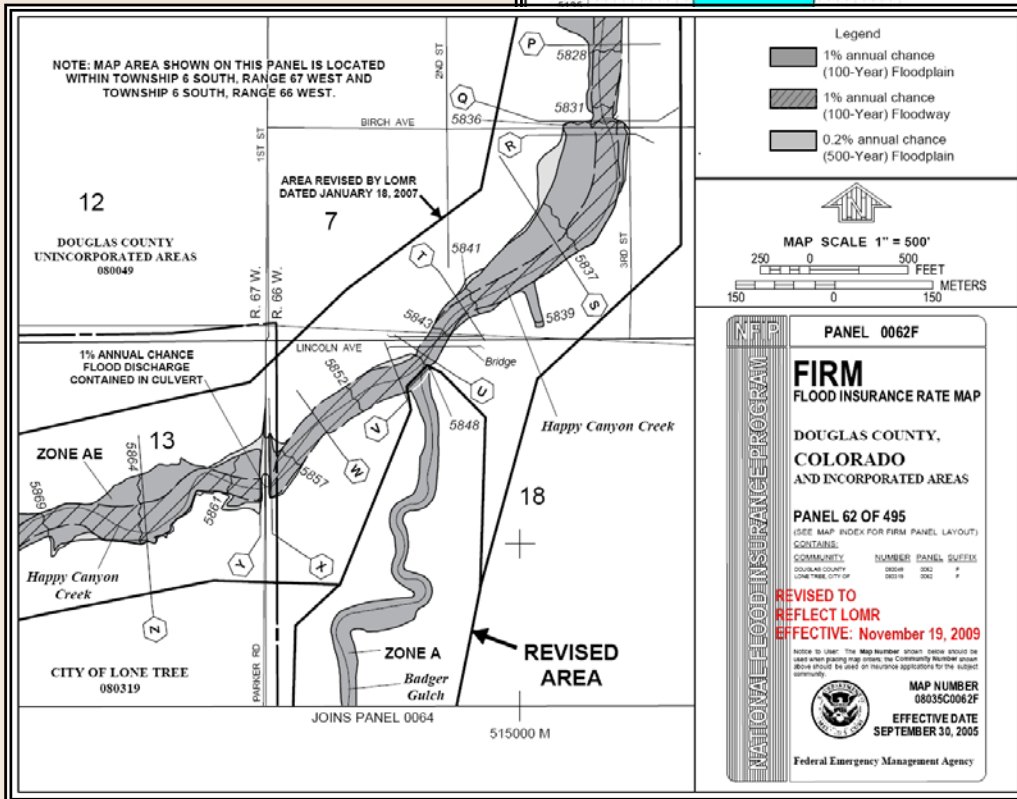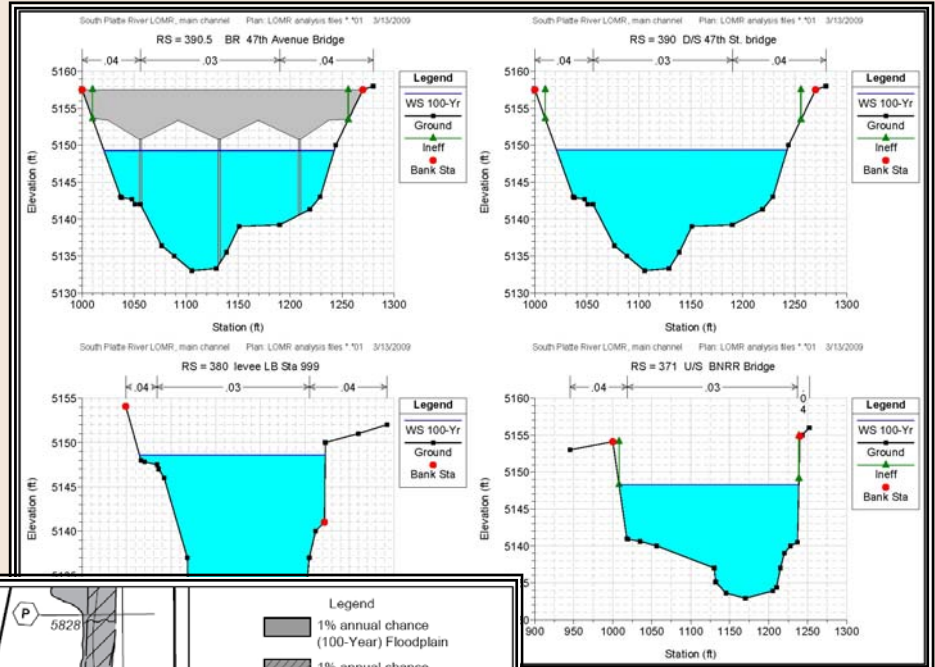# Digital Letter of Map Change (DLOMC) Guidelines
May 2010

Prepared for:

Urban Drainage and Flood Control District
2450 West 26th Avenue, Suite 156B
Denver, CO 80211

Prepared by:

Table of Contents

1. <u>INTRODUCTION AND PURPOSE</u>

These Digital Letter of Map Change (DLOMC) Guidelines were written in order to offer assistance and direction for engineering consultants, communities, or any interested party in preparing a largely digital Letter of Map Revision (LOMR) or Conditional Letter of Map Revision (CLOMR) submittal for review by the Urban Drainage and Flood Control District (UDFCD).   Under the Federal Emergency Management Agency's (FEMA's) Cooperating Technical Partner initiative, the UDFCD has been reviewing LOMRs and CLOMRs which fall within the District's boundaries since 2001.

