



FINAL DRAINAGE REPORT

BENT GRASS RESIDENTIAL SUBDIVISION
FILING NO. 2
(SF-19-014)

El Paso County, Colorado

PREPARED FOR:
Challenger Homes
8605 Explorer Dr., Suite 250
Colorado Springs, CO 80920

PREPARED BY:
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Engineering Review

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**EPC Planning & Community
Development Department**



ENGINEER'S STATEMENT

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

Charlene Durham, PE 36727
For and on behalf of Galloway & Company, Inc.



DEVELOPER'S CERTIFICATION

I, The developer, have read and will comply with all of the requirements specified in this drainage report and plan.

By: _____

Address: Challenger Homes
8605 Explorer Dr., Suite 250
Colorado Springs, CO 80920

Date

2-10-20

DEVELOPER'S CERTIFICATION

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

Jennifer Irvine, P.E.
County Engineer/ECM Administrator

Date

Conditions:

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I. Purpose

The intent of the developer is to develop the residential portion of the Bent Grass Subdivision. The purpose of this Preliminary Drainage Report is to identify on and offsite drainage patterns, locate and identify tributary or downstream drainage features and facilities that impact the site, and to identify which types of drainage facilities will be needed and where they will be located. This report will remain in general compliance with the MDDP, which is being submitted concurrently with this report, for the site prepared by Galloway & Company.

II. General Description

The project is a single-family residential development located in the Falcon area of El Paso County, Colorado. The site is located in the Northwest $\frac{1}{4}$ and Southwest $\frac{1}{4}$ of Section 1, Township 13S, Range 65W, of the Sixth Principal Meridian, County of El Paso, State of Colorado. The subject property is located to the south of The Meadows Filing No. 3; west of Bent Grass Residential Filing No. 1; north of Latigo Business Center Filing No 1, undeveloped property, and the Mountain View Electric Association; and east of The Meadows Filing No. 2. A Vicinity Map is included in Appendix A.

A Planned Unit Development Plan Amendment was approved for the site, PUD-14-002, approved in July 2014. This Development Plan is the basis for the drainage facility design contained within this MDDP. The site consists of approximately 103.4 acres and includes 309 dwelling units.

The existing soil types within the proposed site as determined by the NRCS Web Soil Survey for El Paso County Area consist of Columbine gravelly sandy loam, Blakeland-Fluvaquentic Haplaquolls, and Blakeland loamy sand. All soils are defined as having a hydrologic soil group of A. See the soils map included in Appendix A.

III. Previous Reports

The proposed site has been included in multiple drainage studies in the past. The following is a composite list of the existing reports pertaining to this site analysis.

1. *Falcon Drainage Basin Planning Study*, by Matrix Design Group, September 2015.
2. *Master Development Drainage Plan – Bent Grass Residential Subdivision*, by Galloway & Company, May 2019.
3. *Master Development Drainage Plan and Preliminary Drainage Plan – Bent Grass Subdivision*, by Kiowa Engineering Corporation, December 2006.
4. *Final Drainage Report for Bent Grass Residential (Filing No. 1)*, by Classic Consulting Engineers & Surveyors, LLC, August 2014.
5. *Final Drainage Report Addendum for Bent Grass Residential (Filing No. 1)*, by Classic Consulting Engineers & Surveyors, LLC, August 2015.
6. *Master Development Drainage Plan for The Ranch*, by Classic Consulting Engineers & Surveyors, LLC, November 2018.
7. *Falcon Highlands Master Development Drainage Plan & Preliminary Drainage Report & Final Drainage Report for Filing 1*, by URS, January 2005.
8. *Final Drainage Report and Erosion Control Plan – Latigo Business Center Filing No. 1 A Re-subdivision of a Portion of Latigo Business and Research Center Filing No. 1*, by Kiowa Engineering Corporation, November 2004.

9. *Final Drainage Letter Report for Lot 1, Latigo Business Center Filing No. 1*, by Colorado Design Concepts, April 2005.
10. *Final Drainage and Erosion Control for The Meadows Filing Three Subdivision*, by LADD Engineering, July 2000.

IV. Drainage Criteria

Hydrology calculations were performed using the City of Colorado Springs/El Paso County Drainage Criteria Manual, as revised in November 1991 and October 1994 with County adopted Chapter 6 and Section 3.2.1 of Chapter 13 of the City of Colorado Springs/El Paso County Drainage Criteria Manual as revised in May 2014 and the El Paso County Engineering Criteria Manual (ECM) as revised in July 2019.

The drainage calculations were based on the criteria manual Figure 6-5 and IDF equations to determine the intensity, and are listed in Table 1 below.

Table 1 - Precipitation Data

Return Period	One Hour Depth (in).	Intensity (in/hr)
5-year	1.50	5.17
100-year	2.52	8.68

The rational method was used to calculate peak flows as the tributary areas are less than 100 acres. The rational method has been proven to be accurate for basins of this size and is based on the following formula:

$$Q = CIA$$

Where:

Q = Peak Discharge (cfs)
C = Runoff Coefficient
I = Runoff intensity (inches/hour)
A = Drainage area (acres)

The runoff coefficients are calculated based on land use, percent imperviousness, and design storm for each basin, as shown in the drainage criteria manual (Table 6-6). Composite percent impervious and C values were calculated using the residential, streets, roofs, and lawns coefficients found in Table 6-6 of the manual.

The 100-year event was used as the major storm event for pipes and inlets. The 5-year event was used as the minor event.

For the preliminary design of the channels HEC-RAS version 5.0.3 was utilized. The model was prepared to evaluate velocity, Froude number, and channel depth. Additionally, the model was utilized to size the culverts under Bent Grass Meadows Parkway. A Manning's n value of 0.045 was utilized for the channel which is appropriate for a bunch type native grass that is anticipated within the full channel section. The channels were designed to have a maximum depth of 5' per the criteria manual and have a maximum velocity of 5 ft/s with a maximum Froude number of 0.6. Drainage swales which are not able to meet the 5 ft/s velocity will be lined with riprap.

The UD-Detention spreadsheet was utilized for sizing the water quality orifices on the proposed water quality portion of the regional detention pond. This spreadsheet was also utilized for the design of the proposed on-site water quality ponds, Pond (North) and Pond (South).

HEC-HMS was utilized to analyze the hydrology of the overall basin and verify that no changes in release rates have occurred to the regional detention pond with its addition of water quality.

UD-Inlet was utilized to calculate both the street capacities and the inlet capacities.

StormCAD was utilized to size the storm sewer systems.

V. Existing Drainage Conditions

The site is contained fully within one major drainage basin; the West Falcon Tributary. The site does border the Middle Falcon Tributary along the eastern edge of the property. The site generally drains from north to south with an average slope of 2% outside of the channel. The rational method was used to analyze the individual basins within the site because their size permits it. Excerpts from the DBPS are included in Appendix A.

In addition to the DBPS, The Ranch MDDP to the north and west of the site has revisited their existing conditions as well as existing conditions from the site directly to the north of them. Several detention ponds have been created within the Paint Brush Hills Subdivision which revise the offsite flow entering the site within the major drainageway. This is taken into account with The Ranch MDDP. While The Ranch is still in design stage they are proposing detention ponds within their site to release at historic rates. This will revise the flow rates in their designed section of the channel to below the rates that are identified within the DBPS. A HEC-HMS model will be prepared with subsequent submittals updating the existing flow rates within the channel (as well as the proposed flow rates).

Per the DBPS the site lies within the basins, WT200, WT210, and WT220. These basins connect to channel reaches RWT202, RWT204, and RWT210. Both the RWT204 and RWT210 sections of channel currently exist and appear as a drainageway when visiting the site. Reach RWT202 appears to be a shallow overland flow through the project site. It is nearly unrecognizable through the site from a visual standpoint.

The existing channels have been visually inspected via a site walk and all appear in really good condition. There are no signs of scour within the bottoms of the channel. There are small areas that are incised or sloughing at the top of bank of the channel. These areas are less than 12" in height.

There is a small depression at the north end of the site, it appears to be the remnants of an old stock pond. It provides no detention or water quality for the upstream area. It will be removed with the development of this site.

There is an existing sediment pond located to the east of the site, on what is known as the "**School Site.**" This sediment pond was designed with the FDR Addendum for Bent Grass Residential Filing 1 and works for existing conditions. A permanent pond will need to be provided upon development of this site. Drainage basins OS-5 and OS-6 in the provided Proposed Drainage Maps (Appendix G) represent these areas.

A historic basin map has been prepared for this site to analyze the existing basins as well as the offsite basins contributing to the site. The historic map is included in Appendix G and basins are described below.

Basin A-1 (5.42 AC, $Q_5 = 2.2$ cfs, $Q_{100} = 12.4$ cfs): is associated with the northeastern portion of the proposed site. The basin is currently undeveloped. Runoff from the basin generally flows to the southeast, into the property to the east.

Basin A-2 (18.00 AC, $Q_5 = 5.3$ cfs, $Q_{100} = 35.4$ cfs): is associated with the northeastern portion of the proposed site. The basin is currently undeveloped. Runoff from the basin generally flows to the southwest into the existing channel RWT204.

Basin A-3 (19.59 AC, $Q_5 = 6.0$ cfs, $Q_{100} = 40.7$ cfs): is associated with the northwestern portion of the proposed site. The basin is currently undeveloped. Runoff from the basin generally flows to the southeast into the existing channel RWT204.

Basin A-4 (23.81 AC, $Q_5 = 8.3$ cfs, $Q_{100} = 46.5$ cfs): is associated with the western portion of the proposed site. The basin is currently undeveloped. Runoff from the basin generally flows to the south toward the Latigo Business Center Filing No. 1.

Basin B-1 (35.53 AC, $Q_5 = 9.6$ cfs, $Q_{100} = 64.2$ cfs): is associated with the southeastern portion of the proposed site. The basin is currently undeveloped. Runoff from the basin generally flows to the south offsite.

Basin B-2 (4.51 AC, $Q_5 = 1.5$ cfs, $Q_{100} = 10.0$ cfs): is associated with a portion of the middle of the site. The basin is currently undeveloped. Runoff from the basin generally flows to the southeast into the existing channel.

Basin B-3 (16.18 AC, $Q_5 = 7.8$ cfs, $Q_{100} = 36.9$ cfs): is associated with the southwestern portion of the proposed site. The basin is currently undeveloped. Runoff from the basin generally flows to the southeast into the existing channel.

Basin OS-1 (13.05 AC, $Q_5 = 6.9$ cfs, $Q_{100} = 28.6$ cfs) is associated with The Meadows Filing No. 3 lots 14, 15, 16, and 17. Runoff from this basin sheet flows to the northern property line of the site and then into Basin A-1 to Design Point (DP1).

Basin OS-2 (17.81 AC, $Q_5 = 11.4$ cfs, $Q_{100} = 41.7$ cfs) is associated with The Meadows Filing No. 3 lots 7, 10, 11, 12 and 13. Runoff from this basin sheet flows to the northern property line and into Basin A-2 to DP 2 where it enters RWT204.

Basin OS-3 (9.99 AC, $Q_5 = 5.4$ cfs, $Q_{100} = 23.4$ cfs) is associated with The Meadows Filing No. 3 lots 4 and 5. Runoff from this basin sheet flows to the northern property line and into Basin A-3 to DP 3 where it enters RWT204.

Basin OS-4 (30.69 AC, $Q_5 = 12.0$ cfs, $Q_{100} = 55.4$ cfs) is associated with The Meadows Filing No. 1 lots 4, 5, 6, 7, 8, 9, 10 and 11. Runoff from this basin sheet flows east to the western property line of the site and into Basin A-4 where it then flows south to DP 4.

Design Point 20 (225.0 AC, $Q_5 = 91.8$ cfs, $Q_{100} = 226.0$ cfs) – This area is located north of Basin OS-5, and is comprised of Basins B3 thru B6, A1, and A3 in Bent Grass Filing No. 3. Flows will cross under Woodmen Hills Drive via an existing culvert, then sheet flow to the southeast, passing through Basin OS-5 to DP 11.

Basin OS-5 (14.13 AC, Q5 = 4.9 cfs, Q100 = 27.5 cfs): a basin that is associated with Bent Grass Filing No. 1. Runoff from this basin sheet flows from the North to the South into basin OS-6 and an existing sediment pond.

Basin OS-6 (5.81 AC, Q5 = 1.9 cfs, Q100 = 12.8 cfs): a basin that is associated with Bent Grass Filing No. 1. Runoff from this basin sheet flows from the North to South to an existing sediment pond and then into Bent Grass Meadows Drive. Flows will continue to the east, alongside Bent Grass Meadows Drive, to the Meridian Road intersection. At this location, flows will enter the existing roadside ditch along Meridian Road.

VI. Four Step Process

The Four Step Process is used to minimize the adverse impacts of urbanization and is a vital component of developing a balanced, sustainable project. Below identifies the approach to the four-step process:

1. Employ Runoff Reduction Practices

The proposed development uses Low Impact Development (LID) practices to reduce runoff at the source. Rather than creating point discharges that are directly connected to impervious areas, runoff is routed through pervious areas to promote infiltration. Grass buffers and swales are used where practical.

2. Implement BMPs That Provide a Water Quality Capture Volume with Slow Release

This step utilizes formalized water quality capture volume to slow the release of runoff from the site. Pond WU will be modified to provide EURV and WQCV for its entire tributary area. The EURV volume will release in 72 hours, while the WQCV will release in no less than 40 hours. On-site water quality control volume detention ponds will provide water quality treatment prior to the runoff being released into the channel.

