

Niver Creek MDP/FHAD – Draft Alternatives Report Comments

PREPARED BY: Haley Heinemann
DATE: September 16, 2015
PROJECT NUMBER: 661392
MEETING DATE: September 10, 2015
MEETING TIME: 10:00 am
VENUE: UDFCD
ATTENDEES: Shea Thomas (UDFCD)
Terri Fead (UDFCD)
Alan Pagan (UDFCD)
Dave Skuodas (UDFCD)
Don Stahurski (Federal Heights)
Art Negretti (Federal Heights)
Tim Williams (Federal Heights)
Jim Kaiser (Thornton)
Danny Elsner (CH2M)
Jen Winters (CH2M)
Haley Heinemann (CH2M)

Meeting Minutes

Discussion of stakeholders' comments on the draft alternatives report for the Niver Creek watershed. The purpose of the meeting was to identify changes to be made in the report to address stakeholders' comments.

- **Introductions**
- **Alternatives Overview:** Danny provided a brief description of the four draft alternatives.
- **Review of Main Issues:**
 - 1) Sections 1-3
 - Survey: Jim K. asked if the contours used between 84th & Grant and Washington Street could be updated to the 2014 1-foot contours to increase model accuracy for the proposed development in that location. Jen noted that the 1-ft contour clip provided by UDFCD to CH2M is upstream of I-25 and does not include this area. Shea agreed that 1-ft contours can be worked in to the next FHAD submittal and to note the additional time spent on incorporating the new topography.
 - Jen noted that the proposed developer (HKS) had been in contact with CH2M regarding incorporating development survey into the FHAD model, but that they had not yet obtained that survey data. All agreed that if the 1-foot topography removes the proposed development from the floodplain, then additional survey would not be necessary. Jim noted that he explained to the developer that if

the survey doesn't remove the site from the floodplain that a future LOMR might be needed as the project is a 7-eleven/gas station (critical facility).

- Survey: Jim K. noted that there are 4-feet high, center median barriers on I-25 through the project area. He asked if because of the barriers that the actual backwater elevation would be higher than what is modeled in the FHAD. Typically FEMA models don't assume that temporary structures such as concrete barriers would block flow, but in this case it could be the "worst case scenario". Terri said she would look into if the barriers should be included in the model for the upstream area.

2) Section 4

- Insurable structures: Shea explained that she would like the number of insurable structures to reflect the number of habitable structures within the 100-yr floodplain. Small sheds and garages will be excluded from the figures and tables.
 - Discussed using multiple colors to denote structures in the 100-yr floodplain:
 1. Structures in the new FHAD floodplain that were in the effective FEMA floodplain
 2. Structures removed from the effective FEMA floodplain by the new FHAD floodplain
 3. Structures added to the floodplain by the new FHAD floodplain that were not in the effective FEMA floodplain
- Floodplain Figures: Discussed creating four floodplain figures – one for each tributary – that shows the structures discussed above. Named the figures "Floodplain figures".

3) Section 5

- Detention: Discussed maximization of detention pond sizing. Jim K. asked why online detention was not feasible at I-25. He is concerned that the proposed detention area is utilizing potential developable parcel and will have minimal impacts on small storm events since the offline storage is designed only for the 100-year storm. Danny explained that, because flow needs to be delayed by about 2 hours, only offline detention reduces peak flow by the amount required. He also explained that the proposed pond at I-25 is offline for Trib L, but online for NL-15/88th storm sewer in Alternative 4. Therefore, under that Alternative the pond will also be providing benefits to the smaller storm events.
 - Shea and Jim K. noted that the additional volume for water quality does not need to be included in the size of the pond. CH2M to look at adding the water quality capture volume back into the detention volumes for the Alternatives.
 - CH2M to attach hydrographs to the meeting minutes to demonstrate why offline detention was required. (See Attached)
 - Danny explained that the ultimate goal with the alternatives was to minimize the flow at Washington St. that would allow the existing channel to remain in place without upsizing the channel. That condition is met with Alternative 4, but not with any other Alternative. CH2M will provide a better description of this in the Alternatives Report.
 - Danny explained that under Alternatives 1 through 3, the existing channel at Washington St. must be increased in size to meet capacity of the 100-year storm