The use of these guidelines presents significant advantages during the LOMR/CLOMR (referred together as Letters of Map Change or LOMC) development and review process. We believe that these guidelines will greatly assist in the time and expenses associated with the review procedure.   Similarly, we believe that the use of these guidelines will assist in standardizing and defining basic submittal requirements and improve the overall consistency of each individual project. Other advantages to the use of these guidelines include:

- Reduced time and costs for LOMC submittal preparation and review
- Standardization to make submittals easier to prepare and review
- Quality control checks for common items to reduce review time and expenses
- Reduced submittal size and paper usage
- Most Information can be submitted electronically using CD/DVD media or email

Users are also encouraged to review and make use of the guidelines established for Flood Hazard Area Delineation (FHAD) reports in the UDFCD, specifically with respect to floodplain delineation recommendations that are not otherwise covered by this document. These guidelines can be downloaded using the following web address:

 http://www.udfcd.org/downloads/down_guide_forms.htm

2. <u>SUBMITTAL PROCEDURES</u>

The current submittal procedure for paper LOMC submissions remains mostly unchanged for digital submissions. As an option to the traditionally bound LOMR or CLOMR report, these guidelines establish protocols for which a CD/DVD can be submitted containing such items as: the report text, hydrologic and/or hydraulic modeling, construction plans or as-built survey information, regulation requirements or required notifications, floodplain workmaps, comparison tables, annotated floodway data

tables, and agreement tables. These items, and the items still requiring paper copies, are discussed in detail in section 3 of the DLOMC guidelines.

Please note that all <u>initial</u> digital submittals must be submitted on digital media such as a CD or DVD (include 2 copies). Email submittals are not acceptable for the initial submittal. For any digital items that require revision during the review, email may be used as an alternative to the CD or DVD included with the opening submittal.

Beginning January 1, 2007, the submittal requirements for submitting LOMCs within the UDFCD changed and now <u>both</u> the review fee and <u>two</u> complete copies of the submittal request should be submitted directly to the District using the following information:

<u>Submit two (2) complete copies of the request along with the appropriate fee (made out the National Flood Insurance Program) to:</u>

>   *Urban Drainage and Flood Control District*
>   *ATTN: Floodplain Management Program*
>   *2480 West 26th Avenue, Suite 156-B*
>   *Denver, CO 80211*
>   *PH: (303) 455-6277*

The required fee must be received before a request can be reviewed or processed. The current review fee information can be reviewed at the following web address: http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm .   Please note that the fee schedule can be changed at any time and the fee in effect at the time of the initial submittal must be provided.

3. <u>DLOMC SUBMITTAL ITEMS</u>

Two copies of the following items should be included with a DLOMC submittal in either electronic or paper form (where noted).

3.1   Report Text

Recommended items to include in the LOMR or CLOMR report include sections describing the following:

- *Purpose:*   This section describes the purpose of the request. Any pertinent project elements shall be described as well as

listing the stakeholders and/or requestors. Applicants should also describe any special requirements of the desired outcome (e.g. does the requester want the LOMR to be effective immediately or do they want the current FEMA zone designation changed in any way).

- *Background:*   Describe the background of the flooding source and any pertinent history. This section should also mention any previous studies (i.e. FHADs, Master Plans, etc.) and include a description of any effective LOMRs or approved CLOMRs which impact the project's revision reach.

- *Study Limits:*   List the impacted FIRM panels, effective dates, impacted communities and counties, and describe the proposed revision reach

- *Mapping:*   Describe the source of the topographic mapping used for the project including the mapping company, date mapped or flown, scale, contour interval, vertical datum, and control point data (e.g. NGS or UDFCD). This section should also identify the horizontal datum (e.g. NAD 83) and mapping projection (e.g. State Plane Central) used for the base mapping. If the mapping utilizes ground coordinates, please provide the conversion factor to grid coordinates or a table showing XY values for several known points in both grid and ground coordinates.

- *Hydrology:*   This section identifies the source of the discharge information used during the hydraulic analysis. If the project hydrology has been changed or differs from the adopted FEMA discharges in any way, the details, results or changes should be summarized here.

- *Hydraulics:*   The hydraulics section outlines the hydraulic modeling effort for the LOMC request starting with the Effective model and ending with the Proposed (CLOMR) or Post-Project (LOMR) hydraulic models. This section should also include the source of the Effective model (e.g. a FHAD, Master Plan, previous LOMR, etc.) and can include discussions related to the relevant changes and development of the: Duplicate Effective, Corrected Effective, Existing, and Proposed hydraulic models. Depending on the request, this section can also discuss changes to the regulatory floodway, Manning's 'n' values, tie-ins to the effective information, etc.

- *NFIP Regulation Compliance*   Describes what National Flood Insurance Program (NFIP) regulations are required to be met with the request (e.g. tie-in requirements, Regulation 65.12, public floodway revision notification, LOMR notifications, etc.) and how they were met.

- *References:*   Lists the references used during the preparation of the DLOMC submittal as well as what hydrologic and/or hydraulic programs were used (including the program version).

3.2   Hydrologic and/or Hydraulic Models

Executable copies of all hydrologic and/or hydraulic models used in the DLOMC submittal should be included in electronic form. In order to simplify and standardize the review process, a logical file structure should be used for all submittals. An example of the recommended file structure for DLOMC submittals is shown in Figure 3.2.1. The structure shown in this figure could change depending on the submittal but it is recommended that something similar to this structure be used for all DLOMC submittals.
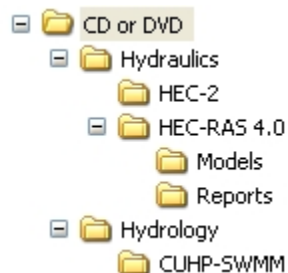
Figure 3.2.1 – Recommended Model File Structure

Whenever possible, Duplicate Effective, Corrected Effective, Existing, and Proposed hydraulic models should be organized within the same HEC-RAS project file using plan files in HEC-RAS rather than separate HEC-RAS project files.