3. Stabilize Drainageways

This step implements stabilization to channels to accommodate developed flows while protecting infrastructure and controlling sediment loading from erosion in the drainageways. Erosion protection in the form of riprap pads at all outfall points to the channel to prevent scouring of the channel from point discharges. A HEC-RAS model has been created and used to evaluate the stability of the existing and proposed channels. It has been determined that given that the channel is stable in its current state and the proposed velocities and Froude numbers are similar to those in the existing channel, no improvements will be made to the channel at this time. This will be further discussed later in this report.

4. Implement Site Specific and Other Source Control BMPs

Source control BMPs for homeowners include the use of garages as the primary area where pollutants can be stored. The single-family detached homes provide garages which can act as storage areas. The proposed development does not include outdoor storage or the potential for introduction of contaminants to the Counties' MS4, thus no targeted source control BMPs are necessary. The biggest source control BMP is public education which can be found on the City of

Colorado Springs website and discuss topics such as: pet waste, car washing, lawn care, fall leaves, and snow melt and deicer.

VII. Proposed Drainage Conditions

There has been very minor change to the overall Falcon Area Basin delineation with the proposed condition. A small portion of the site that previously went to the Middle Tributary has been revised to come into the site and a small portion of the site that was previously within the West Tributary has been designed to drain into the Middle Tributary. This will be discussed with the individual basins. All necessary calculations can be found within the appendices of the report.

According to the DBPS, there are two channels that run through the site. As was discussed within the Existing Conditions portion of the report both the RWT202 and RWT204 run through the site. The RWT202 channel will be rerouted on the north end, prior to entering the site, to flow in the existing RWT204 channel. The proposed development will drain to the RWT204 channel, which becomes RWT210 further south in the site. Because Bent Grass Meadows Parkway is being constructed, (2) 16' x 6' concrete box culverts for RWT204 will be installed with this project. This will be installed in its ultimate location.

The DBPS alternative that was approved shows a small sub regional pond (SR3) to provide EURV for a portion of the tributary area. The basin analysis provided in the DBPS shows no decrease in either the 2-year or the 100-year events through this point. It has been discussed with El Paso County to provide detention ponds that only treat the Water Quality Capture Volume (WQCV). This modification will be discussed later in the report.

The site will provide WQCV Detention Ponds to provide water quality treatment prior to discharging the runoff directly into the West Tributary channel RWT204. There are 5 basins which release offsite and do not reach any of the on-site water quality facilities. They are Basin I-1 (0.31 acres), Basin F-1 (0.44 acres), F-2 (0.55 acres), C-8 (0.42 acres) and H-1 (0.52 acres). These areas will be addressed further under "Proposed Water Quality Ponds".

As mentioned previously, the site is proposed to be single family residential. The site is designed to provide a large lot buffer between the existing large lots to the north and west of the site and the proposed site. Beyond this buffer the majority of the site is smaller approximately 1/8 acre lots.

Basin OS-1 (32.28 AC, Q5 = 15.1 cfs, Q100 = 65.1 cfs): a basin that is associated with The Meadows Filing No. 3 lots 7, 10, 11, 12, 13, 14, 15, 16, and 17. Runoff from this basin sheet flows south to the northern property line of the site. Proposed Swale - A intercept these flows and convey them directly to the existing channel, Reach RWT204.

Basin A-1 (2.70 AC, Q5 = 3.3 cfs, Q100 = 8.6 cfs): a basin that is in the northeast corner of the site. It encompasses single-family residential lots (Type A and B) along Ansley Court. Runoff will flow from each lot onto Ansley Court where proposed mountable curb and gutter will convey flows to **DP-1**. Flows will then be conveyed West by mountable curb and gutter to DP-2.

Basin A-2 (1.19 AC, Q5 = 1.5 cfs, Q100 = 4.2 cfs): a basin that is in the northeast area of the site. It encompasses single-family residential lots (Type A) along Berwyn Court. Runoff will flow from each lot

onto Berwyn Court where proposed mountable curb and gutter will convey flows to **DP-2**. Flows will then be conveyed South by mountable curb and gutter to DP-3.

Basin A-3 (1.57 AC, Q5 = 2.1 cfs, Q100 = 5.0 cfs): a basin that is in the northeast area of the site. It encompasses single-family residential lots (Type A and B) along Niebrara Drive and Berwyn Court. Runoff will flow from each lot onto Niebrara Drive and Berwyn Court where proposed mountable curb and gutter will convey flows to **DP-3**. Flows will then be conveyed West by a proposed cross pan to DP-4.

Basin A-4 (2.24 AC, Q5 = 2.9 cfs, Q100 = 7.5 cfs): a basin that is in the northeast area of the site. It encompasses single-family residential lots (Type A and B) along Berwyn Court and a small portion of Willmore Drive. Runoff will flow from each lot onto Berwyn Court where proposed mountable curb and gutter will convey flows to **DP-4**. Flows will then be conveyed West along Bent Grass Meadows Drive by curb and gutter to DP-8.

Basin E-1 (1.71 AC, Q5 = 3.6 cfs, Q100 = 7.7 cfs): a basin that is in the center of the site and encompasses a portion of Bent Grass Meadows Drive. A high point on the far East of the basin forces water to flow to a low point at **DP-8**, which represents a 20' CDOT Type R sump inlet, which conveys stormwater via proposed 36" RCP storm sewer to the north water quality detention pond. Emergency overflow will spill over the crown of the road and enter into a proposed 10' CDOT Type R sump inlet represented by DP-7.

Basin D-2 (5.15 AC, Q5 = 5.8 cfs, Q100 = 15.4 cfs): a basin that is in the northwest area of the site. It is undeveloped and covered in native grasses, weeds, rock, and shrubs. Runoff from this basin sheet flows from North to South along grades between 2.5 and 6.5 percent. Small portions of the basin will flow directly into RWT202. Most of this basin sheet flows from north to south and collects at **DP-5**. Flows will then be conveyed East by a proposed cross pan to DP-6.

Basin D-1 (12.49 AC, Q5 = 13.3 cfs, Q100 = 35.5 cfs): a basin that is in the northwest area of the site. It is undeveloped and covered in native grasses, weeds, rock, and shrubs. Runoff from this basin sheet flows from North to South along grades between 2.5 and 6.5 percent. Small portions of the basin will flow directly into RWT204. Most of this basin sheet flows from north to south and collects at **DP-6**. Flows will then be conveyed East along Bent Grass Meadows Drive by curb and gutter to DP-8.

Basin E-2 (0.68 AC, Q5 = 2.4 cfs, Q100 = 4.6 cfs): a basin that is in the center of the site and encompasses a portion of Bent Grass Meadows Drive. A high point on the far West of the basin forces water to flow to a low point at **DP-8**, which represents a 20' CDOT Type R sump inlet, which conveys stormwater via a proposed 36" RCP storm sewer to the north water quality detention pond. Emergency overflow will spill over the crown of the road and enter into a proposed 10' CDOT Type R sump inlet represented by DP-7.

Basin E-3 (0.78 AC, Q5 = 2.9 cfs, Q100 = 5.3 cfs): a basin that is in the center of the site and encompasses a portion of Bent Grass Meadows Drive. A high point on the far West of the basin forces water to flow to a low point at **DP-7**, which represents a 10' CDOT Type R sump inlet, which conveys stormwater via a proposed 24" storm sewer to **DP-8**. This inlet receives emergency overflow from DP-8.

Basin B-3 (0.46 AC, Q5 = 1.1 cfs, Q100 = 2.3 cfs): a basin that is in the North-central area of the site. It encompasses the fronts of two single family Type A lots, and a large portion of Silky Thread Road. Runoff will flow from each lot onto Silky Thread Road where proposed mountable curb and gutter will convey

flows west into temporary, riprap lined, Proposed Swale - B. Flows will continue West and then South to **DP-14** where it will enter the north water quality detention pond.

Basin B-4 (1.19 AC, Q5 = 0.4 cfs, Q100 = 2.5 cfs): a basin that is in the North-central area of the site. Runoff from this basin sheet flows until it is intercepted by temporary Proposed Swale - B just West of Silky Thread Road. Once intercepted, flows will be routed West and then South to **DP-14** into the north water quality detention pond.

Basin B-1 (4.46 AC, Q5 = 5.6 cfs, Q100 = 14.0 cfs): a basin that is in the northeast area of the site. It encompasses single-family residential Type A lots along Thedford Court and Willmore Drive. Runoff will flow from each lot onto the street where proposed mountable curb and gutter will convey flows South and then West to **DP-11**.

Basin B-2 (1.17 AC, Q5 = 2.0 cfs, Q100 = 4.3 cfs): a basin that is in the northeast area of the site. It encompasses the fronts of single-family residential Type B lots along Willmore Drive. Runoff will flow from each lot onto the street where proposed mountable curb and gutter will convey flows West to **DP-12**.

Basin B-5 (1.56 AC, Q5 = 0.5 cfs, Q100 = 3.7 cfs): a basin that is in the northeast area of the site. It is undeveloped and covered in native grasses, weeds, rock, and shrubs. Runoff from this basin sheet flows from North to South along grades around 2 percent. Runoff will be intercepted by temporary Proposed Swale B that will convey flows to **DP-14** into the north water quality detention pond.

Basin B-6 (0.62 AC, Q5 = 0.2 cfs, Q100 = 1.5 cfs): a basin that is in the northeast area of the site adjacent to RWT204. It encompasses the proposed north water quality detention pond. Runoff will sheet flow directly into the pond. The pond will outfall to RWT204.

Basin C-5 (7.86 AC, Q5 = 10.9 cfs, Q100 = 24.9 cfs): a basin that is in the southeast area of the site. It encompasses single-family residential lots, Type A lots along Feather Reed Drive and Avena Road. Runoff will flow from each lot onto the street where proposed mountable curb and gutter will convey flows West and then South to a proposed on-grade 15' CDOT Type R inlet, **DP-16**. Captured flow will convey stormwater via a proposed 24" RCP storm sewer to DP-17. By-pass flow will continue down Feather Reed Drive to DP-18 where 5 yr. and 100 yr. flows will be completely captured by a 20' CDOT Type R sump inlet.

Basin C-6 (5.54 AC, Q5 = 7.0 cfs, Q100 = 16.9 cfs): a basin that is in the southeast area of the site. It encompasses single-family residential lots, Type A lots along the North portion of Feather Reed Drive and Type A lots along the South portion of Feather Reed Drive. Runoff will flow from each lot onto Feather Reed Drive where proposed mountable curb and gutter will convey flows West and then South to a proposed on-grade 10' CDOT Type R inlet, **DP-17**. Captured flow will convey stormwater via a proposed 30" RCP storm sewer to DP-19A. By-pass flow will continue down Feather Reed Drive to DP-19 where 5 yr. and 100 yr. flows will be completely captured by a 20' CDOT Type R sump inlet.

Basin C-3 (2.38 AC, Q5 = 3.3 cfs, Q100 = 7.8 cfs): a basin that is in the southeast area of the site. It encompasses single-family residential lots, Type A lots along Berwyn Drive. Runoff will flow from each lot onto the street where proposed mountable curb and gutter will convey flows West to a proposed 20' CDOT Type R sump inlet, **DP-18**. 5 yr. and 100 yr. flows will be completely captured and then conveyed via a proposed 30" RCP storm sewer to DP-19.

Basin C-4 (3.61 AC, Q5 = 5.3 cfs, Q100 = 12.0 cfs): a basin that is in the southeast area of the site. It encompasses single-family residential lots, Type A lots along Bossett Drive. Runoff will flow from each lot onto the street where proposed mountable curb and gutter will convey flows West to a proposed 20' CDOT Type R sump inlet, **DP-18**. 5 yr. and 100 yr. flows will be completely captured and then conveyed via a proposed 30" RCP storm sewer to DP-19.

Basin C-1 (1.35 AC, Q5 = 2.6 cfs, Q100 = 5.8 cfs): a basin that is associated with Bent Grass Residential Filing No. 1 lots 58, 59, 60, 61, 62, 63, 64, 65, and 66. It encompasses the rears of single-family residential lots. Runoff will flow West from each lot into Proposed Swale G, which will convey flows South to Avena Road. Then, proposed mountable curb and gutter will convey flows West and will be routed through basin C-2 along Berwyn Drive to **DP-19**.

Basin C-2 (6.80 AC, Q5 = 7.1 cfs, Q100 = 18.5 cfs): a basin that is in the Southeast corner of the site. It encompasses fronts of single-family residential Type B lots. Runoff will flow from each lot onto Berwyn Drive where proposed mountable curb and gutter will convey flows South and then West to a proposed 20' CDOT Type R sump inlet, **DP-19**, where 5 yr. and 100 yr. flows will be completely captured and then conveyed via a proposed 30" RCP storm sewer pipe to outfall the south water quality detention pond.

Basin C-7 (0.89 AC, Q5 = 0.3 cfs, Q100 = 2.1 cfs): a basin that is in the South-central area of the site adjacent to RWT204 and RWT 210. It encompasses the proposed south water quality detention pond. Runoff will sheet flow directly into the pond. The pond will outfall to RWT210.

Basin C-8 (0.42 AC, Q5 = 0.2 cfs, Q100 = 1.0 cfs): a basin that is in the South-central area of the site adjacent to RWT204 and RWT 210. It encompasses the rears of single-family residential Type B lots. Runoff will sheet flow West directly into RWT204 and RWT210.