- event. CH2M to send out Billy’s cross section for downstream of Washington St. with the meeting minutes. (See Attached)
- No Change Alternative: Discussed the definition of a “No Change” alternative: issues remaining after only localized stabilization, excluding improvements to conveyance. Shea and Art concluded that a no change alternative does not need to be explicitly added to the report, rather discussed further in Section 5.
 - CH2M to further discuss Niver Creek stabilization needs in Section 5. Additionally, stabilization will be addressed in the conceptual design, regardless of the final chosen alternative.
 - Costs: Art asked if it was possible to quantify lost opportunity costs. Difficult to directly quantify opportunity costs. Shea noted that the final selected plan will be determined by the stakeholders and will include the property acquisition costs along with the costs to construct the proposed project. It also needs to be implementable by the jurisdictions; therefore, the opportunity costs and other non-engineering related factors will be considered during final selection of the alternative by the stakeholders. Group discussion regarding the lost opportunity costs of developing land upstream with detention that will ultimately provide most benefit to land downstream. Discussion of the purpose of UDFCD to coordinate jurisdictions working together to solve the overall problems of the system of the creek.
 - CH2M to quantify property acquisition cost within report
 - Sub-alternatives: Danny briefly described the sub-alternatives in the draft report. Jim K. noted that the dimensions of the sub-alternative channel improvements should be added to the report. Shea noted that the 84th Street crossing should be sized for a culvert in addition to the bridge that is currently in the alternatives. .
 - CH2M to include Grant St. to the table showing peak flows for each alternative.
 - CH2M to include channel improvement dimensions for sub-alternatives, as wells as culvert size for the 84th Street crossing.
 - Manholes: Discussed the number of manholes that should be assumed per linear foot of storm pipe. The group agreed one manhole every 300 feet is a reasonable assumption for the MDP.
 - Alternatives Figures: All agreed that the figures in the report are currently confusing and difficult to navigate.
 - CH2M to consolidate the figures into four interactive figures – one for each tributary that could be manipulated to show any of the four alternatives.
- **Schedule:**
 - CH2M to post draft alternatives report to website
 - FHAD
 - Preliminary submitted to UDFCD on July 3rd
 - Alternatives Report
 - Final Alternatives Report due to stakeholders by October 1st (3 weeks from meeting)

- Public Meeting TBD; likely the end of October, Thornton City Hall
- Stakeholders select final alternative after the Public Meeting