In a DLOMC submittal, HEC-RAS reports can be submitted electronically. These reports should be generated using the recommended settings shown in Figure 3.2.2. The reports should be organized following the same file structure shown in Figure 3.2.1 and can be submitted in their original format, as a PDF, or using Microsoft Word.

Similarly, hydraulic cross-section plots can also be provided electronically (in PDF format) and should be placed in the Reports folder along with the HEC-RAS report files.
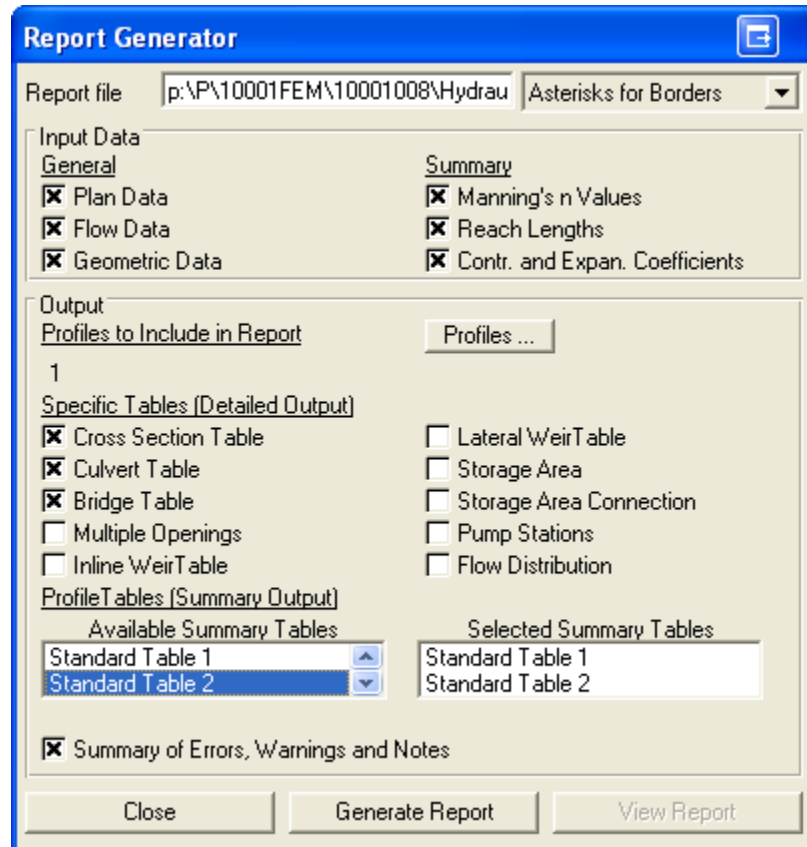
Figure 3.2.2 – Recommended HEC-RAS Report Generator Settings

3.3   Proposed Construction Plans and/or As-Built Survey Information

For a traditional LOMC submittal, proposed construction plans are required for a CLOMR submittal whereas, certified as-built drawings—and/or certified survey information—are a requirement for a LOMR submittal. For a DLOMC submittal, these items are still required but they can be submitted electronically.

For CLOMRs, proposed construction plans can be submitted in PDF form. A single file containing multiple sheets (preferred method) or multiple PDF files can be included.

For LOMRs, as-built drawings and/or survey information can also be submitted in PDF form. A signed and stamped seal of an engineer registered in the State of Colorado must be visible in the submitted PDF file(s).

3.4   FEMA MT-2 Forms (HARD COPIES REQUIRED)

For a DLOMC submittal, two copies of the required FEMA MT-2 Forms must be filled out and submitted in paper form with all the required signatures of the requester, community official(s) responsible for floodplain management, and a Colorado registered professional engineer or land surveyor.

3.5   NFIP Regulation Requirements/Notifications

Meeting specific NFIP regulation requirements is a common necessity for any LOMC submittal.   For a DLOMC submittal, these requirements—or notifications—can be provided in electronic form using signed PDF versions of the required notifications or regulation requirements.   This section of the guidelines highlights some of these requirements and where more information and assistance on fulfilling the NFIP regulations can be obtained.

All submittals must meet the specific tie-in requirements set forth by FEMA for tying into the effective information.   For a detailed study area (an area with flooding designated as Zone AE), the revised Base Flood Elevations (BFEs) must tie-in at both the upstream and downstream ends of the revised reach within 0.5 foot of the effective profile elevations.   The width of the Special Flood Hazard Area (SFHA), the area inundated by the 1%-annual-chance flood event, or base flood, must have a tie-in top-width within 5% of the effective FIRM map's scale (e.g. 25 feet for a 1" = 500 feet scale FIRM).   For Zone AE areas which include a regulatory floodway, the floodway elevations must also be within the 0.5 foot profile requirement and the floodway encroachment stations at both the upstream and downstream limits must match the effective encroachment stations.   For areas not studied by detailed methods, or an area designated as Zone A, the revised base flood elevations must be within 0.5 foot of the pre-project conditions model (either Corrected Effective or Existing) at both the upstream and downstream revision limits and the width of the SFHA must also tie-in within 5% of the effective FIRM's scale.