Basin OS-2 (20.08 AC, Q5 = 9.0 cfs, Q100 = 43.4 cfs): a basin that is associated with The Meadows Filing No. 2 lots 1, 2, 3, 4, 5, and 6. Runoff from this basin sheet flows from the Northwest to the Southeast, crossing the West property line of the site. The runoff will continue to sheet flow in the same manner through basins D-4 and D-3 until intercepted by Proposed Swale - D on the southern property line of the site. Collected flows will then be routed East to **DP-23** where 5 yr. and 100 yr. flows will be captured by a CDOT Type D area inlet. Flows will then be conveyed by a 36" RCP storm drain piped underneath Bent Grass Meadows Drive out falling into Proposed Swale - E that will route flows South to DP-26 and then East by Proposed Swale – F ultimately outfalling into RWT210. At the confluence of Swales E and F (DP-26), there will be a temporary sediment basin to provide water quality, prior to flows entering RWT210. This facility will be designed as a permanent feature, upon future development.

Basin OS-3 (10.62 AC, Q5 = 4.7 cfs, Q100 = 22.7 cfs): a basin that is associated with The Meadows Filing No. 1 lot 11 and The Meadows Filing No. 2 lots 1 and 2. Runoff from this basin sheet flows from the Northwest to the Southeast until crossing the West property line of the site. The runoff will continue to sheet flow in the same manner through basin D-4 until intercepted by Proposed Swale - D on the southern property line of the site. Collected flows will then be routed East to **DP-23** where 5 yr. and 100 yr. flows will be captured by a CDOT Type D area inlet. Flows will then be conveyed by a 36" RCP storm drain piped underneath Bent Grass Meadows Drive out-falling into Proposed Swale – E that will route flows South to DP-26 and then ultimately East by Proposed Swale – F into RWT210. A temporary sediment basin is located at DP-26, which will provide water quality, prior to flows entering RWT210.

Basin OS-4 (2.64 AC, Q5 = 0.9 cfs, Q100 = 6.0 cfs): a basin located just south of Basin D-4, and west of Bent Grass Meadows Drive. Flows will be captured as gutter flow within Bent Grass Meadows, where it

will continue to the south to **DP-24**, proposed 25' CDOT Type R on-grade inlet. By-pass flows will continue south along Bent Grass Meadows Drive, to be intercepted by an existing sump inlet, installed as part of the Latigo Business Park development.

Basin D-4 (9.53 AC, Q5 = 7.1 cfs, Q100 = 23.3 cfs): a basin that is in the West area of the site. Runoff from this basin sheet flows from the Northwest to the Southeast. The runoff be intercepted by Proposed Swale – D on the southern property line of the site. Collected flows will then be routed East to **DP-23** where 5 yr. and 100 yr. flows will be captured by a CDOT Type D area inlet. Flows will then be conveyed by a 36" RCP storm drain piped underneath Bent Grass Meadows Drive out-falling into Proposed Swale – E that will route flows South to DP-26 and then ultimately East by Proposed Swale – F into RWT210. The temporary sediment basin at DP-26 will provide water quality for this basin.

Basin D-3 (9.16 AC, Q5 = 9.4 cfs, Q100 = 26.2 cfs): a basin that is in the West area of the site. Runoff from this basin sheet flows from the Northwest to the Southeast. Flow from the basin will sheet flow onto Bent Grass Meadows Drive where proposed curb and gutter will convey flows South where the 5 yr. and 100 yr. flows will be captured by a proposed 25' CDOT Type R on-grade inlet, **DP-24**. Captured flow will be routed by a 24" RCP storm drain piped to DP-25.

Basin E-4 (0.91 AC, Q5 = 3.0 cfs, Q100 = 5.7 cfs): a basin that is in the Southwest area of the site and encompasses a portion of Bent Grass Meadows Drive. Runoff from this basin is captured by proposed curb and gutter and then routed South where the 5 yr. and 100 yr. flows will be captured by a proposed 25' CDOT Type R on-grade inlet, **DP-24**. Captured flow will be routed by a 24" RCP storm drain piped to DP-25. A temporary water quality facility will treat this flow.

Basin E-5 (0.89 AC, Q5 = 3.3 cfs, Q100 = 6.1 cfs): a basin that is in the Southwest area of the site and encompasses a portion of Bent Grass Meadows Drive. Runoff from this basin is captured by proposed curb and gutter and then routed South where the 5 yr. and 100 yr. flows will be captured by a proposed 25' CDOT Type R on-grade inlet, **DP-25**. Captured flow will be routed by a 24" RCP storm drain piped to an outfall at DP-26, where a temporary sediment basin will provide water quality for the basin. Flows will then be routed East by Proposed Swale – F until out-falling into RWT210.

Basin F-1 (0.44 AC, Q5 = 0.6 cfs, Q100 = 1.6 cfs): a basin that is in the Northeast corner of the site. It encompasses the rears of single-family residential Type B lots. Runoff from the basin will follow historical patterns East onto a vacant lot currently known as the "School Site", which has an existing sediment pond for water quality treatment.

Basin F-2 (0.55 AC, Q5 = 1.5 cfs, Q100 = 3.1 cfs): a basin that is in the east side of the site. It encompasses a portion of Bent Grass Meadows Parkway and a portion of back lots. There is a high point in the road causing a portion of the road to drain east into the existing roadway. Bent Grass Residential Filing No. 1 had two basins accounting for this condition (Basins A and B with a total area of 0.38 acres). The anticipated flow rate from these two basins was 1.3 cfs in the 5-year event and 2.6 cfs in the 100-year event. The proposed runoff from the proposed slightly exceeds the anticipated runoff in the Filing No. 1 Report. This basin will continue east as gutter flow in Bent Grass Meadow Drive, until it reaches an existing roadside ditch along Meridian Road.

Basin G-1 (1.47 AC, Q5 = 1.3 cfs, Q100 = 4.5 cfs): a basin that is along the East boundary of the site, south of Bent Grass Meadow Drive. It encompasses the rears of single-family residential Type B lots and open space. Flows from this basin will be routed to the south through Proposed Swale H. A flared end

section is installed at the southeast corner, **DP-20**, of the project site to intercept this flow. An 18" rcp will convey flows to the west, releasing into the South water quality pond.

Basin H-1 (0.52 AC, Q5 = 0.2 cfs, Q100 = 1.4 cfs): is a basin along the south property line, east of the existing channel, consisting of a proposed utility easement. Flows will release directly offsite to the south

Basin I-1 (0.31 AC, Q5 = 1.0 cfs, Q100 = 2.1 cfs): a basin that is associated with Latigo Business Center Filing No. 1 lot 1. It encompasses a portion of Bent Grass Meadows Parkway South of the proposed (2) 25' CDOT Type R Inlets on site. There are a set of on-grade inlets (20' on the east side, 15' on the west side), which will intercept this flow. Inlets will then release flows to the east into an existing drainage swale. Based on the Latigo Business Park drainage report by Kiowa Engineering, inlets were designed for flows of 9.9 and 21.2 cfs from this basin. The development of the Bent Grass site has reduced the flows entering the Latigo Business Park site, ensuring the existing storm system will continue to function adequately.

Design Point 30 (225.0 AC, Q5 = 91.8 cfs, Q100 = 226.0 cfs) – This area is located north of Basin OS-5, and is comprised of Basins B3 thru B6, A1, and A3 in Bent Grass Filing No. 3. Flows will cross under Woodmen Hills Drive via an existing culvert, then sheet flow to the southeast, passing through Basin OS-5 to DP 31.

Basin OS-5 (14.13 AC, Q5 = 4.9 cfs, Q100 = 27.5 cfs): a basin that is associated with Bent Grass Filing No. 1. Runoff from this basin sheet flows from the North to the South into basin OS-6 and an existing sediment pond at DP-32.

Basin OS-6 (5.38 AC, Q5 = 8.8 cfs, Q100 = 19.3 cfs): a basin that is associated with Bent Grass Filing No. 1. Runoff from this basin sheet flows from the North to South to an existing sediment pond. This sediment pond works in existing conditions. A permanent pond will need to be provided upon development of this site. There are several options which will be analyzed, to determine the best scenario to deal with these flows. These options will be considered in the drainage report associated with Meridian Road improvements, which could include a DBPS Amendment to the Falcon Basin, depending on the scenario decided to be best suited for dealing with these off-site flows.

VIII. Proposed Water Quality Detention Ponds

Three Water Quality Capture Volume Detention Ponds will be provided for the proposed site. One will be provided for the area north of Bent Grass Meadows Drive, one will be provided for the area to the south and one will be provided along the east side of Bent Grass Meadows Drive at the south property line. All ponds are private. These detention ponds will only provide water quality. The EURV and 100-year volumes will be conveyed via the emergency overflow weir, which will be lined. The water quality volume release will be controlled with an orifice plate that will release in 40 hours. The north water quality pond will release into RWT204 and the south and west will release into RWT210. The west pond will act as a temporary sediment basin, at the confluence of Swales E and F (DP-26). Once the area south of Bent Grass Meadows Drive develops, final design of this pond and it's components will be provided.

There are four basins which are not provided with on-site water quality, as stated previously. Basin I-1, which releases to the South into the Latigo Business Park, has been reduced in size. From the FDR for Latigo Business Park, the offsite basin being accounted for was 7.2 acres. With the proposed development, the basin is only 0.31 acres. Also from this report, flows will continue through a natural swale, releasing eventually into the West Tributary, reaching Pond WU. Basin H-1, located at the south

boundary lines, will release towards the south. Flows will continue until they reach the West Tributary, and then Pond WU.

Basins F-1 and F-2 release to the east, onto the "School Site" property. From the FDR for Bent Grass Filing No. 1, the existing sedimentation pond on the School Site was accommodating 5.42 acres from the proposed development. This area has been reduced to 0.99 acres (0.44 + 0.55). These 2 basins will receive water quality from the existing pond, but do not reach Pond WU, which is being revised to handle water quality from the developed basins, which cannot be treated on-site. Flows from this basin, as they continue east, will enter the Middle Tributary of the Falcon Basin. Total area which will not be treated via on-site facilities, or Pond WU is less than 1.0 acre required.

IX. Proposed Channel Improvements

As can be seen in the drainage maps the proposed Filing No. 2 does not encroach into the existing channel for the RWT204 reach. It is desired to leave the channel in its existing condition, as the channel was proven to be stable, refer to shear stress calculations in the appendix. Reach RWT204 does not lie within the FEMA 100-year floodplain. This development will define the 100-year floodplain into Tract H. Future development will reroute RWT204 into this tract.

The future channel and the existing channel do not align at this location. Therefore, a small amount of grading is proposed to direct runoff from the existing channel to the proposed culvert location. After outfalling to the south of Bent Grass Meadows Parkway there is another small section of grading to direct flows back to the existing channel. The radii of these bends were designed such that super elevation/increased velocities are not expected.

The future channel design, which will realign the facility with future development, has been analyzed with HEC-RAS and shown to be stable with increased flows.

Reviewing the HEC-RAS model prepared for the conditions proposed by this report shows that the existing and proposed conditions have similar velocities and Froude numbers. Given that the channel is stable in its current state, it is proposed to not provide improvements to the channel as part of this Filing. Refer to Appendix D for HEC-RAS modeling and output.

Riprap protection will be provided at the individual outfalls from the site into the channel to prevent scouring from the point discharges. Riprap lining will be provided for Swales B, C and F as they do not meet the 5 ft/s velocity constraint. Each of these swales will be lined with type M riprap. Other swales will be natural, grass lined swales.

Improvements to the existing channel will be outlined in the Master Development Drainage Plan for Bent Grass Residential Subdivision (MDDP). As development of Bent Grass proceeds from east to west, crossing the channel, improvements outlined in the MDDP for the existing channel will be implemented.

At this time the RWT202 reach will be rerouted along the north property line of the site and directed into the existing RWT204 reach. This has been modeled in the HEC-RAS model to ensure that the channel remained stable with this additional flow. At the confluence of these two existing channels reaches, RWT210 becomes the next section of channel.

The MDDP identifies the use of check structures for the RWT210 channel downstream of the site. Again, due to the existing stability of the channel and the minor increase in flows, velocities and Froude numbers

have only slightly changed, but channel remains stable. For the purposes of this Filing, it is proposed to leave the channel as is.

The channel design flow rates have previously been established using HEC-HMS in the DBPS. The site has been analyzed using the Rational method. The HEC-HMS model for the basin has been obtained from El Paso County and has been revised accordingly for the developed site. It was necessary to break apart the basin into a couple of smaller basins in order to accurately design the crossings of Bent Grass Meadows Drive. The DBPS identified a pond named SR3 at the junction of RWT202 and RWT204 near the south end of the Bent Grass Residential Subdivision. The purpose of this pond was to provide EURV for a portion of the tributary area, it was identified to have a volume of 1 acre-foot. It has been discussed with El Paso County to not construct this pond. In its place will be three on-site WQCV detention ponds (2 permanent facilities with this development, referred to as the North and South Ponds, one will be temporary sedimentation, referred to as the West Pond, until the adjacent area develops). Pond WU will be modified to provide water quality for the entire tributary area. It is not understood how the 1 ac-ft volume for pond SR3 was generated. The onsite water quality ponds proposed have a total of 1.34 ac-ft volume. If pond SR3 was truly online and provided EURV for the entire tributary area the volume would far exceed the 1 ac-ft volume that was required. In general, as the undeveloped areas develop and are now required to provide onsite water quality, this will aide in detaining the lower event storms which will aide in the stability of the existing channel in small storm events.

In addition to the changes made with this project, several changes have been made upstream of the Bent Grass Subdivision. The Ranch MDDP has added detention ponds for their project and has corrected several of the other offline ponds near the northern end of their site. In addition to the ponds the DBPS identified a flow diversion from the Falcon Watershed into the Sand Creek Watershed. This diversion was removed with The Ranch MDDP. The updated HEC-HMS model is necessary because the DBPS hydrology has now been superseded by The Ranch design.