Niver Creek MDP/FHAD - Draft Alternatives Report Comments

Comment Number	Report Section	Page Number	Author	Comment	Context	Response	Agenda
1	1.4	2	jkaiser	Can the area upstream of the 84th & Grant area, through the Washington Street and just east area use the 2014 1-foot contours? There are several insurable buildings in this area and a more precise delineation would be beneficial.	2008 USGS two-foot LIDAR	Will add 1-foot contours for Grant/Washington area to the next round of the FHAD model.	Sections 1 through 3- Survey
2	1.6	2	sthas	Art Negretti (City of Federal Heights), Don Stahurski (City of Federal Heights)	Project acknowledgements	Concur- Will add to list	
3	2.1, Figure 2.2	4	jkaiser	not included in this document	Project area map of the watershed showing the four drainageways of Niver Creek	Concur - Will add figure	
4	2.1	4	jkaiser	Replace text: "Basin east of Huron Street where it joins Upper Niver Creek within the basin."	Location of Trib M	Concur- Will edit text	
5	2.1	4	jkaiser	Add text: ", differentiated above and below the Niver Creek Detention basin; located northwest of 88th Avenue and I-25."	Project area watershed	Concur- Will add text	
6	2.3.1	5	jkaiser	36"x36", or what?	36-inch concrete box culvert	Concur - Will fix size call-out	
7	2.3.1	5	jkaiser	using the abbreviation before defining it.	AFW: American Furniture Warehouse	Concur- Will define abbreviation	
8	2.3.3	5	jkaiser	Delete: this makes it sound like in the future it will flow someplace else.	Describing location of Trib L	Concur- Will delete text	
9	2.3.4	5	jkaiser	Basin	Replace "Dam" with "Basin"; describing headwaters of Trib M	Concur- Will delete text	
10	2.4	5	jkaiser	No previous discussion of this flooding to introduce the reader.	2011 Trib M flooding	Concur- Will add text	
11	3.3.1	6	jkaiser	were?	Typo	Concur- Will edit text	
12	3.6.2	9	jkaiser	within?	Word choice; comparison of 100-yr peak flow values	Concur- Will edit text	
13	3.7, Table 3-8	10	jkaiser	3802?	Incorrect value for 100-year peak discharge?	Concur- Will fix	
14	4	11	jkaiser	2008 DRCOG (?)	USGS topographic 2-foot contours	USGS is correct	
15	4	11	jkaiser	2008 DRCOG contours were ... (?)	USGS topographic 2-foot contours	USGS is correct	
16	4.0, Table 4-2	11	sthas	There are 23 in the table.	Different number in table	Concur- Will edit text to match table	
17	4.0, Table 4-2	11	sthas	Six	Different number in table	Concur- Will edit text to match table	
18	4.2	12	sthas	Are these all structures (including outbuildings, sheds, etc) or just houses/commercial buildings? I would like it to be the latter.	Structures in the 100-year floodplain	Will include only habitable structures	Section 4- Insurable Structures
19	4.2.4	13	sthas	These are not shown on Figure 4-2.	20 homes in Federal heights between Elm Court and Pecos Street	Concur- Will add to figure	
20	4.2.4	13	jkaiser	None of the townhomes between Thornton Parkway/96th Avenue and Huron are shown in Figure 4-2; this figure does not show much east of Pecos. They show up in Figure 5-1, etc. Is the flooding for the townhomes caused by backwater from Huron Street's undersized culvert, or from lack of channel conveyance/proximity to the channel?	20 homes in Federal heights between Elm Court and Pecos Street	Concur- Will adjust figures. Townhomes flooding primarily due to proximity to channel	
21	4.2.4	13	sthas	These aren't shown in figures 4-1 thru 4-4.	10 structures in floodplain along Trib L	Concur- Will adjust figures. Townhomes flooding primarily due to proximity to channel	
22	All Figures	PDF 21	sthas	Only show structures in new floodplain - this one shouldn't be green. Actually, let's show houses removed from the floodplain as a different color.	Structures in the 100-year floodplain	Will add three colors: 1.) houses in effective floodplain, that are removed in the new floodplain 2.) houses in both effective and new floodplains 3.) houses not shown in the effective floodplain and added in the new floodplain.	Section 4- Insurable Structures
23	All Figures	PDF 21	sthas	Are the numbers in the report reflecting the new floodplain or these green structures?	Small structures	See above comment and resolution.	Section 4- Insurable Structures
24	All Figures	PDF 21	sthas	Show as removed.	Several structures on the edge of floodplain boundary	Will show as removed	Section 4- Insurable Structures
25	Figure 4-1	PDF 21	sthas	Is there a reason you didn't include the whole drainageway? I assume it was to just show inundated structures. It would be easier to follow if you included everything.	Inundated structures along Upper Niver	Will provide floodplain figures for the entire reaches of all tributaries.	Section 4- Drainageway Figures
26	Figure 4-3	PDF 23	sthas	Can you swap 4-3 and 4-4 so we're always moving downstream?	Inundated structures along Lower Niver	Will reorganize	Section 4- Drainageway Figures
27	Figure 4-3	PDF 23	asparks	Shallow Flooding is indicated for an area southwest of Coronado Pkwy South and York St. I think that some dialog should be included to discuss this shallow flooding as well as define the depth or range of depth expected (perhaps in Section 4.2.3). These are new figures, Figures 4-1 to 4-4, and I don't see any discussion referencing them. The page # before the figures is 13, and the page # after is 14.	Inundated structures along Lower Niver	Will add text to discuss shallow flooding	Section 4- FHAD
28	5.0	14	anegretti	Generally, this needs to be able to be presented in lay terms to City Council, residents and businesses. I anticipate questions like: o How many houses and/or modulars were in the old flood plain? o How many more will be in the new flood plain and which ones? o How many fewer will be in the floodplain if we do Alt X, Y, Z? o How much will it cost?	Alternative analysis overview	Will summarize in a table or more succinct manner.	Section 5- FHAD
29	5.3	14	jkaiser	the language here sounds as if something besides the modeling methods and mapping detail has changed	Baseline hydrology vs. MDP peak discharges	Concur- Will adjust syntax accordingly	
30	5.3	14	sthas	...	Incomplete sentence	Concur- Will complete sentence	
31	5.3	14	jkaiser	No discussion of channel stabilization needed; especially with alternative 1. A consequence of removing "inadvertent detention" is that small storms make the channels much flashier and unstable, incising channels become more unstable and more prone to incising.	Alternative categories	Will add discussion of stabilization issues	Section 5- Stability Issues
32	5.3	14	anegretti	Provide a No Change alternative.	Alternative categories	A no change alternative is essentially equivalent to providing only stabilization in areas that are needed. This will be inherently included by adding a more detailed discussion of channel stability issues	Section 5 - No Change Alternative
33	5.4	14	asparks	I find it odd that FlowMaster was utilized to size culverts when the Section 5.2 Criteria and Constraints reference the 1.5 ratio normally used with highway culvert sizing with headwater. I would agree that FlowMaster is a simple way to find a pipe size, but it will be less accurate than using highway culvert sizing with headwater.	Culvert sizing	CulvertMaster was used to size the culverts which does incorporate highway culvert sizing with headwater. Will revise text in report to clarify.	Section 5- CulvertMaster vs. FlowMaster
34	5.5	14	sthas	Version 2.2 has been posted on our website for a year now.	UD-MP Cost Spreadsheet	Concur- Will update version	