MT-2 Form 2, Section D, lists some of the most common regulatory requirements for a LOMC or DLOMC submittal and should be filled out completely and included with all submittals.   Additionally, the MT-2 Form Instructions contains some useful guidance for filling out Section D as well as a more detailed explanation regarding the listed regulatory requirements.   The MT-2 Forms and Instructions can be downloaded at the following location:

http://www.fema.gov/library/viewRecord.do?id=1493

For CLOMRs, NFIP regulations section 65.12 often applies which requires several conditions be met including individual legal notification to all impacted property owners and a certified statement indicating that "*no insurable structures are impacted by the proposed project changes.*"   FEMA's MT-2 Form Instructions

contain sample individual legal notification letters, and Appendix A within this document also contains an example of a certified statement regarding insurable structures.

For LOMRs, notifications are required for all property owners experiencing any adverse impacts due to the proposed changes (i.e. increases in BFE or SFHA width when compared to the effective). The MT-2 Form Instructions also contain sample LOMR notification letters which fulfill this obligation. In addition to the required notifications, the impacted community, or submitting engineer, must also provide certification that all property owners experiencing adverse impacts have, in fact, been notified of the changes and that no insurable structures are impacted from increased BFEs. Appendix B contains a sample of a certification letter which meets this requirement.

The UDFCD is available to assist communities and submitting engineers in meeting FEMA's NFIP regulation requirements for a LOMC or DLOMC submittal. Please contact the Floodplain Management Program for further assistance.

It should be noted that neither this section of the DLOMC Guidelines nor MT-2 Form 2, Section D, contain all the regulations governing FEMA or the NFIP. Section 44 of the Code of Federal Regulations (CFR) contains the policies and procedures governing FEMA and parts 60 and 65 of that section contains the regulatory requirements of the NFIP. Section 44 of the CFR can be viewed using the following link:

   http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfrv1_02.html

3.6   Floodplain Workmaps (DIGITAL AND HARD COPIES REQUIRED)

Two copies of a certified topographic floodplain workmap showing the relevant portions of the effective, existing (or pre-project for a LOMR), and proposed (or post-project for a LOMR) floodplains and floodways must be submitted for a DLOMC request. The workmaps are required to be submitted in both electronic and hard copy formats. Digital workmaps must use either AutoCAD or GIS formats, unless prior authorization is given by the District in advance of the submittal. For AutoCAD formats, the digital submittal must include the .dwg file and pertinent associated files; for GIS formats, the digital submittal must include the .mxd file with relative references. PDF copies of the certified workmaps are also recommended to supplement the digital submittal information.   At a minimum, the workmaps (both hardcopy and digital versions) must contain all applicable information stated in FEMA's MT-2 Forms which is summarized below:

- Effective Floodplain Boundaries (1%- and 0.2%-annual chance)
- Existing/Corrected Effective Floodplain Boundaries (1%-annual chance)
- Proposed/Post-Project Floodplain Boundaries (1%- and 0.2%-annual chance)

- Proposed/Post-Project BFEs
- Effective Floodway Boundaries
- Proposed/Post-Project Floodway Boundaries
- Location and Alignment of All Hydraulic Cross-sections
- Stream Centerlines and Stationing Which Correlate with the Submitted Hydraulic Models
- Road and Any Other Pertinent Alignments (e.g. Dams, Levees, Lateral Structures, etc.)
- Current Community Easements and Boundaries
- Adjacent Property Boundaries
- Boundaries of the Requester's Property
- Registered Professional Engineer Certification
- Referenced Vertical Datum (e.g. NAVD, NGVD, etc.)
- Referenced Horizontal Datum and Mapping Projection (e.g. NAD 83 State Plane Central)
- Date of Aerial Photography or Survey Information

Similar to what is required for certified as-built/survey drawings (see Section 3.3) a signed and stamped seal of a registered professional engineer must be visible on the submitted hardcopy workmap(s). The seal can also be added to any digital or PDF versions at the applicant's preference.

An important part of being able to use the data produced for a LOMR to modify the effective flood hazard data is knowing how the data is positioned horizontally and vertically on the surface of the earth. Therefore, the submitted electronic workmap files must use and identify a known horizontal datum (e.g. NAD 83) and mapping projection (e.g. State Plane Central) in order to orient the workmap's location on the surface of the earth with the location of the effective data. If the mapping utilizes ground coordinates (e.g. Modified State Plane), the conversion factor to grid coordinates (e.g. State Plane Central) or a table showing XY values for several known points in both grid and ground coordinates must be provided.

The data should also use a known vertical datum (e.g. NAVD88) and provide the adjustments to NAVD88 if another vertical datum is used. If the data uses the NGVD29 vertical datum, the conversion factor stated in the effective Flood Insurance Studies (FISs)—whether it's based on a countywide or stream by stream factor—should be used for converting to NAVD88. If the FIS does not provide a conversion factor, then the District web site should be referenced to determine an appropriate conversion factor between the NAVD88 and NGVD29 vertical datums.

Flood hazard information contained in the CAD or GIS workmaps should follow a logical naming and appearance convention so it is easy to identify the flood hazard features from the geographic or background data. Additionally, a map legend or labels for the pertinent flood hazard information should be included. Recommended layer/shape naming and appearance conventions are presented in Table 3.6.1.