The Ranch MDDP also investigated the connection from The Ranch site through the Meadows Filing No. 3 to the Bent Grass site. It was identified that the existing homes within the Meadows do not have the adequate drainage improvements to convey storm water through the subdivision. The drainage path through the Meadows is incorrectly identified and allowed homes to be built closer to the flow path than should have been allowed. In addition, several culverts were erroneously constructed restricting the flow path through the subdivision.

The conclusion of The Ranch MDDP is that major channel improvements are necessary through the Meadows subdivision. They state that multiple meetings have taken place with El Paso County regarding this issue and funding for the improvements is being discussed.

X. Proposed Regional Pond Improvements

Utilizing the areas and percent impervious values from the future models in the DBPS it was determined that pond WU has a tributary area of 3.58 square miles and a 7.33% impervious. Utilizing the WQCV equations contained with the Criteria it has been determined that a volume of 9.764 ac-ft is required for the entire tributary area. This volume exceeds the volume for the 5-year event per the DBPS.

The stage storage data for the pond was taken from the DBPS and it was found that the required volume exceeds the front edge of the existing outlet structure on the pond. It is proposed to raise the front edge of the existing outlet to provide the required water quality capture volume. The existing orifices on the face of the outlet structure will be covered to prevent release through them and a new rectangular hole

will be cut through the existing wall. An orifice plate with square orifices will be installed to release the WQCV. A well screen will be installed on the face of the outlet structure. A small micro pool will be proposed directly in front of the orifice plate in an effort to reduce clogging of the well screen. A portion of the top of the outlet opening will be covered, to ensure flows exiting the pond meet the DBPS flows. The HEC-HMS model prepared for the Falcon DBPS has been modified to account for the changes to Pond WU, removal of Pond SR-3, addition of developed basin along Old Meridian Road and modifications made upstream in the Ranch MDDP. This model and results are provided in the appendix.

In reviewing the pond and in discussions with El Paso County, the inlet to Pond WU has washed out and is in need of repair. As part of the proposed improvements to the pond, the washed-out embankment will be repaired. In discussions with the County it is understood that there are multiple areas of wetlands in the area. While the majority of the West Tributary should be directed through Pond WU there are two 18" pipes to the east of the embankment that allow flows to pass from the West Tributary into the existing wetlands to maintain them. The embankment is designed such that flows will back up prior to entering Pond WU and will pass through the existing pipes to the east.

Site investigations have identified that a large reason the embankment failed was improper erosion protection. It is apparent that, as the embankment was overtopped it began scouring under the riprap placed on the downhill side of the embankment. Given enough time or a large enough storm it was able to dislodge a section of the protection and the embankment washed out.

It is proposed to fill the washed-out area of the embankment back to match the existing weir elevation of 6832.5. An 18" pipe will be installed through the embankment. The purpose of this pipe is to drain the area just upstream of the embankment since the dual pipes to the east are higher than that point. Riprap will be re-established on the downstream side of the embankment. In addition, it is proposed to riprap the top of the embankment to protect it from scour. A cutoff wall will also be installed through the full length of the embankment from the top of the embankment to just below the toe of slope on the downstream side. The cutoff wall should be installed on the downstream side of the top of the embankment.

XI. Maintenance

The proposed channels are to be private facilities, along with the water quality ponds, which will be maintained by the Bent Grass Metropolitan District. After completion of construction and upon the Board of County Commissioners acceptance, all public drainage facilities within easements and public Right-of-Way will be owned and maintained by El Paso County. Other than the construction of the proposed twin culverts at Bent Grass Meadows Drive, the only other channel improvements with this Filing, is along the north property line, west of the Falcon Basin channel. Due to the size of the channel, an access road will be provided along the length of the channel. It will be a 15' wide dirt road along the top of the proposed channel. Access will be only on one side of the channel, as the second road would not be able to be located within the development property. Access to the bottom of the channel is not needed, as the overall channel depth is less than 10'. New access to the existing channel has not been provided. When the channel is improved, access will be included in the overall design.

XII. Wetlands Mitigation

No wetlands are located on site.

necessary where
shown on redlines

Will this take flow
away from the
wetlands?

XIII. Floodplain Statement

A portion of the project site lies within Zone AE Special Flood Hazard Area as defined by the FIRM Map number 08041C0553G effective December 7, 2018. A copy of the FIRM Panel is included in Appendix A.

The portion of channel that has a floodplain designation is only the RWT210 and RWT204 portions of the channel. It is unknown why the western channel, RWT202 is unmapped since it is the larger contributor regarding flow rates. Discussions have occurred with PPRBD and a no rise certificate will be required for the existing channel. Models have been obtained from FEMA which show that the FEMA discharges are higher than the DBPS. Therefore the culvert crossing at Bent Grass Meadows Parkway has been sized per the FEMA flows and not the DBPS. The no rise certification will be provided under a separate report.

XIV. Drainage/Bridge Fees and Credits/Reimbursements

The site lies within the Falcon Drainage Basin. The DBPS was approved in 2013 and has drainage and bridge fees associated with the basin.

The subdivision has a total area of 50.795 acres.

Show split of acreage that will pay fees when replatted.

The percent impervious for the subdivision has been calculated with this report to be approximately 39 percent.

50.795 acres x 39% = 19.81 Impervious Acres

Should be 68.545, 59.755 with fees

The following calculations are based on the 2019 Falcon Basin drainage/bridge fees:

38?

Drainage Fees

\$29,622 x 19.81 Imp. Acres = \$586,811.82

Bridge Fees

\$4,069 x 19.81 Imp. Acres = \$80,606.89

~22.7

Per discussions with El Paso County the fees will be offset by the cost of regional improvements. Costs of the improvements to the regional pond facility will be deducted from the overall drainage fees for the project, leaving a net balance, to be paid. The regional improvements would include channel, detention pond modification, and pond inlet repair costs. Below is a table of the reimbursable costs limited to those shown in the Falcon DBPS.

Item	Quantity	Unit	Unit Cost	Cost
Channel Improvements				
30" Grouted Boulders	33	SY	\$ 190.00	\$ 6,270.00
Soil Rip Rap - Type M	20.8	CY	\$ 70.00	\$ 1,456.00
6' Cutoff Wall - Concrete	35	CY	\$ 600.00	\$ 21,000.00
Subtotal				\$ 28,726.00

Regional Pond Improvements (Public)				
18" RCP Storm Drain (Public)	126	LF	\$ 54.00	\$ 6,804.00
18" FES	2	EA	\$ 920.00	\$ 1,840.00
3' Concrete Headwall	2	CY	\$ 600.00	\$ 1,200.00
13' Cutoff Wall - Concrete	60	CY	\$ 600.00	\$ 36,000.00
13' Cutoff Wall - Steel Reinforcement	6380	LBS	\$ 0.90	\$ 5,742.00
13' Sheet Pile Cutoff Wall	155	LF	\$ 620.00	\$ 96,100.00
Rip Rap - Type VH	2260	CY	\$ 85.00	\$ 192,100.00
Pond Modification to Full Spectrum	1	LS	\$ 60,000.00	\$ 60,000.00
Subtotal				\$ 399,786.00
Total (Public)				\$ 428,512.00
Contingency			10%	\$ 42,851.20
Grand Total (Public)				\$ 471,363.20

Below is a cost estimate for the improvements proposed with this filing.

Item	Quantity	Unit	Unit Cost	Cost
Storm Drain Improvements (Public)				
10' CDOT Type R Inlet (Public)	10	EA	\$ 8,000.00	\$ 80,000.00
15' CDOT Type R Inlet (Public)	3	EA	\$ 9,800.00	\$ 29,400.00
CDOT Type D Area Inlet (Public)	1	EA	\$ 7,900.00	\$ 7,900.00
5' Manhole - Type II (Public)	1	EA	\$ 4,700.00	\$ 4,700.00
24" RCP Storm Drain (Public)	137	LF	\$ 70.00	\$ 9,590.00
30" RCP Storm Drain (Public)	122	LF	\$ 95.00	\$ 11,590.00
36" RCP Storm Drain (Public)	245	LF	\$ 110.00	\$ 26,950.00
42" RCP Storm Drain (Public)	50	LF	\$ 140.00	\$ 7,000.00
24" FES	1	EA	\$ 970.00	\$ 970.00
36" FES	1	EA	\$ 1,610.00	\$ 1,610.00
18" FES	2	EA	\$ 1,700.00	\$ 3,400.00
Subtotal				\$ 183,110.00
Culvert (Concrete Box Culvert) (Public)				
6' x 12' Concrete Box Culvert	266	LF	\$ 1,600.00	\$ 425,600.00
30" Grouted Boulders	164	SY	\$ 190.00	\$ 31,160.00
Soil Rip Rap - Type M	52.44	CY	\$ 70.00	\$ 3,670.80
Headwalls - Concrete	35	CY	\$ 600.00	\$ 21,000.00
Wingwalls - Concrete	60	CY	\$ 600.00	\$ 36,000.00
Headwalls - Steel Reinforcement	1300	LBS	\$ 0.90	\$ 1,170.00
Wingwalls - Steel Reinforcement	4430	LBS	\$ 0.90	\$ 3,987.00
Subtotal				\$ 522,587.80

WQCV Detention Ponds (Private)				
Pond (North)	1	EA	\$ 80,000.00	\$ 80,000.00
Pond (South)	1	EA	\$ 80,000.00	\$ 80,000.00
Subtotal				\$ 160,000.00
Total				\$ 865,697.80
Contingency			10%	\$ 86,569.78
Grand Total				\$ 952,267.58

XV. Conclusion

The Bent Grass Residential Subdivision lies within the West Tributary of the Falcon Area Watershed. Recommendations are made within this report to establish and stabilize multiple drainageways through the project site. Detention for the site is provided in two on-site WQCV ponds and a regional pond that will be modified to provide water quality for the entire tributary area. Recommendations are also given for re-establishing the inlet to the regional pond. All drainage facilities within this report were sized according to the Drainage Criteria Manuals. All of the channel corridors will be publicly owned and maintained and shall be the responsibility of El Paso County. Upon development of the individual parcels within the Bent Grass Residential Subdivision, separate Final Drainage Reports will be required to be submitted and approved by El Paso County.

district until final improvements are constructed

XVI. References

this doesn't make sense

1. *City of Colorado Springs/County of El Paso Drainage Criteria Manual*, October 1991.
2. *Drainage Criteria Manual, Volume 2*, City of Colorado Springs, November 2002.
3. *Urban Storm Drainage Criteria Manual*, Urban Drainage and Flood Control District, January 2016 (with current revisions).
4. *Falcon Drainage Basin Planning Study*, by Matrix Design Group, September 2015.
5. *Master Development Drainage Plan and Preliminary Drainage Plan – Bent Grass Subdivision*, by Kiowa Engineering Corporation, December 2006.
6. *Final Drainage Report for Bent Grass Residential (Filing No. 1)*, by Classic Consulting Engineers & Surveyors, LLC, August 2014.
7. *Final Drainage Report Addendum for Bent Grass Residential (Filing No. 1)*, by Classic Consulting Engineers & Surveyors, LLC, August 2015.
8. *Master Development Drainage Plan for The Ranch*, by Classic Consulting Engineers & Surveyors, LLC, November 2018.
9. *Falcon Highlands Master Development Drainage Plan & Preliminary Drainage Report & Final Drainage Report for Filing 1*, by URS, January 2005.
10. *Final Drainage Report and Erosion Control Plan – Latigo Business Center Filing No. 1 A Re-subdivision of a Portion of Latigo Business and Research Center Filing No. 1*, by Kiowa Engineering Corporation, November 2004.