35	5.5, Table 5-1	14	jkaiser	The danger in using just these unit costs for estimating an alternative is that they are representative of the work being part of a much larger project. Costs such as pavement removal/replacement and traffic control, especially for crossing I-25 and 84th Avenue would be significantly greater than what is rendered here; not to mention mobilization, permits, etc. While reasonable to assume that these "overhead" costs would be the relatively the same when comparing alternatives that purport to do the same crossing, the "total" cost of an alternative put into the master plan would be way underestimated. From Shea: UD-MP Cost includes items like Traffic Control, so we need to make sure those costs are increases when crossing 84th Ave. I-25 should include boring costs.	Alternative costs	Will add boring costs to 84th Ave. and I-25.	Section 5- Costs
36	5.5	15	jkaiser	Isn't this paragraph about Trib M?	NVTC Option B	Concur- Will clarify text	
37	5.5	15	jkaiser	Unless there are very long tangents available, this seems excessive	Manhole every 500 feet	Will revise to every 300 feet	Section 5- Manholes
38	5.6	15	jkaiser	We've zeroed in on the four detention alternatives and, under the guise of every little bit helps, have looked past all others, for example could we delay the peak/capture a bit of storage on Trib L by raising the berm on the existing Bell Roth Park Pond? What about combining the existing "Trib L" detention with the proposed "I-25 detention" into a single pond?	Alternative plans	Will provide detention alternative hydrographs to support the basis for the offline detention calculations	Section 5- Alternative Detention
40	5.6	15	jkaiser	from	word choice; detention alternative 2	Concur- Will add text	
41	5.6	15	sthas	Please state property ownership of each detention pond location.	Detention pond alternatives	Concur- Will state ownership	
42	5.6.2	16	anegretti	Please enumerate by jurisdiction how many and what type of homes are in the existing and proposed flood plains for each alternative.	Detention pond alternatives	Concur - will summarize by jurisdiction	Section 5 - Insurable Structures
43	5.6.2	16	jkaiser	If there are no changes to Upper Niver or Trib M with alternatives 3 and 4, doesn't this make figures 5-5 through 5-8 redundant with 5-3 and 5-4 for reaches 1 and 2, respectively?	Reach 1 figures	Will revise figures to be more clear	Section 5- Figures
44	5.6.2	16	jkaiser	see note for Reach 1	Reach 2 figures	Will revise figures to be more clear	Section 5- Figures
45	5.6.2	16	sthas	two?	Replace existing 78" CMP at West 96th Avenue with one 9' x 5' RCBC	Concur - will verify	
46	5.6.2	16	anegretti	Summarize total construction costs per jurisdiction for each alternative.	Costs	Will summarize by jurisdiction	Section 5 - Insurable Structures
47	5.6.2	16	jkaiser	<ul style="list-style-type: none"> A lot of the improvements, especially the idealized ones shown in the sub alternatives, do not have sizes associated with them; at least not on the exhibits. There also is no discussion much less cost estimates of collateral impacts. For example, <ul style="list-style-type: none"> o how big would the channel need to be between 92nd and Huron on Trib M to convey Q100 away from the townhomes? Would the existing trail need to be relocated/reconstructed o Several significant multi-cell box crossings are recommended. Perhaps this is because there is insufficient HW/D to maximize the conveyance that an HW/D = 1.5 would provide. What about a drop structure upstream to provide the extra head? What about raising the road profile if a significant sag exists? o the I-25 Trib L box alternatives – I suppose if/when CDOT completely reconstructs this segment of roadway they would build the identified Q100 conveyance. Standing alone, this would be a significant traffic control, phasing, demolition, and reconstruction project besides just "building a box (or boxes) o Same with crossing 84th Avenue with new conveyance o To the last two bullets above, what about boring? On the Big Dry Creek masterplan, they evaluated jacking two 10-foot diameter pipes through the existing railroad embankment. 		Will make sure to clarify in the text the sizes of the features in the subalternatives. Will add sizes for all proposed channel modifications/upgrades. Will add boring costs to I-25 and 84th crossings. Culvert sizing with drops/stability issues will be addressed at conceptual design.	Section 5- Subalternatives