Table 3.6.1 – Recommended Layer/Shape Naming and Appearance Conventions

FLOOD HAZARD FEATURES	LAYER/SHAPE NAME	COLOR	LINETYPE
Effective 100-YR Floodplain	100-YEAR-EFF	Orange	Dashed
Existing 100-YR Floodplain	100-YEAR-EX	Red	Hidden
Proposed 100-YR Floodplain	100-YEAR-PP	Cyan	Continuous
Effective 500-YR Floodplain	500-YEAR-EFF	Light Grey	Dashed
Proposed 500-YR Floodplain	500-YEAR-PP	Green	Continuous
Effective Regulatory Floodway	FLDWY-EFF	Dark Grey	Dashed
Proposed Regulatory Floodway	FLDWY-PP	Yellow	Continuous
Hydraulic Cross-Sections	XSECTION	Magenta	Continuous
Base Flood Elevation (BFE)	BFE	Red	Zigzag
Stream Centerline	CHANNEL	Blue	Center
Culverts	CULVERT	Black	Continuous
Bridges	BRIDGE	Black	Continuous
Footbridges	FOOTBRIDGE	Black	Continuous
Community Boundaries	BNDRY-COMMUN	Thick Black	Phantom
Property Boundaries	BNDRY-PROPERTY	Purple	Phantom

Once the review of the case is complete, the District may ask the applicant to provide updated versions of the workmaps (both hardcopy and digital) which reflect any changes that may have developed over the course of the review period.

3.7   Annotated FIRM Panels (HARD COPIES REQUIRED)

Similar to a traditional LOMC submittal, annotated FIRM exhibits are required for all impacted FIRM panels. The annotated FIRM shows the boundaries of the modified floodplains and regulatory floodway within the revised reach and how they tie into the effective information at the upstream and downstream tie-in locations. For a DLOMC submittal, the annotated FIRM must be submitted in paper form.

3.8   Comparison Tables and Profiles

Tables comparing the changes in BFE are common in LOMC submittals. For a DLOMC submittal, a BFE comparison table is required in order to demonstrate the hydraulic model progression and the impacts the proposed project has on the studied drainageway.   For a DLOMC submittal, comparison tables may be submitted electronically using the PDF or Microsoft Excel formats. Appendix C contains a standardized comparison table (a blank version and a filled out example are included) which provides a common format for all submittals that will reduce review time.   The Excel version of this table is available for download on

the District's web site. Please note that the values shown in the example version of the Appendix C table are for illustrative purposes only and do not represent actual values used in a DLOMC submittal.

Being able to track the progression of the submitted hydraulic models is an important step in understanding how the project affects the existing channel but also how the channel has changed since the original effective analysis was completed. For example, the BFE differences between the Effective and Duplicate Effective models indicate any changes associated with obtaining a copy of the effective model and re-running the model on the user's computer using either an updated version of the hydraulic model used when the effective model was created, or a different hydraulic program (e.g. HEC-2 to HEC-RAS). Another example is the BFE differences between the Pre-Project (Existing or Corrected Effective) model and the Post-Project—or Proposed—model. These differences isolate the changes in BFE due to the project only and are important in determining if NFIP regulations section 65.12 applies. Additionally, for CLOMR requests, the information presented in the BFE Comparison Table is used directly to write the CLOMR approval letter. FEMA's MT-2 Form Instructions should be consulted when determining which models should be used for each case, as the instructions explain the differences between the various models.

During the preparation of a LOMC or DLOMC submittal the consultant or requester usually has several hydraulic cross-sections which are not common to all prepared models. For example, there are usually multiple cross-sections used in the proposed conditions model which are not present in the effective or duplicate effective models. Additionally, there might also be cross-sections used in the effective model which do not apply for the proposed conditions model. Finally, when the channel stationing differs between models, comparing common cross-sections can be difficult. In these instances, interpolated values should be used in order to complete the required comparison table. In the case of the Effective BFEs, these values may be obtained by either interpolation or by pulling the BFE value directly from the effective FIS profile at the approximate location. Similarly, existing or proposed elevations can be interpolated at the original effective locations as if an updated profile exists. Finally, since the cross-section identification/label is often different that the stream stationing, a correlation must also be provided in the comparison table information. Please note that interpolated values must be clearly identified on the submitted comparison table in similar fashion to what is shown in Appendix C.

A comparison profile must also be provided to identify the changes in BFE resulting from the modeling progression. There are any number of ways to generate and present this comparison profile; however, the profile should utilize a common stationing system, similar to what is shown in the comparison table.

3.9   Annotated Floodway Data Table

For a submittal which proposes modifications to an effective regulatory floodway, an annotated floodway data table is required. The annotated floodway data table can be submitted in electronic form (Microsoft Excel or Adobe PDF is recommended) and, similar to the annotated FIRM panel, should indicate which effective FEMA cross-sections change and display the revised floodway data for the revised cross-sections. Since the annotated floodway data table references the stream stationing, some sort of correlation must also be provided when cross-section labels are different than the corresponding stream stationing. Since the annotated floodway data table references the stream stationing, there must be a correlation provided when cross-section labels are different than the corresponding stream stationing.

3.10 Agreement Tables

Hydraulic agreement tables are required for the Proposed—or Post-Project— models and workmaps in a DLOMC submittal. The purpose of these tables is to correlate the information presented by the consultant (or requester) between the hydraulic model, floodplain workmap, and floodway data. A blank version and an example of a completed agreement table are presented in Appendix D. The Excel version is also available for download on the District's web site.

The table ensures the following information matches between the submitted workmap and hydraulic model:

- Distance between hydraulic cross-sections along channel centerline
- Cumulative channel distance along channel centerline
- 1%-annual-chance floodplain top width
- Regulatory floodway top width (if applicable)

In order to complete the table, the requester must first list all hydraulic cross-section locations and corresponding stream stationing on the table. For requests where the number of cross-sections exceeds the available rows, additional pages should be used. Next, the requester must fill in the channel distances according to the hydraulic model for each cross-section. The model channel distances can easily be accessed in HEC-RAS under the Geometry Data window using the "Tables" menu and selecting "Reach Lengths." Next, the Channel Distances for the floodplain workmap can be filled out by measuring the corresponding value for each cross-section. Note the acceptable tolerance listed below of the Channel Distance column as plus or minus 5% of the model channel distance value. This tolerance is checked automatically in the "% Difference" column when using the Excel version of the table. If the Excel version is not used, the "% Difference" will need to be filled in manually. Once the map channel distances are completed, any discrepancies greater than the 5% tolerance— which the Excel version highlights in red—should be corrected or explained in the comments column or an attached document.