Add a statement regarding no significant adverse impacts to downstream and adjacent properties

APPENDIX A

Exhibits and Figures

APPENDIX B

Hydrologic Computations

Existing Computations

Proposed Computations

APPENDIX C
Hydraulic Computations

APPENDIX D
Preliminary Channel HEC-RAS Models

Existing Conditions Model

Proposed Conditions Model

APPENDIX E
On-Site Pond Calculations

Pond (North) Calculations

Pond (South) Calculations

Pond (West) Calculations

APPENDIX F
Regional Pond Calculations

APPENDIX G
Drainage Map

APPENDIX A

Exhibits and Figures



BENT GRASS

-

BENT GRASS MEADOWS DRIVE

SCALE: 1" = 2,000'

VICINITY MAP

Project No:

CLH000014.20

Drawn By:

CMWJ

Checked By:

RGD

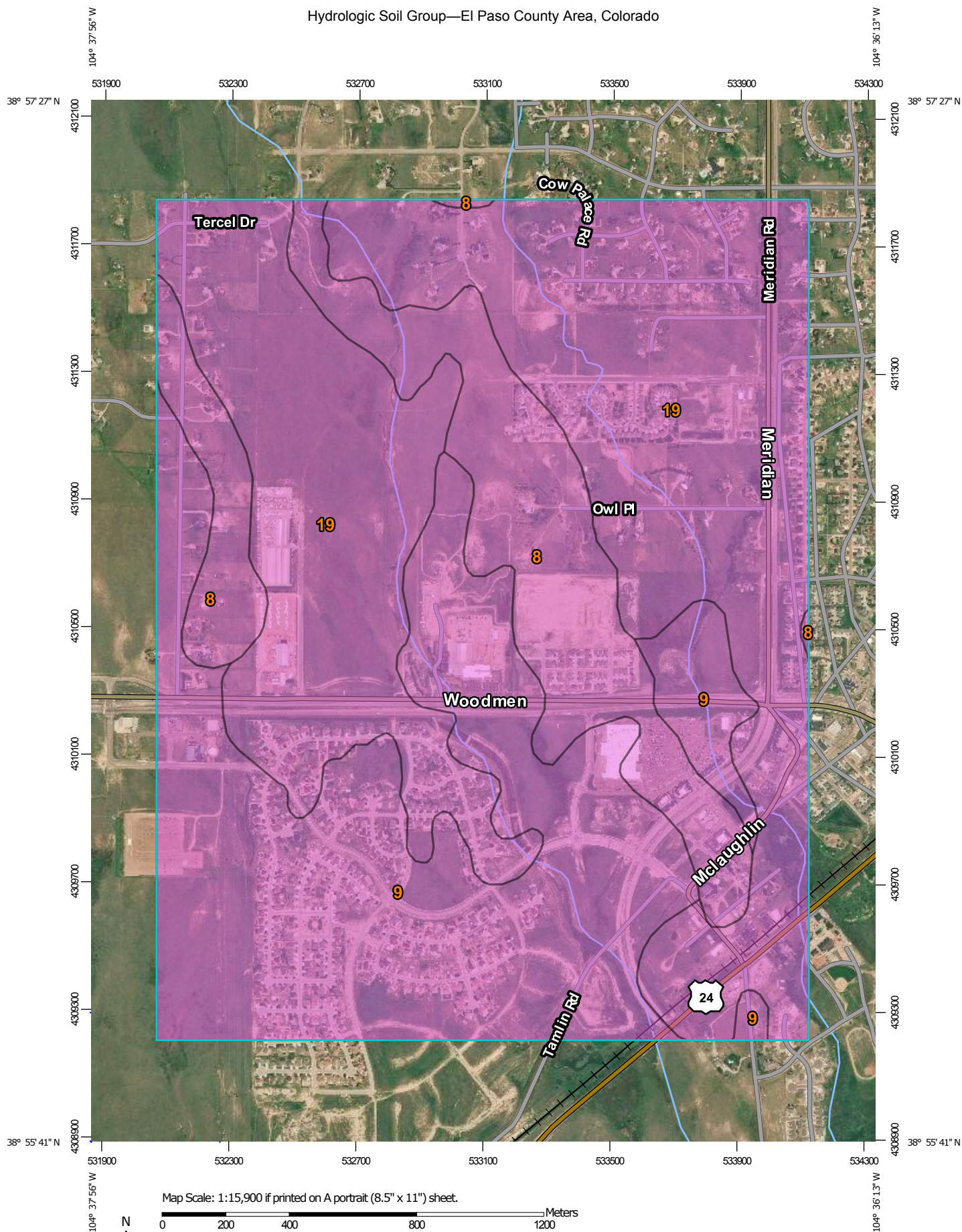
Date:

04/02/2019

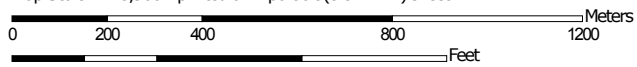
Galloway

1755 Telstar Drive, Suite 107
Colorado Springs, CO 80920
719.900.7220 • GallowayUS.com

Hydrologic Soil Group—El Paso County Area, Colorado



Map Scale: 1:15,900 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

4/2/2019
Page 1 of 4

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons





 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines


 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available


Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 16, Sep 10, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 7, 2016—Aug 17, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	A	214.3	16.0%
9	Blakeland-Fluvaquentic Haplaquolls	A	465.8	34.7%
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	A	662.6	49.3%
Totals for Area of Interest			1,342.6	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the **North American Vertical Datum of 1988 (NAVD88)**. These flood elevations must be compared to structure and ground elevations referenced to the **same vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NIMS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at <http://www.ngs.noaa.gov/>.

Base Map information shown on this FIRM was provided in digital format by El Paso County, Colorado Springs Utilities, City of Fountain, Bureau of Land Management, National Oceanic and Atmospheric Administration, United States Geological Survey, and Anderson Consulting Engineers, Inc. These data are current as of 2006.

This map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

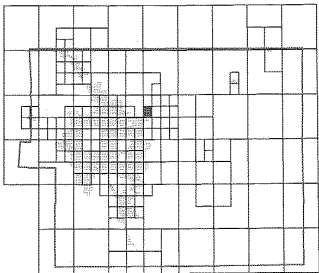
Contact **FEMA Map Service Center (MSC)** via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9820 and its website at <http://www.msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfp>.

El Paso County Vertical Datum Offset Table

Flooding Source	Vertical Datum Offset (ft)
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION	

Panel Location Map



This Digital Flood Insurance Rate Map (DFIRM) was produced through a Cooperating Technical Partner (CTP) agreement between the State of Colorado Water Conservation Board (CWCB) and the Federal Emergency Management Agency (FEMA).



Additional Flood Hazard information and resources are available from local communities and the Colorado Water Conservation Board.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area Formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

Base Flood Elevation line and value; elevation in feet*

Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

Cross section line

Transect line

67° 07' 30.00" 32° 22' 30.00" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

4750000N 1000-meter Universal Transverse Mercator grid ticks, zone 13

6000000 FT 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPS ZONE 0552), Lambert Conformal Conic Projection

DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)

M1.5 River Mile

MAP REPOSITORIES Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP MARCH 17, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

DECEMBER 7, 2018: To update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS



PANEL 0553G

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY,
COLORADO
AND INCORPORATED AREAS

PANEL 553 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
EL PASO COUNTY 08059 5553 G

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
08041C0553G

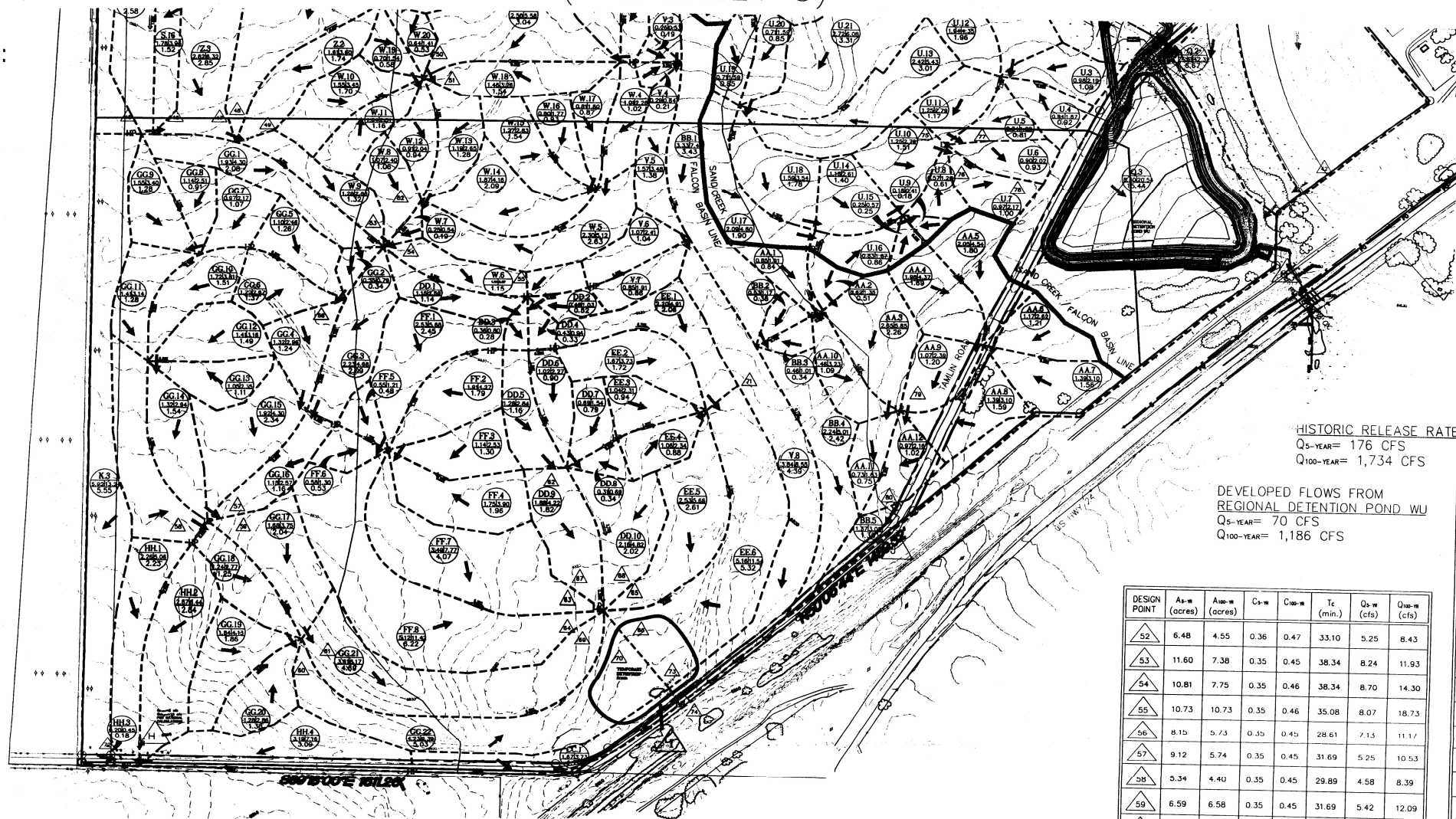
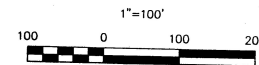
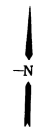
MAP REVISED
DECEMBER 7, 2018

Federal Emergency Management Agency

FINAL DRAINAGE FALCON HIGHL

SHEET 4 OF 4

(SEE SHEET 3)



HISTORIC RELEASE RATES
Q_{5-YEAR} = 176 CFS
Q_{100-YEAR} = 1,734 CFS

DEVELOPED FLOWS FROM
REGIONAL DETENTION POND WU
Q_{5-YEAR} = 70 CFS
Q_{100-YEAR} = 1,186 CFS

DEVELOPED FLOWS FROM
TEMP. DETENTION POND
Q_{5-YEAR} = 49.70 CFS
Q_{100-YEAR} = 126.74 CFS

HISTORIC RELEASE RATES
Q_{5-YEAR} = 64.50 CFS
Q_{100-YEAR} = 159.70 CFS

DESIGN POINT	A _{u-m} (acres)	A _{u-m} (acres)	C _{u-m}	C _{u-m}	T _c (min.)	Q _{5-YEAR} (cfs)	Q _{100-YEAR} (cfs)
52	6.48	4.55	0.36	0.47	33.10	5.25	8.43
53	11.60	7.38	0.35	0.45	38.34	8.24	11.93
54	10.81	7.75	0.35	0.46	38.34	8.70	14.30
55	10.73	10.73	0.35	0.46	35.08	8.07	18.73
56	8.15	5.73	0.35	0.45	28.61	7.15	11.17
57	9.12	5.74	0.35	0.45	31.69	5.25	10.53
58	5.34	4.40	0.35	0.45	29.89	4.58	8.39
59	6.59	6.58	0.35	0.45	31.69	5.42	12.09
60	6.67	6.57	0.35	0.45	33.52	5.25	11.64
61	6.46	6.37	0.35	0.45	33.52	5.09	11.64
62	6.14	3.97	0.35	0.46	28.11	6.08	9.01
63	6.58	6.58	0.35	0.45	32.94	5.30	11.87
64	6.58	6.58	0.35	0.45	32.94	5.30	11.87
65	4.91	3.11	0.35	0.45	24.03	4.66	6.59
66	4.80	3.07	0.35	0.45	24.03	4.53	6.51

DESIGN POINT	A _{u-m} (acres)	A _{u-m} (acres)
67	5.30	5.24
68	5.24	5.24
69	16.51	16.51
70	16.51	16.51
71	7.99	5.79
72	8.34	8.34
73	21.57	21.57
74	21.57	21.57
75	17.68	17.63
76	6.11	6.19
77	6.11	6.19
78	7.39	7.39
79	7.30	7.30
80	8.23	8.23

FALCON DRAINAGE BASIN PLANNING STUDY

SELECTED PLAN REPORT

FINAL - SEPTEMBER 2015

Prepared for:



El Paso County Public Services Department
3275 Akers Drive
Colorado Springs, CO 80922