48	Figure 5-1	--	sthas	The figures are confusing. Rather than having several duplicate or near-duplicate figures, let's just combine into two (5-1 and 5-2). The labels can indicate the differences in the alternatives. For example, the label at Huron St can say 10'x9' RCBC (Alt 1) 10'x8' RCBC (Alts 2-4). Also, keep all of the figures together and move to end of Section 5.6.5. It's really confusing the way they are split up right now.	Alternatives 1-4 figures	Will revise figures to be more clear	Section 5- Figures
49	Figure 5-2	--	sthas	Dual?	Alternative 1; Upper Niver Reach 2	Concur - will verify	
50	Billy's Sketches	--	sthas	Label these figures (Figure 5-9).	Billy's sketches	Concur- Will add figure labels	
51	5.6.3	25	jkaiser	line	word choice; "The channel is currently undersized and creates a potential flood risk for the neighboring manufactured houses that align the creek channel."	Concur- Will change text	
52	5.6.3	25	jkaiser	homes	word choice; "This option includes fitting the proposed channel alignment between the existing manufactured houses."	Concur- Will change text	
53	5.6.3	25	jkaiser	with what size/shape culvert/bridge?	undersized crossing structures to be replaced	Concur - Will add structure sizes	
54	5.6.3	25	jkaiser	No figure 5-9 in the packet; the figure after 5-8 is Option A	crossing structures to be replaced	Concur- Will add labels	
55	5.6.3	25	jkaiser	easements acquired from the underlying property (or land) owner(s)	syntax	Concur- Will adjust text accordingly	
56	5.6.3	25	jkaiser	this is redundant.	"Additionally, the existing street crossings within the area are undersized and will need replaced with larger sized structures."	Concur- Will delete text	
57	5.6.3	25	jkaiser	5-9?	"See Figure 5-10 for a plan view of Option A."	Concur- Will add labels	
58	5.6.3	25	sthas	Quantify the acreage of property that would need to be acquired for each option. Is property acquisition included in the cost estimates?	Trib M Options A-C	Will add property acquisition costs.	Section 5- Subalternatives
59	5.6.3	25	jkaiser	proposed	typo	Concur- Will fix text	
60	5.6.3	25	jkaiser	nd	typo	Concur- Will fix text	
61	5.6.3	25	jkaiser	5-10?	Plan view of Option B	Concur- Will add labels	
62	5.6.3	25	anegretti	Area of concern: 96th Avenue at Bryant Drive, Figures 4.3 & 5.12. There is a steep hill along the north side of 96th from Elm to Zuni. It is especially steep at Bryant and storm water flows over and through it from the north above. It is then piped down along the west side of Federal Heights Elementary School to Trib. M. But the flow occasionally exceeds the capacity and escapes the drainage system.	Trib M Options A-C	Will add to text as part of the redevelopment options	Section 5- Subalternatives
63	5.6.3	25	jkaiser	See Figure ??? for a view of Option C	Trib M Options A-C	Concur- Will fix labels	
64	5.6.3	25	asparks	largest	typo	Concur- Will fix typo	
65	5.6.3	25	jkaiser	How can a structure that is at least 4-feet deeper road to invert be constructed without drop structures? Would a pre-cast concrete arch, possibly with ped-capabilities (see Holly/Brantner Gulch,) be a less expensive alternative?	Trib M Alternative 1, Reach 1	Agree. Detailed culvert design will be addressed during conceptual design or during the CIP phase.	Section 5- Structure Sizing
66	5.6.3	25	jkaiser	How?	Trib M Alternative 1, Reach 1; increase channel capacity	Concur - Will add clarifying text with channel sizing	
67	5.6.3	25	sthas	Size?	Trib M Alternative 1, Reach 1; increase channel capacity; storm sewer pipe	Concur - will add size	