The Cumulative Channel Distance column will automatically fill in as the Channel Distance column is completed. Again, note the tolerance for this item listed below this column (plus or minus 5% of model distance). Any discrepancies exceeding this tolerance should be explained or corrected.

Completing the Base Floodplain Width and Floodway Width columns should be done in much the same way as the Channel Distance column. The floodplain—or floodway (if applicable)—widths from the hydraulic model should be filled in next to the values measured from the submitted floodplain workmaps. The tolerance for these values is 25 feet. The top-width used is the total section top-width including high ground or ineffective flow areas. One way to obtain this value directly from the HEC-RAS hydraulic model is to use the Profile Output Tables—Standard Table 1 or Encroachment Table 3—and modify either one of them to add the three columns necessary to calculate the correct top-width required. Using the Define Table option under the Options menu, the user can add the following variables to the table: "Sta W.S. Rgt", "Sta W.S. Lft", and "Diff". The resulting value presented in the "Diff" column is the correct top-width to report in the Agreement Tables. The DFHAD guidelines also contain guidance on reporting floodplain and floodway widths and should be consulted for delineation purposes.

For detailed Zone AE areas, the revised BFEs plotted on the submitted workmaps should also correlate well with the submitted profile in the hydraulic model. A BFE column has not been included with the agreement tables but revised BFEs plotted on the workmaps should adhere to the following guidelines:

- BFEs should be placed in the correct location along the channel centerline as compared to the adjacent hydraulic cross-sections
- BFEs should intersect the location where the proposed floodplain crosses the whole foot contour value indicated by the BFE
- Shape and orientation of BFEs should follow the shape and orientation of nearby hydraulic cross-sections and BFEs should not cross nearby hydraulic cross-sections

3.11 Other Items

Any other items that should be included in a traditional LOMC submittal can be included in digital form for a DLOMC submittal. This includes but is not limited to:

- Pertinent additional hydraulic and/or hydrologic calculations
- Hydrologic Figures (e.g. Connectivity Diagrams, Basin Maps, etc.)
- Copies of previous studies or reports
- Correspondence

3.12 CD/DVD Media

The final item required for a DLOMC submittal is a CD or DVD containing all the digital submissions noted above (e.g. hydraulic models, floodplain workmaps, report, etc.)   The recommended file structure for the CD or DVD is shown in Figure 3.12.1.
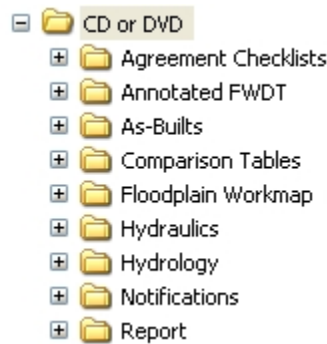
Figure 3.12.1 – Recommended CD/DVD File Structure

Figure 3.12.1 highlights the recommended file structure for a LOMR with revised hydrology. The directory structure should be modified accordingly for another type of submittal.

4. <u>DLOMC SUBMITTAL CHECKLIST</u>

The DLOMC Submittal Checklist summarizes what is required for a submittal to the District and what form the specific item can be submitted in. A completed Submittal Checklist should be filled out by the requester or submitting engineer and included in all DLOMC submittals in either paper or electronic form. If submitted electronically, the checklist should be placed in the root CD or DVD directory. A blank version of the Submittal Checklist is included in Appendix E and the Excel version is available for download on the UDFCD web site.

<u>Appendix A</u>

Regulation 65.12 Certification Statement

(DATE)

Mr. Bill DeGroot, P.E.
Manager, Floodplain Management Program
Urban Drainage and Flood Control District
2480 West 26th Avenue, Suite 156-B
Denver, CO 80211

RE: (PROJECT NAME/IDENTIFIER) CLOMR

Dear Mr. DeGroot:

With this letter, we hereby certify that no insurable structures are negatively impacted due to the proposed revisions to (FLOODING SOURCE). Please contact us should you have any questions or concerns regarding this certification.

Sincerely,

(COMPANY)

(ENGINEER).
(TITLE)

SAMPLE INSURABLE STRUCTURE CERTIFICATION LETTER
(Meets NFIP Regulation 65.12 Requirements)

<u>Appendix B</u>

LOMR Certification Statement

(DATE)

Mr. Bill DeGroot, P.E.
Manager, Floodplain Management Program
Urban Drainage and Flood Control District
2480 West 26th Avenue, Suite 156-B
Denver, CO 80211

RE: (PROJECT NAME/IDENTIFIER) LOMR

Dear Mr. DeGroot:

With this letter, we hereby certify that all property owners who are adversely impacted by any increases in and/or shifting of the 1%-annual-chance floodplain top-width and/or impacted by increased 1%-annual chance water-surface elevations between the post-project and the effective conditions for (FLOODING SOURCE) have been individually notified of the proposed changes. In addition, we certify that no insurable structures are negatively impacted due to the revisions. Please contact us should you have any questions or concerns regarding these certifications.

Sincerely,

(COMPANY)

(ENGINEER).
(TITLE)

SAMPLE CERTIFICATION LETTER FOR ADVERSE IMPACT NOTIFICATION
(Required for LOMRs with Any Adverse Impacts)

<u>Appendix C</u>

Base Flood Elevation Comparison Table

UDFCD DLOMC Submittal - BFE Comparison Table

Project Name :	Noname Creek CLOMR
Flooding Source:	Noname Creek
Company:	ICON Engineering, Inc.
Completed By:	Justen Hamann, P.E.

