceptable vertical tie-in to the Effective boundaries of ≤0.5 ft. may be achieved.)

			A. Existing Conditions OR Corrected Effective OR Effective 100-year floodplain boundaries (Whichever reflects the final model prepared prior to including the proposed project.)
			B. Existing Conditions OR Corrected Effective OR Effective 500-year floodplain boundaries, as applicable (Whichever reflects the final model prepared prior to including the proposed project.)

			C. Existing Conditions OR Corrected Effective OR Effective 0.5-foot floodway boundaries, as applicable (Whichever reflects the final model prepared prior to including the proposed project.)
			D. Proposed Conditions 100-year floodplain boundaries
			E. Proposed Conditions 500-year floodplain boundaries
			F. Proposed Conditions 0.5-foot floodway boundaries, as applicable
			G. Cross section location and alignment, including ID and station
			H. Base (100-year) water surface elevations, on a whole-foot interval
			I. Upstream and downstream tie-in locations

D. Existing Conditions Floodplain Work Map (If needed to provide a clear understanding of impacts, e.g., when there are Effective, Corrected Effective, and Existing Conditions models.) **MUST be submitted electronically as shapefiles or geodatabase.**

1. Page Setup and Title Block

			A. Scale 1" = 20' to 1" = 100', as required to show sufficient detail
			B. Vertical datum (e.g., NAVD88)
			C. Horizontal datum and spatial projection (e.g., NAD83 and State Plane)
			D. Date of aerial photography or survey

2. Reference Data

			A. Existing (solid) contours with a maximum contour interval of 2 feet. In terrain where the slope exceeds 15%, the maximum interval is 5 feet. Contours must extend a minimum of 100 feet beyond property lines. Include contour labels.
			B. Jurisdictional boundaries
			C. Stream centerlines and stationing
			D. Existing or proposed streets, roadways, or highways
			E. Existing utilities and structures
			F. All property boundaries and easements (right-of-way) with type of easements noted
			G. Adjacent developments or ownerships

3. Floodplain Data. (Include the source of each set of boundaries. All floodplain boundaries that exist for the project area should be included, i.e., FIRM, FHAD, and others. The Corrected Effective and Existing Conditions boundaries must extend upstream and downstream of all modifications to cross sections where an acceptable vertical tie-in to the Effective boundaries of ≤0.5 ft. may be achieved.)

			A. Effective 100-year floodplain boundaries
			B. Effective 500-year floodplain boundaries, as applicable
			C. Effective 0.5-foot floodway boundaries, as applicable
Yes	No	N/A	Requirement

			D. Corrected Effective 100-year floodplain boundaries, as applicable
			E. Corrected Effective 500-year floodplain boundaries, as applicable
			F. Corrected Effective 0.5-foot floodway boundaries, as applicable
			G. Existing Conditions 100-year floodplain boundaries
			H. Existing Conditions 500-year floodplain boundaries, as applicable
			I. Existing Conditions 0.5-foot floodway boundaries, as applicable
			J. Cross section location and alignment, including ID and station
			K. Base (100-year) water surface elevations, on a whole-foot interval

E. Annotated FIRM, As Applicable (Required for CLOMR.)

			1. Size as needed to produce the map at the scale of the effective FIRM
			2. Include secondary legend for annotations
			3. Scale must match scale of effective FIRM
			4. Show proposed 100-year floodplain boundaries, 0.5-foot floodway boundaries (as applicable), and 500-year floodplain boundaries, including the source. (Show proposed boundaries for all events shown on the FIRM; e.g., for detailed study, show the 100-year, floodway, and 500-year boundaries.)

F. Annotated FIS Profile, As Applicable (Required for CLOMR)

			1. Include secondary legend for annotations
			2. Must be at the same vertical and horizontal scale as the effective profile(s)

G. Annotated Floodway Data Table, As Applicable (Required for CLOMR)

			Cross section IDs/stations must correlate to the naming and stationing shown on the topographic work maps and profiles.
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