68	5.6.3	25	jkaiser	... at 92nd Avenue	Trib M Alternative 1, Reach 1; increase channel capacity; location of 72" CMP to be replaced	Concur- Will add text	
69	5.6.3	25	stthomas	Somehow show on Figure 5-12 the extent of these improvements (I realize it's different for each option but a general circle or line will suffice).	Trib M Sub-alternatives Options A-C	Concur- Will delineate locations	
70	5.6.3	25	jkaiser	Where is Figure 5-12's storm sewer system discussed?	Trib M Sub-alternatives Options A-C	Concur- Will review	
71	5.6.4	25	asparks	"The overall intention of the detention along those two (2) creeks" should be describing 2 different creek segments of the same creek, Niver Creek. Perhaps change creeks to creek segments.	Trib L Alternatives	Concur- Will change "two creeks" to "two segments of Niver Creek"	
72	5.6.4	25	anegretti	Area of concern: Between Water world and the Hyland Hills ball parks there is a steep Creekside slope along Reach 2 of Trib. L. Figures 2C, 5-14, -16, -18, -20. This is in Hyland Hills property and a stability concern. To address this, their engineer should be involved - Terry Barnhart, HYPERLINK "mailto:TBarnhart@hylandhills.org" TBarnhart@hylandhills.org	Trib L Alternatives	Concur- Will add text	Section 5- Stability Issues
73	5.6.4	25	anegretti	Area of concern: At the start of Trib. L, Figure 2C, the drainage drops suddenly into a gulch with high energy, sometimes producing a geyser at a makeshift dissipation structure. The resulting erosion is constant and concerning. According to a property owner on Elm Court at 88th Avenue, surface water sheet flows west-east possibly causing damage.	Trib L Alternatives	Concur- Will add text	Section 5- Stability Issues
74	5.6.4	25	asparks	of	typo	Concur- Will fix typo	
75	5.6.4	25	jkaiser	One concern with a "pass all water" option is by removing the metering effect of the existing 'undersized' culverts, the channel will become much flashier in even small storms (<<2-year), making the channel more unstable and cause more incising and bank erosion. Channel stability needs to be evaluated in all alternatives; the goal is not just passing the 100-year event.	Trib L Alternative 1	Concur - will add text discussing stabilization/erosion issues to Section 5.	Section 5- Stability Issues
76	5.6.4	25	stthomas	88th	typo; Trib L Alternative 1	Concur- Will fix typo	
77	5.6.4	25	stthomas	Have you considered the effect of the change in timing of these flows entering Niver Creek?	Trib L Alternative 1	Each alternative has a SWMM analysis. Will clarify in report text.	Section 5- Alternatives
78	5.6.4	25	jkaiser	Why is the conveyance at Huron 5.5 times that of I-25? What about a combination water/pad trail precast arch ("con-span"); what about raising the profile of Huron Street at the low point to facilitate this? (Holly/Brantner Gulch)	Trib L Alternative 1	Product of the available headwater. Could explore different culvert types, raising the road, etc. This will occur during the conceptual design phase or in the future CIP process.	Section 5- Structure Sizing
79	5.6.4	25	stthomas	2-10'x8' RCBC at Pecos St	Trib L Alternative 1; forgotten structures	Concur- Will add text	
80	5.6.4	26	stthomas	Why isn't this included in the Lower Niver Creek section instead of here?	Trib L Alternative 2	Because the detention areas are acting as one system it seemed most appropriate to include in the Trib L section. Will revise text to clarify this.	Section 5- Alternatives
81	5.6.4	26	jkaiser	see comment on Alt. 4	Trib L Alternative 2	See Alt 4 response.	Section 5- Alternatives
82	5.6.4	26	jkaiser	What is the basis of the 9 AF? is it the "100-year" detention volume for the tributary area (problematic at best) versus the maximum achievable volume (much more problematic)	Trib L Alternative 2	9 AF is the 100-yr detention volume (with separate WQCV). Will look at including WQCV to add more volume. Will also provide hydrographs to provide explanation for the hydrology and basis for the detention basins and sizes.	Section 5- Alternative Detention
83	5.6.4, Table 5-2	26	jkaiser	Typical for alternatives 2, 3, and 4: what is the flow reduction at Grant Street; what is the reduction at I-25?	Trib L Alternative 2	Will add Grant St. as a location in the table.	Section 5- Alternatives