SOURCE DATA											COMPARISONS				
HYDRAULIC CROSS-SECTION INFO.						BASE FLOOD ELEVATIONS (NAVD)									
Effective Cross-Section ID (Letter)	Corrected Effective Cross-Section ID	Corrected Effective Stream Station	Existing Cross-Section ID	Proposed Cross-Section ID	Proposed Stream Station	EFFECTIVE	DUP. EFF.	COR. EFF.	EXISTING	PROPOSED	DUP. EFF vs. EFF.	COR. EFF. vs. EFF.	EX. vs. COR. EFF.	PP. vs. COR. EFF.	PP. vs. EFF.
						BFE	BFE	BFE	BFE	BFE	BFE	BFE	BFE	BFE	BFE
300 (A)	300	300	--	300	300	5205.50	5205.50	5205.50	--	5205.50	0.00	0.00	--	0.00	0.00
--	450	450	--	450	450	*5207.10*	*5207.16*	5206.25	--	5206.25	0.06	-0.85	--	0.00	-0.85
605	605	605	--	605	605	5208.10	5208.13	5208.17	--	5208.17	0.03	0.07	--	0.00	0.07
710 (B)	710	710	--	710	710	5208.40	5208.46	5208.80	--	5208.60	0.06	0.40	--	-0.20	0.20
--	900	900	--	900	900	*5208.52*	*5208.52*	5209.05	--	5208.70	0.00	0.53	--	-0.35	0.18
--	--	--	--	930	930	*5208.60*	*5208.62*	*5209.18*	--	5209.55	0.02	0.58	--	0.37	0.95
--	--	--	--	1055	1055	*5209.94*	*5209.95*	*5209.98*	--	5210.60	0.01	0.04	--	0.62	0.66
--	--	--	--	1075	1075	*5210.12*	*5210.08*	*5210.42*	--	5210.60	-0.04	0.30	--	0.18	0.48
1010	1166	1166	--	1150	1150	5211.20	5211.12	5211.14	--	5211.36	-0.08	-0.06	--	0.22	0.16
1300	--	--	--	--	--	5212.63	5212.53	*5211.80*	--	*5211.75*	-0.10	-0.83	--	-0.05	-0.88
--	1357	1357	--	--	--	*5212.68*	*5212.62*	5212.44	--	*5212.32*	-0.06	-0.24	--	-0.12	-0.36
--	--	--	--	1370	1370	*5213.80*	*5213.78*	*5213.72*	--	5213.67	-0.02	-0.08	--	-0.05	-0.13
1650 (C)	1672	1672	--	1656	1656	5214.57	5214.56	5216.97	--	5216.84	-0.01	2.40	--	-0.13	2.27
--	--	--	--	1840	1840	*5217.21*	*5217.21*	*5218.66*	--	5218.96	0.00	1.45	--	0.30	1.75
--	--	--	--	2050	2050	*5219.30*	*5219.30*	*5220.63*	--	5220.31	0.00	1.33	--	-0.32	1.01
2115	2136	2136	--	2120	2120	5220.30	5220.30	5221.27	--	5223.68	0.00	0.97	--	2.41	3.38
--	--	--	--	2227	2227	*5222.56*	*5222.64*	*5222.41*	--	5225.20	0.08	-0.15	--	2.79	2.64
2371	--	--	--	--	--	5224.60	5224.71	*5224.62*	--	*5227.53*	0.11	0.02	--	2.91	2.93
--	--	--	--	2302	2302	*5225.34*	*5225.34*	*5226.20*	--	5228.63	0.00	0.86	--	2.43	3.29
--	--	--	--	2327	2327	*5225.98*	*5225.99*	*5227.71*	--	5229.87	0.01	1.73	--	2.16	3.89
--	--	--	--	2370	2370	*5227.46*	*5227.46*	*5228.43*	--	5230.37	0.00	0.97	--	1.94	2.91
--	--	--	--	2390	2390	*5232.47*	*5232.46*	*5232.88*	--	5234.48	-0.01	0.41	--	1.60	2.01
--	--	--	--	2460	2460	*5234.54*	*5234.54*	*5233.12*	--	5234.65	0.00	-1.42	--	1.53	0.11
--	2545	2545	--	--	--	*5236.20*	*5236.20*	5233.46	--	*5234.90*	0.00	-2.74	--	1.44	-1.30
2705 (D)	2745	2745	--	2701	2701	5237.48	5237.48	5237.20	--	5236.50	0.00	-0.28	--	-0.70	-0.98
--	2989	2989	--	2945	2945	*5239.40*	*5239.40*	5238.77	--	5238.74	0.00	-0.63	--	-0.03	-0.66
3130	3170	3170	--	3126	3126	5240.80	5240.80	5240.16	--	5240.16	0.00	-0.64	--	0.00	-0.64
--	3422	3422	--	3378	3378	*5245.20*	*5245.20*	5244.62	--	5244.62	0.00	-0.58	--	0.00	-0.58
3580 (E)	3620	3620	--	3576	3576	5248.42	5248.44	5248.13	--	5248.13	0.02	-0.29	--	0.00	-0.29

-- = Not applicable or no direct comparison available

5225.98 = Interpolated value or value pulled directly from the effective FIS profile

UDFCD DLOMC Submittal - BFE Comparison Table

Project Name :	
Flooding Source:	
Company:	
Completed By:	