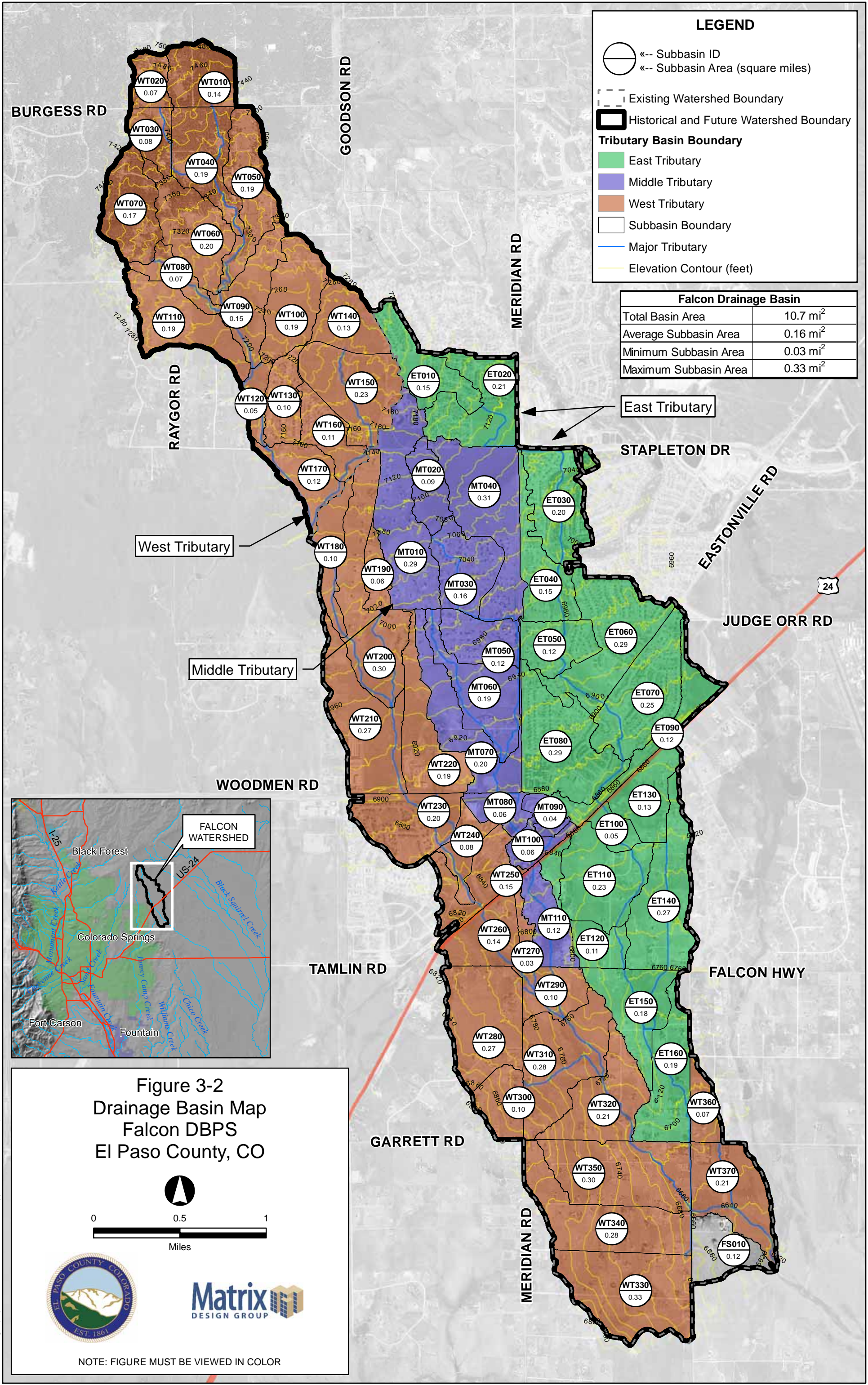
Prepared By:



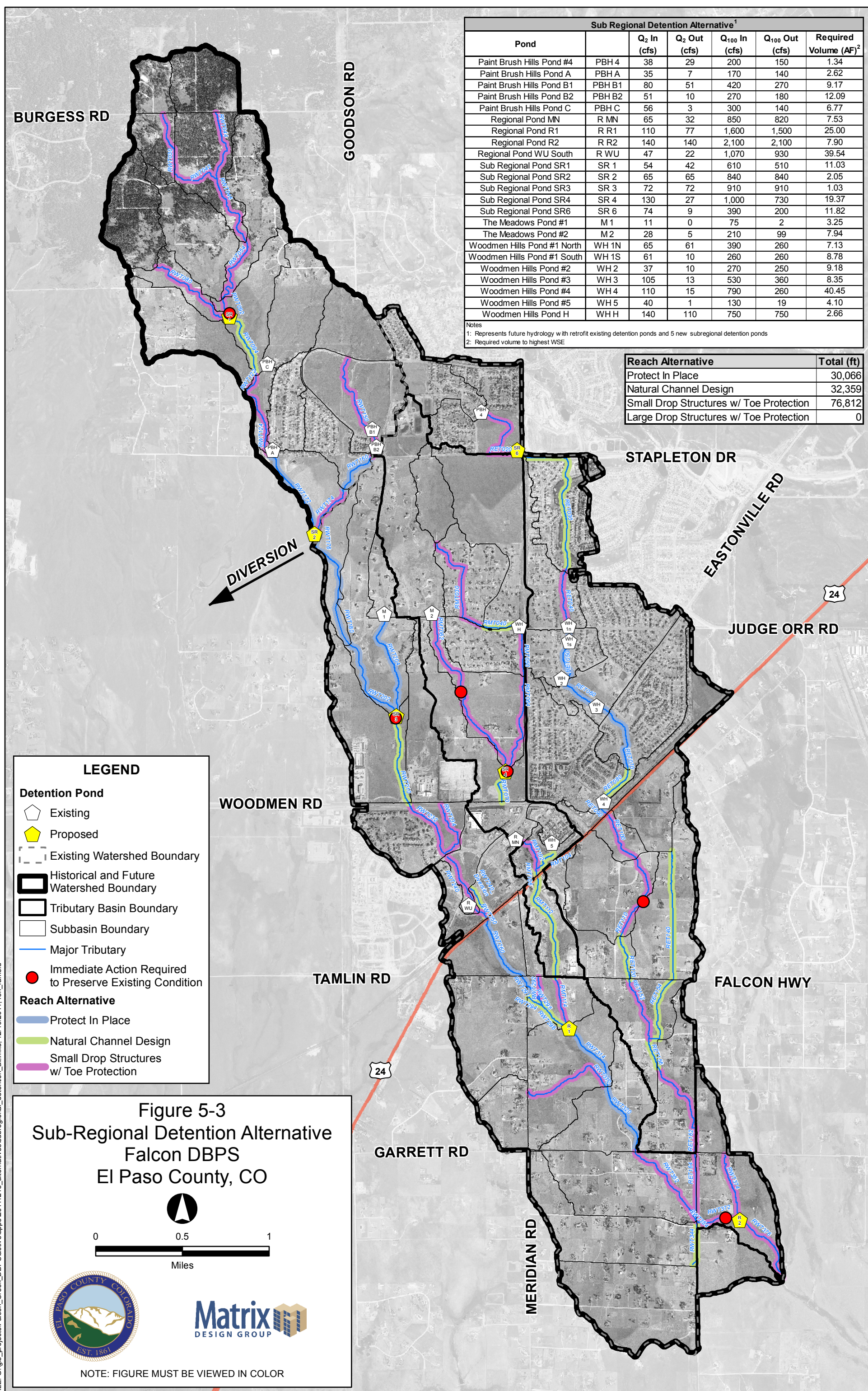
Matrix Design Group
2435 Research Parkway, Suite 300
Colorado Springs, CO 80920

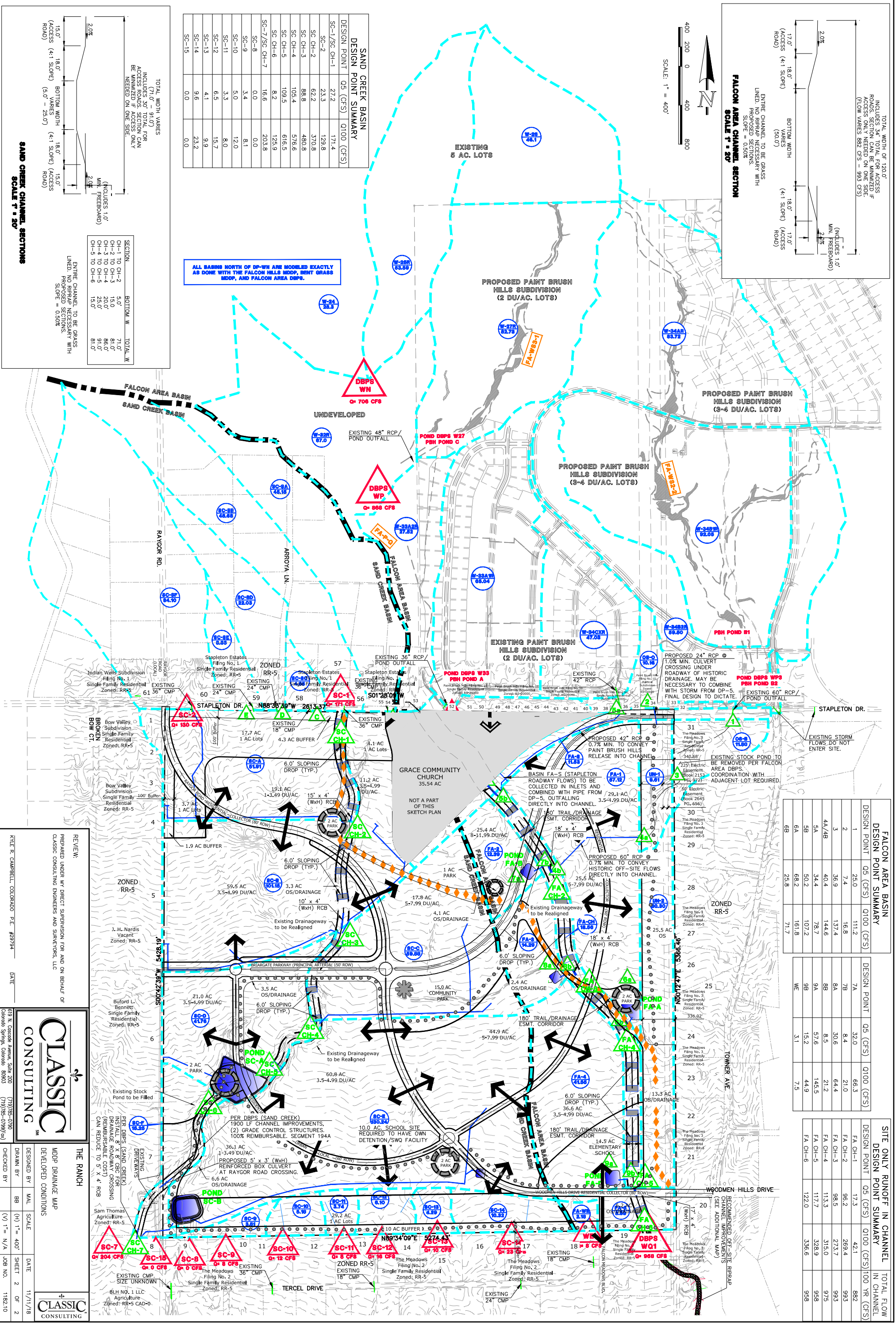
Matrix Project No. 10.122.003

FILE: G:\gis_projects\Falcon_Creek_DBPS\active\apps\20110613\basin_map.mxd, 8/29/2011, wilson_wheeler









REVIEW:
PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF
CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

KYLE R. CAMPBELL, COLORADO P.E. #23794 DATE

DESIGNED BY: MALL SCALE DATE: 11/11/18
DRAWN BY: BB (H) 1" = 400' SHEET 2 OF 2
CHECKED BY: (V) 1" = N/A JOB NO. 118210

THE RANCH
MDDP DRAINAGE MAP
DEVELOPED CONDITIONS

CLASSIC CONSULTING

FALCON AREA BASIN			SITE ONLY RUNOFF IN CHANNEL		
DESIGN POINT SUMMARY			DESIGN POINT SUMMARY		
DESIGN POINT	Q5 (CFS)	Q100 (CFS)	DESIGN POINT	Q5 (CFS)	Q100 (CFS)
1	25.0	111.2	7A	32.0	66.3
2	7.4	16.8	7B	8.4	21.0
3	36.9	137.4	8A	30.6	64.4
4A/4B	40.4	144.6	8B	8.5	21.2
5A	44.7	78.7	9A	57.6	145.5
5B	50.2	107.2	9B	15.2	44.9
6A	68.2	161.8	WE	3.1	7.5
6B	25.8	71.7			

APPENDIX B
Hydrologic Computations

Existing Computations

COMPOSITE % IMPERVIOUS CALCULATIONS: EXISTING

Subdivision: Bent Grass Metro District
Location: CO, Colorado Springs

Project Name: Bent Grass
Project No.: CLH000014.20
Calculated By: CMWJ
Checked By: _____
Date: 10/25/19

Basin ID	Total Area (ac)	Paved/Dirt Roads			Lawns			Roofs			Basins Total Weighted % Imp.
		% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	
A-1	5.42	100	0.16	3.00	2	5.26	1.90	90	0.00	0.00	4.9
A-2	18.00	100	0.00	0.00	2	18.00	2.00	90	0.00	0.00	2.0
A-3	19.59	100	0.00	0.00	2	19.59	2.00	90	0.00	0.00	2.0
A-4	23.81	100	0.57	2.40	2	23.12	1.90	90	0.12	0.50	4.8
B-1	32.53	100	0.00	0.00	2	32.53	2.00	90	0.00	0.00	2.0
B-2	4.51	100	0.00	0.00	2	4.51	2.00	90	0.00	0.00	2.0
B-3	16.18	100	1.00	6.20	2	15.18	1.90	90	0.00	0.00	8.1
OS-1	13.06	100	0.84	6.40	2	11.65	1.80	90	0.57	3.90	12.1
OS-2	17.81	100	2.00	11.20	2	15.18	1.70	90	0.63	3.20	16.1
OS-3	9.99	100	0.69	6.90	2	9.08	1.80	90	0.22	2.00	10.7
OS-4	30.69	100	1.42	4.60	2	28.41	1.90	90	0.86	2.50	9.0
OS-5	14.13	100	0.17	1.20	2	13.74	1.90	90	0.22	1.40	4.5
OS-6	5.81	100	0.00	0.00	2	5.81	2.00	90	0.00	0.00	2.0

COMPOSITE RUNOFF COEFFICIENT CALCULATIONS: EXISTING

Subdivision: Bent Grass Metro District
Location: CO, Colorado Springs

Project Name: Bent Grass
Project No.: CLH000014.20
Calculated By: CMWJ
Checked By: _____
Date: 10/25/19