84	5.6.4	26	jkaiser	If there is upstream detention, why is this the same size as Alt 1?	Trib L Alternative 2, Reach 1 at I-25	Peak flow is not reduced enough to change the size of the culvert in this location.	Section 5- Alternatives
85	5.6.4	26	jkaiser	If there is upstream detention, why is this the same size as Alt 1?	Trib L Alternative 2, Reach 1 at Huron Street	Peak flow is not reduced enough to change the size of the culvert in this location.	Section 5- Alternatives
86	5.6.4	26	stthomas	, 15 AF	Trib L Alternative 2, Reach 2 detention	Concur- Will add text	
87	5.6.4	26	stthomas	Move to Lower Niver Creek section.	Trib L Alternative 3	Because the detention areas are acting as one system it seemed most appropriate to include in the Trib L section. Will revise text to clarify this.	Section 5- Alternatives
88	5.6.4	26	asparks	insert space	typo	Concur- Will fix typo	
89	5.6.4	26	stthomas	, 65 AF	Trib L Alternative 3, Reach 2 detention	Concur- Will add text	
90	5.6.4	26	stthomas	Move to Lower Niver section.	Trib L Alternative 4; "and along Lower Niver Creek just north of the American Furniture Warehouse (NL-12)."	Because the detention areas are acting as one system it seemed most appropriate to include in the Trib L section. Will revise text to clarify this.	Section 5- Alternatives
91	5.6.4	26	jkaiser	This is not shown on figure 5-19. What happened to the idea of diverting the 88th Avenue storm sewer system into the existing detention basin north of 88th Avenue ?	Trib L Alternative 4; online storage for subcatchments north of detention areas NL15 and 16	We looked at this idea and it was not possible due to grade constraints and impacts to the existing Niver Dam.	Section 5- Alternatives
92	5.6.4	27	jkaiser	This comment would be germane to Alternative 2, as well: Why concentrate all of the earthwork and volume exclusively to "off line" detention north of the Trib L channel. Why not investigate a larger "on-line" detention, perhaps one that swallows the existing detention. One cost consideration of both the off line and my suggested on-line detention would be the need to relocate a 16-inch waterline that crosses I-25 about 175-feet north of the sign bridge visible in the photos, and runs due west for about 350-feet from the edge of pavement, then loops around the north side of the existing "detention" basin. Specific to this alternative, with the tremendous cost that would be associated with a new box under I-25, surely something could be found that would be cheaper than a conveyance that is only 25% larger than existing. Perhaps in Reach 2 increase the on-line Bell Roth Park basin size downstream of Pecos, which hasn't been explored at all as an attenuation possibility.	Trib L Alternative 4, Reach 1	Will provide detention alternative hydrographs to support the basis for the offline detention calculations and provide further explanation/clarification in the report text.	Section 5- Alternatives
93	5.6.5	27	stthomas	Sometimes you use "by" and sometimes you use "x". Please search for all by's and replaces with x's.	Document	Concur- Will fix throughout document	
94	5.6.5	27	stthomas	, 65 AF	Trib L Alternative 4, Reach 2 detention	Concur- Will add text	
95	5.6.5	27	asparks	I didn't see mention of alternatives discussion of the concrete-lined channel adjacent to Coronado Pkwy. I don't think that anyone likes concrete-lined channels anymore from District to Federal. There is shallow flooding around structures at the intersection with York St. If the alternative included improving the channel, concrete-lined would not be an acceptable replacement. I understand that the implementation of constructing a natural channel here would include street modification. Or is it that the upstream improvements would preclude the necessity of improving the channel here to a natural channel?	Lower Niver Alternatives	Concur - we looked at replacing the concrete lined channel with grass lined for the section downstream of Washington Street for Alternatives 1, 2, and 3. For Alternative 4, the peak discharge is reduced enough that the existing channel downstream of Washington does not need to be revised in order to contain the flow. Will add more text in the report to clarify this.	Section 5- Alternatives