SOURCE DATA											COMPARISONS				
HYDRAULIC CROSS-SECTION INFO.						BASE FLOOD ELEVATIONS (NAVD)									
Effective Cross-Section ID (Letter)	Corrected Effective Cross-Section ID	Corrected Effective Stream Station	Existing Cross-Section ID	Proposed Cross-Section ID	Proposed Stream Station	EFFECTIVE	DUP. EFF.	COR. EFF.	EXISTING	PROPOSED	DUP. EFF vs. EFF.	COR. EFF. vs. EFF.	EX. vs. COR. EFF.	PP. vs. COR. EFF.	PP. vs. EFF.
						BFE	BFE	BFE	BFE	BFE	BFE	BFE	BFE	BFE	BFE
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00	0.00

-- = Not applicable or no direct comparison available

5225.98 = Interpolated value or value pulled directly from the effective FIS profile

Appendix D

Hydraulic Agreement Table

UDFCD LOMC AGREEMENT TABLE

PROJECT NAME:	Todd Creek CLOMR
COMPANY:	ICON Engineering, Inc.
COMPLETED BY:	Justen Hamann, P.E.

Community(ies): City of Thornton & Adams County, CO

Flooding Source(s): Todd Creek

Reference Location	Stream Station	Cross Section #	Channel Distance (ft)			Cumulative Channel Distance (ft)			Base Floodplain Width (ft)			Floodway Width (ft)			Comments
			Model	Map	% Difference	Model	Map	% Difference	Model	Map	Difference (ft)	Model	Map	Difference (ft)	
Todd Creek, D/S Tie-In Location	480.2	480	15	15	0%	15	15	0%	25	25	0	25	25	0	
	490.4	490	50	51	2%	65	66	2%	62	60	2	55	60	5	
	500.1	500	780	782	0%	845	848	0%	75	80	5	60	60	0	
	510.0	510	710	718	1%	1555	1566	1%	87	85	2	68	60	8	
	520.2	520	370	360	3%	1925	1926	0%	135	130	5	85	80	5	
	530.3	530	435	430	1%	2360	2356	0%	120	125	5	80	80	0	
	539.9	540	575	580	1%	2935	2936	0%	99	100	1	80	80	0	
D/S XS - Yosemite St. Bridge	550.0	550	460	450	2%	3395	3386	0%	112	110	2	55	60	5	
U/S XS - Yosemite St. Bridge	550.8	551	73	72	1%	3468	3458	0%	162	190	*28*	100	100	0	Island not plotted on workmap
	560.1	560	45	44	2%	3513	3502	0%	132	130	2	132	130	2	
	569.6	570	87	90	3%	3600	3592	0%	116	120	4	116	120	4	
	570.5	571	61	60	2%	3661	3652	0%	114	110	4	114	110	4	
	580.3	580	323	327	1%	3984	3979	0%	87	90	3	87	90	3	
	590.0	590	432	435	1%	4416	4414	0%	83	80	3	78	80	2	
U/S XS - Pedestrian Bridge	590.7	591	157	161	3%	4573	4575	0%	66	70	4	66	70	4	
D/S XS - Pedestrian Bridge	591.5	591.5	35	35	0%	4608	4610	0%	88	80	8	80	80	0	
	592.4	592	20	20	0%	4628	4630	0%	90	95	5	80	80	0	
	600.1	600	78	80	3%	4706	4710	0%	81	80	1	81	80	1	
	629.6	630	118	120	2%	4824	4830	0%	70	70	0	70	70	0	
	645.4	645	95	92	3%	4919	4922	0%	72	75	3	72	75	3	
Todd Creek, U/S Tie-In Location	700.0	700	290	291	0%	5209	5213	0%	80	80	0	80	80	0	
ACCEPTABLE TOLERANCES =			**+/- 5% of Model**			**+/- 5% of Model**			**+/- 25 Feet**						

UDFCD LOMC AGREEMENT TABLE

PROJECT NAME:	
COMPANY:	
COMPLETED BY:	

Community(ies): _____

Flooding Source(s): _____

Reference Location	Stream Station	Cross Section #	Channel Distance (ft)			Cumulative Channel Distance (ft)			Base Floodplain Width (ft)			Floodway Width (ft)			Comments
			Model	Map	% Difference	Model	Map	% Difference	Model	Map	Difference (ft)	Model	Map	Difference (ft)	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
					#DIV/0!	0	0	#DIV/0!			0			0	
	ACCEPTABLE TOLERANCES =		+/- 5% of Model			+/- 5% of Model			+/- 25 Feet						

<u>Appendix E</u>

Submittal Checklist

UDFCD DLOMC SUBMITTAL CHECKLIST

PROJECT NAME:	
COMPANY:	
COMPLETED BY:	

DLOMC Submittal Item		Requirements			What Is Submitted	
Item No.	**Item (include 2 complete copies)**	**Digital Optional**	**Digital Required**	**Hard Copy Required**	**Digital**	**Hard Copy**
3.1	Report Text	✕				
3.2.a	Hydraulic and/or Hydrologic Models		✕			
3.2.b	Hydraulic and/or Hydrologic Reports and Cross-Sections	✕				
3.3	Proposed Construction Plans and/or As-Built Survey Information	✕				
3.4	FEMA MT-2 Forms			✕		
3.5	NFIP Regulation Requirements/Notifications	✕				
3.6	Floodplain Workmaps		✕	✕		
3.7	Annotated FIRM Panels		✕	✕		
3.8.a	Comparison Tables	✕				
3.8.b	Comparison Profile	✕				
3.9	Annotated Floodway Data Table	✕				
3.10	Agreement Checklists	✕				
3.11	Other Items	✕				
3.12	CD/DVD Media			✕		