Basin ID	Total Area (ac)	Paved Roads			Lawns/Undeveloped			Roofs			Composite C ₅	Composite C ₁₀₀
		C ₅	C ₁₀₀	Area (ac)	C ₅	C ₁₀₀	Area (ac)	C ₅	C ₁₀₀	Area (ac)		
A-1	5.42	0.90	0.96	0.16	0.09	0.36	5.26	0.73	0.81	0.00	0.11	0.38
A-2	18.00	0.90	0.96	0.00	0.09	0.36	18.00	0.73	0.81	0.00	0.09	0.36
A-3	19.59	0.90	0.96	0.00	0.09	0.36	19.59	0.73	0.81	0.00	0.09	0.36
A-4	23.81	0.90	0.96	0.57	0.09	0.36	23.12	0.73	0.81	0.12	0.11	0.38
B-1	32.53	0.90	0.96	0.00	0.09	0.36	32.53	0.73	0.81	0.00	0.09	0.36
B-2	4.51	0.90	0.96	0.00	0.09	0.36	4.51	0.73	0.81	0.00	0.09	0.36
B-3	16.18	0.90	0.96	1.00	0.09	0.36	15.18	0.73	0.81	0.00	0.14	0.40
OS-1	13.06	0.90	0.96	0.84	0.09	0.36	11.65	0.73	0.81	0.57	0.17	0.42
OS-2	17.81	0.90	0.96	2.00	0.09	0.36	15.18	0.73	0.81	0.63	0.20	0.44
OS-3	9.99	0.90	0.96	0.69	0.09	0.36	9.08	0.73	0.81	0.22	0.16	0.41
OS-4	30.69	0.90	0.96	1.42	0.09	0.36	28.41	0.73	0.81	0.86	0.15	0.40
OS-5	14.13	0.90	0.96	0.17	0.09	0.36	13.74	0.73	0.81	0.22	0.11	0.37
OS-6	5.81	0.90	0.96	0.00	0.09	0.36	5.81	0.73	0.81	0.00	0.09	0.36

C values are taken directly from Table 6-6 in the Colorado Springs DCM Vol. 1. (Referencing UDFCD 2001)

STANDARD FORM SF-2: EXISTING TIME OF CONCENTRATION

Subdivision: Bent Grass Metro District
Location: CO, Colorado Springs

Project Name: Bent Grass
Project No.: CLH000014.20
Calculated By: CMWJ
Checked By: _____
Date: 10/25/19

SUB-BASIN						INITIAL/OVERLAND			TRAVEL TIME					Tc CHECK			FINAL
DATA						(T _i)			(T _p)					(URBANIZED BASINS)			
BASIN ID	D.A. (AC)	Hydrologic Soils Group	Impervious (%)	C ₁₀₀	C ₅	L (FT)	S (%)	T _i (MIN)	L (FT)	S (%)	C _v	VEL. (FPS)	T _i (MIN)	COMP. T _c (MIN)	TOTAL LENGTH(FT)	Urbanized T _c (MIN)	
A-1	5.42	A	4.90	0.38	0.11	300	2.5	22.9	466	2.5	15.0	2.4	3.3	26.2	766.0	14.3	14.3
A-2	18.00	A	2.00	0.36	0.09	300	2.4	23.9	1130	2.0	15.0	2.1	8.9	32.8	1430.0	17.9	17.9
A-3	19.59	A	2.00	0.36	0.09	300	2.7	23.0	760	2.7	15.0	2.5	5.1	28.1	1060.0	15.9	15.9
A-4	23.81	A	4.80	0.38	0.11	300	2.0	24.9	1500	2.0	15.0	2.1	11.8	36.6	1800.0	20.0	20.0
B-1	32.53	A	2.00	0.36	0.09	300	2.6	23.3	1100	2.6	15.0	2.4	7.6	30.9	1400.0	17.8	17.8
B-2	4.51	A	2.00	0.36	0.09	300	3.0	22.2	323	5.0	15.0	3.4	1.6	23.8	623.0	13.5	13.5
B-3	16.18	A	8.10	0.40	0.14	300	2.9	21.4	780	2.9	15.0	2.6	5.1	26.4	1080.0	16.0	16.0
OS-1	13.06	A	12.10	0.42	0.17	300	2.5	21.7	1420	2.5	15.0	2.4	10.0	31.7	1720.0	19.6	19.6
OS-2	17.81	A	16.10	0.44	0.20	300	2.3	21.5	1370	2.3	15.0	2.3	10.0	31.6	1670.0	19.3	19.3
OS-3	9.99	A	10.70	0.41	0.16	300	2.0	23.7	850	2.0	15.0	2.1	6.7	30.3	1150.0	16.4	16.4
OS-4	30.69	A	9.00	0.40	0.15	300	2.3	22.9	2600	2.3	15.0	2.3	19.0	42.0	2900.0	26.1	26.1
OS-5	14.13	A	4.50	0.37	0.11	300	2.5	23.1	1400	3.0	15.0	2.6	9.0	32.1	1700.0	19.4	19.4
OS-6	5.81	A	2.00	0.36	0.09	300	2.0	25.4	400	2.0	15.0	2.1	3.1	28.6	700.0	13.9	13.9

NOTES:

$T_i = (0.395 * (1.1 - C_5) * (L)^{0.5}) / ((S)^{0.33})$, S in ft/ft

$T_i = L / 60V$ (Velocity From Fig. 501)

Velocity $V = C_v * S^{0.5}$, S in ft/ft

$T_c \text{ Check} = 10 + L / 180$

For Urbanized basins a minimum T_c of 5.0 minutes is required.

For non-urbanized basins a minimum T_c of 10.0 minutes is required

**STANDARD FORM SF-3: EXISTING
STORM DRAINAGE SYSTEM DESIGN**
(RATIONAL METHOD PROCEDURE)

Subdivision: Bent Grass Metro District
Location: CO, Colorado Springs
Design Storm: 5-Year

Project Name: Bent Grass
Project No.: CLH000014.20
Calculated By: CMWJ
Checked By:
Date: 10/25/19

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
		OS-1	13.06	0.17	19.6	2.22	3.12	6.9													
		A-1	5.42	0.11	14.3	0.62	3.60	2.2													
	1								19.6	2.84	3.12	8.9									Total flow going offsite to Bent Grass F1 Residential
		OS-2	17.81	0.20	19.3	3.63	3.14	11.4													
		A-2	18.00	0.09	17.9	1.62	3.25	5.3													
	2								19.3	5.25	3.14	16.5									Total Flow entering Junction of RWT202&204
		OS-3	9.99	0.16	16.4	1.60	3.39	5.4													
		A-3	19.59	0.09	15.9	1.76	3.43	6.0													
	3								16.4	3.36	3.39	11.4									Total Flow entering Junction of RWT202&204
		OS-4	30.69	0.15	26.1	4.46	2.69	12.0													
		A-4	23.81	0.11	20.0	2.68	3.09	8.3													
	4								26.1	7.14	2.69	19.2									
	5	B-1	32.53	0.09	17.8	2.93	3.27	9.6													
	6	B-2	4.51	0.09	13.5	0.41	3.68	1.5													
	7	B-3	16.18	0.14	16.0	2.27	3.42	7.8													
	8							4.0													RWT204 - Per Matrix DBPS Existing Hydrology
	9							0.0													RWT202 - Per Matrix DBPS Existing Hydrology
	10							14.0													RWT210 - Per Matrix DBPS Existing Hydrology
	20							98.1													Flows into Basin OS-5 from Bent Grass Filing No. 3
		OS-5	14.13	0.11	19.4	1.55	3.13	4.9													
	11											103.0									Flows into Basin OS-6
		OS-6	5.81	0.09	13.9	0.52	3.64	1.9													
	12											104.8									Existing Sediment Pond in Basin and then flows to Bent Grass Meadows Drive

**STANDARD FORM SF-3: EXISTING
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)**

Subdivision: Bent Grass Metro District

Location: CO, Colorado Springs

Design Storm: 100-Year

Project Name: Bent Grass

Project No.: CLH000014.20

Calculated By: CMWJ

Checked By:

Date: 10/25/19

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
		OS-1	13.06	0.42	19.6	5.46	5.24	28.6													
		A-1	5.42	0.38	14.3	2.05	6.04	12.4													
	1								19.6	7.51	5.24	39.4									Total flow going offsite to Bent Grass F1 Residential
		OS-2	17.81	0.44	19.3	7.90	5.28	41.7													
		A-2	18.00	0.36	17.9	6.48	5.46	35.4													
	2								19.3	14.38	5.28	75.9									Total Flow entering Junction of RWT202&204
		OS-3	9.99	0.41	16.4	4.11	5.69	23.4													
		A-3	19.59	0.36	15.9	7.05	5.77	40.7													
	3								16.4	11.16	5.69	63.5									Total Flow entering Junction of RWT202&204
		OS-4	30.69	0.40	26.1	12.29	4.51	55.4													
		A-4	23.81	0.38	20.0	8.97	5.19	46.6													
	4								26.1	21.26	4.51	95.9									
	5	B-1	32.53	0.36	17.8	11.71	5.48	64.2													
	6	B-2	4.51	0.36	13.5	1.62	6.18	10.0													
	7	B-3	16.18	0.40	16.0	6.42	5.75	36.9													
	8							43.0													RWT204 - Per Matrix DBPS Existing Hydrology
	9							770													RWT202 - Per Matrix DBPS Existing Hydrology
	10							880													RWT210 - Per Matrix DBPS Existing Hydrology
	20							226													Flows into Basin OS-5 from Bent Grass Filing No. 3
		OS-5	14.13	0.37	19.4	5.29	5.26	27.8													
	11											253.8									Flows into Basin OS-6
		OS-6	5.81	0.36	13.9	2.09	6.10	12.7													
	12											266.6									Existing Sediment Pond in Basin and then flows to Bent Grass Meadows Drive

Proposed Computations

COMPOSITE % IMPERVIOUS CALCULATIONS: PROPOSED

Subdivision: Bent Grass Residential Filing No. 2
Location: CO, Colorado Springs

Project Name: Bent Grass
Project No.: CLH000014
Calculated By: CMWJ
Checked By: SMB
Date: 1/13/20

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Basin ID	Total Area (ac)	Paved/Gravel Roads			Lawns/Undeveloped			Roofs			Residential - 1/8 Acre			Residential - 1/4 Acre			Residential - 1/3 Acre			Residential - 1/2 Acre			Residential - 1 Acre			Basins Total Weighted % Imp.
		% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	
A-1	2.70	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	1.18	28.4	40	0.68	10.1	30	0.00	0.0	25	0.00	0.0	20	0.84	6.2	44.7
A-2	1.19	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	0.37	20.2	40	0.56	18.8	30	0.00	0.0	25	0.00	0.0	20	0.26	4.4	43.4
A-3	1.57	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	0.59	24.4	40	0.98	25.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	49.4
A-4	2.24	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	0.93	27.0	40	0.88	15.7	30	0.00	0.0	25	0.00	0.0	20	0.43	3.8	46.5
B-1	4.46	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	2.28	33.2	40	1.46	13.1	30	0.00	0.0	25	0.00	0.0	20	0.72	3.2	49.5
B-2	1.17	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	1.17	65.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	65.0
B-3	0.46	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	0.46	65.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	65.0
B-4	1.19	100	0.00	0.0	2	1.19	2.0	90	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
B-5	1.56	100	0.00	0.0	2	1.56	2.0	90	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
B-6	0.62	100	0.00	0.0	2	0.62	2.0	90	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
C-1	1.35	100	0.03	2.1	2	0.16	0.2	90	0.00	0.0	65.0	1.16	55.9	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	58.2
C-2	6.80	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	2.61	24.9	40	2.75	16.2	30	0.50	2.2	25	0.94	3.5	20	0.00	0.0	46.8
C-3	2.38	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	1.61	44.0	40	0.77	12.9	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	56.9
C-4	3.61	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	2.86	51.4	40	0.75	8.4	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	59.8
C-5	7.86	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	6.53	54.0	40	1.33	6.8	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	60.8
C-6	5.54	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	3.14	36.8	40	1.60	11.6	30	0.80	4.3	25	0.00	0.0	20	0.00	0.0	52.7
C-7	0.89	100	0.00	0.0	2	0.89	2.0	90	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
C-8	0.42	100	0.00	0.0	2	0.42	2.0	90	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
D-1	12.49	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	3.65	19.0	40	5.53	17.7	30	0.75	1.8	25	0.00	0.0	20	2.56	4.1	42.6
D-2	5.15	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	1.63	20.6	40	2.87	22.3	30	0.00	0.0	25	0.00	0.0	20	0.65	2.5	45.4
D-3	9.16	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	0.82	5.8	40	5.88	25.7	30	1.86	6.1	25	0.60	1.6	20	0.00	0.0	39.2
D-4	9.53	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	0.00	0.0	40	0.88	3.7	30	5.94	18.7	25	1.63	4.3	20	1.08	2.3	29.0
E-1	1.71	100	0.78	45.6	2	0.23	0.3	90	0.00	0.0	65.0	0.00	0.0	40	0.70	16.4	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	62.3
E-2	0.68	100	0.56	82.4	2	0.12	0.4	90	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	82.8
E-3	0.78	100	0.69	88.5	2	0.09	0.2	90	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	88.7
E-4	0.91	100	0.73	80.2	2	0.18	0.4	90	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	80.6
E-5	0.89	100	0.79	88.8	2	0.10	0.2	90	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	89.0
F-1	0.44	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	0.00	0.0	40	0.41	37.3	30	0.00	0.0	25	0.00	0.0	20	0.03	1.4	38.7
F-2	0.55	100	0.21	38.2	2	0.11	0.4	90	0.00	0.0	65.0	0.23	27.2	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	65.8
G-1	1.47	100	0.00	0.0	2	0.64	0.9	90	0.00	0.0	65.0	0.25	11.1	40	0.08	2.2	30	0.20	4.1	25	0.30	5.1	20	0.00	0.0	23.4
H-1	0.52	100	0.00	0.0	2	0.52	2.0	90	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
I-1	0.31	100	0.22	71.0	2	0.09	0.6	90	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	71.6
OS-1	32.28	100	2.15	6.7	2	29.25	1.8	90	0.88	2.5	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	11.0
OS-2	20.08	80	0.90	3.6	2	18.62	1.9	90	0.56	2.5	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	8.0
OS-3	10.62	80	0.48	3.6	2	9.84	1.9	90	0.30	2.5	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	8.0
OS-4	2.64	100	0.00	0.0	2	2.64	2.0	90	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
OS-5	14.13	100	0.17	1.2	2	13.74	1.9	90	0.22	1.4	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	4.5
OS-6	5.38	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65.0	5.38	65.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	65.0