96	5.6.5	27	stthomas	Quantify the acreage of property that would need to be acquired for each option. Is property acquisition included in the cost estimates?	Lower Niver Alternatives; Options A-D	Will add property acquisition costs.	Section 5- Subalternatives
97	5.6.5	27	jkaiser	Wouldn't this only be required with Alternative 1, not "all 4 alternatives". If the discharge of Trib L is decreased by Alternatives 2 - 4, the increase in required conveyance under the NVTC site would also go down. One discussion was to have enough detention/attenuation upstream to allow the existing box to work. Is that not possible?	Lower Niver Alternatives; Option D	It was not feasible under any alternative to reduce the flows low enough to be contained in the existing box culvert at Grant St.	Section 5- Alternatives
98	5.6.5	27	stthomas	Approximate size? Is this done within the existing footprint?	LN Alternative 1, Reach 2	Yes- Will fix text	
99	5.6.5	27	jkaiser	For each of the 4 alternatives, what size box (or bored pipe(s)) would be required for the north/south crossing under 84th Avenue based on the Q at the confluence of Trib L with the "upper niver" outflow? At the present box culvert location there are sizable sump inlets in 84th Avenue. So relocating the Niver's crossing would still require some form of storm sewer outlet from this location.	LN Alternative 1, Reach 2	Will add culvert sizing for box culvert at 84th Ave. for each Alt.	Section 5- Subalternatives
100	5.6.5	28	stthomas	Size?	LN Alternative 2, Reach 2; channel replacement	Concur- Will add text	
101	5.6.5	28	stthomas	Size?	LN Alternative 3, Reach 2; channel replacement	Concur- Will add text	
102	5.6.5	28	stthomas	This alternative is not shown on the figures.	LN Alternative 4	Will revise figures to be more clear	Section 5- Figures
103	Figure 5-15	PDF 46	stthomas	(20AF)	LN Alternative 2, Trib L-Reach 1; Proposed I-25 Detention Pond	Concur- Will add text	
104	Figure 5-16	PDF 47	stthomas	(15 AF)	LN Alternative 2, Trib L-Reach 2; Proposed Pecos Detention Pond (Non-jurisdictional)	Concur- Will add text	
105	Figure 5-18	PDF 49	stthomas	(65 AF)	LN Alternative 3, Trib L-Reach 2; Proposed Pecos Detention Pond (Jurisdictional)	Concur- Will add text	
106	Figure 5-19	PDF 50	stthomas	(9 AF)	LN Alternative 4, Trib L-Reach 1; Proposed I-25 Detention Pond (Jurisdictional)	Concur- Will add text	
107	Figure 5-20	PDF 51	stthomas	(65 AF)	LN Alternative 4, Trib L-Reach 2; Proposed I-25 Detention Pond (Jurisdictional)	Concur- Will add text	
108	Billy's Sketches	PDF 52	stthomas	Label these figures (Figure 5-21).	Billy's sketches	Concur- Will add figure labels	
109	5.6.5	44	anegretti	Include ROW/Easement cost estimates in the totals.	Summary of Alternatives	Costs will be added as applicable.	Section 5- Costs
110	5.6.5, Table 5-6	44	stthomas	Where is this footnote?	Cost Summary Table	There is no footnote. Will delete superscript.	
111	5.7	44	jkaiser	One cost, especially for NL-12 detention and lower Niver concepts through the NVTC site is the "opportunity cost" of the detention/channel site. Since these locations are not currently floodplain, what is the developed land value being diverted to floodplain use?	Cost effectiveness of alternatives	The final selected plan will be determined by the stakeholders and will include the property acquisition costs along with the costs to construct the proposed project. The alternative selected also needs to be implementable by the jurisdictions; therefore, the opportunity costs and other non-engineering related factors will be considered during final selection of the alternative by the stakeholders.	Section 5- Alternatives
112	5.7, Table 5-7	45	stthomas	These only add up to 95%.	Weighted Alternative Rankings	Concur- Will fix	
113	6.1.1	46	stthomas	State the number of structures that will be removed from the 100-yr floodplain with the recommended plan.	Recommended Plan	Concur- Will note the number of structures removed from the 100-yr floodplain	
114	6.1.1.2	46	stthomas	Size?	Trib M Alternative 4, Reach 1; increase channel capacity	Concur - Will add sizes	
115	6.1.1.2	46	stthomas	Size?	Trib M Alternative 4, Reach 1; storm sewer pipe construction	Concur - Will add sizes	
116	6.1.1.3	46	stthomas	, 9 AF	Trib L Alternative 4, Reach 1; detention	Concur- Will add text	
117	6.1.1.3	46	stthomas	, 65AF	Trib L Alternative 4, Reach 2; detention	Concur- Will add text	
118	6.1	47	stthomas	Include cost summary table of recommended plan broken down by jurisdiction.	Recommended Plan	Concur- Will insert a table of recommended plan costs broken down by jurisdiction	
119	6.1.1.4	47	stthomas	, 20 AF	Trib L Alternative 4, Reach 3; detention	Concur- Will add text	
120	6.1.2	47	asparks	described	typo	Concur- Will fix typo	
121	6.1.2	47	jkaiser	If this reach is a secondary priority, does that mean in a 25, or 50 year flood the homes are not impacted?	Prioritization	Concur - removing structures from the floodplain is a high priority. Will revise wording accordingly.	Section 6- Prioritization
122	Appendix C	PDF 145	stthomas	Delete these from report. Users should go to the FHAD to find them.	Existing RAS cross-sections	Concur- Will delete figures	
123	Appendix F, Figure 3	PDF 212	jkaiser	See figure for markups of existing pipeline.	Proposed I-25 Detention	Will show the existing pipeline on the and discuss in the text. If needed, will add the pipeline location to the conceptual drawings.	Appendix- Alternatives
124	Appendix F, Figure 4	PDF 213	jkaiser	What size pipe, where does it go? What are the tributary areas, and how do their flows get into this basin?	Proposed NL12 Detention	Will add language describing the tributary areas to the proposed pond. The outlet pipe size and alignment will be determined during conceptual design.	Appendix- Alternatives
125	Appendix F	PDF 335	stthomas	These are hard to follow, so I'm going to just assumed you did it right.	Master Plan Cost Estimate for Individual Reach	Will attempt to make more clear and organized.	Appendix- Costs
126	Appendix F	PDF 347	jkaiser	This cost bears no resemblance to what it would actually cost to cross I-25 with traffic staging, roadway reconstruction, etc. Potentially more realistic to evaluate boring a 10-ft. diameter pipe than a new/parallel CBC	I25 box culvert cost	See response to Comment #35.	Appendix- Costs

* Highlighted comments were discussed during 9/10/2015 Comment Resolution Meeting