Lot Type Identification:	
Lot Size (SF)	Lot Size (Acre)
0 - 8,167	1/8 Acre
8,168 - 12,704	1/4 Acre
12,705 - 18,149	1/3 Acre
18,150 - 32,670	1/2 Acre
32,671 - 43,560	1 Acre

NOTES:
% Impervious values are taken directly from Table 6-6 in the Colorado Springs DCM Vol. 1. CH. 6 (Referencing UDFCD 2001)

COMPOSITE RUNOFF COEFFICIENT CALCULATIONS: PROPOSED

Subdivision: Bent Grass Residential Filing No. 2

Location: CO, Colorado Springs

Project Name: Bent Grass

Project No.: CLH000014

Calculated By: CMWJ

Checked By: SMB

Date: 1/13/20

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Basin ID	Total Area (ac)	Paved/Gravel Roads			Lawns/Undeveloped			Roofs			Residential - 1/8 Acre			Residential - 1/4 Acre			Residential - 1/3 Acre			Residential - 1/2 Acre			Residential - 1 Acre			Composite C ₅	Composite C ₁₀₀
		C ₅	C ₁₀₀	Area (ac)	C ₅	C ₁₀₀	Area (ac)	C ₅	C ₁₀₀	Area (ac)	C ₅	C ₁₀₀	Area (ac)	C ₅	C ₁₀₀	Area (ac)	C ₅	C ₁₀₀	Area (ac)	C ₅	C ₁₀₀	Area (ac)	C ₅	C ₁₀₀	Area (ac)		
A-1	2.70	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	1.18	0.30	0.50	0.68	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.84	0.33	0.52
A-2	1.19	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.37	0.30	0.50	0.56	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.26	0.32	0.51
A-3	1.57	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.59	0.30	0.50	0.98	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.36	0.53
A-4	2.24	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.93	0.30	0.50	0.88	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.43	0.34	0.53
B-1	4.46	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	2.28	0.30	0.50	1.46	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.72	0.36	0.54
B-2	1.17	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	1.17	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.45	0.59
B-3	0.46	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.46	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.45	0.59
B-4	1.19	0.90	0.96	0.00	0.09	0.36	1.19	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
B-5	1.56	0.90	0.96	0.00	0.09	0.36	1.56	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
B-6	0.62	0.90	0.96	0.00	0.09	0.36	0.62	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
C-1	1.35	0.90	0.96	0.03	0.09	0.36	0.16	0.73	0.81	0.00	0.45	0.59	1.16	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.42	0.57
C-2	6.80	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	2.61	0.30	0.50	2.75	0.25	0.47	0.50	0.22	0.46	0.94	0.20	0.44	0.00	0.34	0.53
C-3	2.38	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	1.61	0.30	0.50	0.77	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.40	0.56
C-4	3.61	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	2.86	0.30	0.50	0.75	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.42	0.57
C-5	7.86	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	6.53	0.30	0.50	1.33	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.42	0.57
C-6	5.54	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	3.14	0.30	0.50	1.60	0.25	0.47	0.80	0.22	0.46	0.00	0.20	0.44	0.00	0.38	0.55
C-7	0.89	0.90	0.96	0.00	0.09	0.36	0.89	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
C-8	0.42	0.90	0.96	0.00	0.09	0.36	0.42	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
D-1	12.49	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	3.65	0.30	0.50	5.53	0.25	0.47	0.75	0.22	0.46	0.00	0.20	0.44	2.56	0.32	0.51
D-2	5.15	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	1.63	0.30	0.50	2.87	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.65	0.33	0.52
D-3	9.16	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.82	0.30	0.50	5.88	0.25	0.47	1.86	0.22	0.46	0.60	0.20	0.44	0.00	0.30	0.50
D-4	9.53	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.88	0.25	0.47	5.94	0.22	0.46	1.63	0.20	0.44	1.08	0.24	0.47
E-1	1.71	0.90	0.96	0.78	0.09	0.36	0.23	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.70	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.55	0.69
E-2	0.68	0.90	0.96	0.56	0.09	0.36	0.12	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.76	0.85
E-3	0.78	0.90	0.96	0.69	0.09	0.36	0.09	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.81	0.89
E-4	0.91	0.90	0.96	0.73	0.09	0.36	0.18	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.74	0.84
E-5	0.89	0.90	0.96	0.79	0.09	0.36	0.10	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.81	0.89
F-1	0.44	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.41	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.03	0.29	0.50
F-2	0.55	0.90	0.96	0.21	0.09	0.36	0.11	0.73	0.81	0.00	0.45	0.59	0.23	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.55	0.69
G-1	1.47	0.90	0.96	0.00	0.09	0.36	0.64	0.73	0.81	0.00	0.45	0.59	0.25	0.30	0.50	0.08	0.25	0.47	0.20	0.22	0.46	0.30	0.20	0.44	0.00	0.21	0.44
H-1	0.52	0.90	0.96	0.00	0.09	0.36	0.52	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
I-1	0.31	0.90	0.96	0.22	0.09	0.36	0.09	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.66	0.79
OS-1	32.28	0.90	0.96	2.15	0.09	0.36	29.25	0.73	0.81	0.88	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.16	0.41
OS-2	20.08	0.90	0.96	0.90	0.09	0.36	18.62	0.73	0.81	0.56	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.14	0.40
OS-3	10.62	0.90	0.96	0.48	0.09	0.36	9.84	0.73	0.81	0.30	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.14	0.40
OS-4	2.64	0.90	0.96	0.00	0.09	0.36	2.64	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
OS-5	14.13	0.90	0.96	0.17	0.09	0.36	13.74	0.73	0.81	0.22	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.11	0.37
OS-6	5.38	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	5.38	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.45	0.59

Lot Type Identification:	
Lot Size (SF)	Lot Size (Acre)
0 - 8,167	<1/8 Acre
8,168 - 12,704	1/4 Acre
12,705 - 18,149	1/3 Acre
18,150 - 32,670	1/2 Acre
32,671 - 43,560	1 Acre

NOTES:
C values are taken directly from Table 6-6 in the Colorado Springs DCM Vol. 1, CH. 6 (Referencing UDFCD 2001)
Coefficients use HSG A&B soils - Refer to "Appendix A: Exhibits and Figures" for soil map

STANDARD FORM SF-2: PROPOSED TIME OF CONCENTRATION

Subdivision: Bent Grass Residential Filing No. 2
Location: CO, Colorado Springs

Project Name: Bent Grass
Project No.: CLH000014
Calculated By: CMWJ
Checked By: SMB
Date: 1/13/20

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
SUB-BASIN DATA						INITIAL/OVERLAND (T _i)			TRAVEL TIME (T _t)					T _c CHECK (URBANIZED BASINS)			FINAL T _c (MIN)
BASIN ID	D.A. (AC)	Hydrologic Soils Group	Impervious (%)	C _s	C ₁₀₀	L (FT)	S (%)	T _i (MIN)	L (FT)	S (%)	C _v	VEL. (FPS)	T _t (MIN)	COMP. T _c (MIN)	TOTAL LENGTH(FT)	Urbanized T _c (MIN)	
A-1	2.70	A	44.7	0.33	0.52	100	1.3	12.8	550	1.3	20	2.3	4.0	16.8	650.0	13.6	13.6
A-2	1.19	A	43.4	0.32	0.51	100	4.3	8.8	310	2.3	20	3.0	1.7	10.5	410.0	12.3	10.5
A-3	1.57	A	49.4	0.36	0.53	70	1.0	11.3	680	1.2	20	2.2	5.2	16.5	750.0	14.2	14.2
A-4	2.24	A	46.5	0.34	0.53	100	4.2	8.6	650	1.7	20	2.6	4.2	12.8	750.0	14.2	12.8
B-1	4.46	A	49.5	0.36	0.54	100	2.0	10.8	910	1.2	20	2.2	6.9	17.7	1010.0	15.6	15.6
B-2	1.17	A	65.0	0.45	0.59	85	0.2	18.7	430	0.9	20	1.9	3.9	22.6	515.0	12.9	12.9
B-3	0.46	A	65.0	0.45	0.59	15	2.0	3.7	190	1.0	20	2.0	1.6	5.2	205.0	11.1	5.2
B-4	1.19	A	2.0	0.09	0.36	300	2.7	22.9	690	2.7	15	2.5	4.6	27.6	990.0	15.5	15.5
B-5	1.56	A	2.0	0.09	0.36	200	2.7	18.8	100	2.7	15	2.5	0.7	19.5	300.0	11.7	11.7
B-6	0.62	A	2.0	0.09	0.36	100	5.0	10.8	30	2.7	15	2.5	0.2	11.0	130.0	10.7	10.7
C-1	1.35	A	58.2	0.42	0.57	35	2.4	5.5	400	2.4	20	3.1	2.2	7.7	435.0	12.4	7.7
C-2	6.80	A	46.8	0.34	0.53	100	2.0	11.0	1770	1.5	20	2.4	12.0	23.1	1870.0	20.4	20.4
C-3	2.38	A	56.9	0.40	0.56	100	1.6	11.0	810	1.0	20	2.0	6.8	17.7	910.0	15.1	15.1
C-4	3.61	A	59.8	0.42	0.57	100	2.0	9.9	973	2.0	20	2.8	5.7	15.6	1073.0	16.0	15.6
C-5	7.86	A	60.8	0.42	0.57	100	2.0	9.9	1200	1.3	20	2.2	8.9	18.8	1300.0	17.2	17.2
C-6	5.54	A	52.7	0.38	0.55	100	3.0	9.1	1230	1.5	20	2.4	8.4	17.5	1330.0	17.4	17.4
C-7	0.89	A	2.0	0.09	0.36	80	2.5	12.2	150	2.0	15	2.1	1.2	13.4	230.0	11.3	11.3
C-8	0.42	A	2.0	0.09	0.36	100	2.5	13.6	170	2.5	15	2.4	1.2	14.8	270.0	11.5	11.5
D-1	12.49	A	42.6	0.32	0.51	100	1.0	14.3	1180	2.0	20	2.8	7.0	21.2	1280.0	17.1	17.1
D-2	5.15	A	45.4	0.33	0.52	100	1.0	14.1	1000	2.0	20	2.8	5.9	20.0	1100.0	16.1	16.1
D-3	9.16	A	39.2	0.30	0.50	90	1.5	12.1	1020	1.5	20	2.4	6.9	19.1	1110.0	16.2	16.2
D-4	9.53	A	29.0	0.24	0.47	100	1.5	13.8	1700	1.5	20	2.4	11.6	25.3	1800.0	20.0	20.0
E-1	1.71	A	62.3	0.55	0.69	25	2.0	4.0	940	1.0	20	2.0	7.8	11.8	965.0	15.4	11.8
E-2	0.68	A	82.8	0.76	0.85	25	2.0	2.5	665	1.6	20	2.5	4.4	6.9	690.0	13.8	6.9
E-3	0.78	A	88.7	0.81	0.89	25	2.0	2.1	632	1.0	20	2.0	5.3	7.4	657.0	13.7	7.4
E-4	0.91	A	80.6	0.74	0.84	25	2.0	2.6	913	2.0	20	2.8	5.4	8.0	938.0	15.2	8.0
E-5	0.89	A	89.0	0.81	0.89	25	2.0	2.1	903	2.1	20	2.9	5.2	7.3	928.0	15.2	7.3
F-1	0.44	A	38.7	0.29	0.50	66	2.5	8.9	1	1.0	15	10.4	0.1	9.0	66.0	10.4	9.0
F-2	0.55	A	65.8	0.55	0.69	25	2.0	4.0	464	4.0	20	4.0	1.9	5.9	489.0	12.7	5.9
G-1	1.47	A	23.4	0.21	0.44	20	2.0	5.8	700	3.5	15	2.8	4.2	9.9	720.0	14.0	9.9
H-1	0.52	A	2.0	0.09	0.36	25	2.0	7.3	135	2.0	20	2.8	0.8	8.1	160.0	10.9	8.1
I-1	0.31	A	71.6	0.66	0.79	25	2.0	3.2	135	2.0	20	2.8	0.8	4.0	160.0	10.9	5.0
OS-1	32.28	A	11.0	0.16	0.41	100	2.4	12.9	2100	2.2	15	2.2	15.7	28.6	2200.0	22.2	22.2
OS-2	20.08	A	8.0	0.14	0.40	100	2.3	13.3	1400	2.3	15	2.3	10.3	23.6	1500.0	18.3	18.3
OS-3	10.62	A	8.0	0.14	0.40	100	2.0	14.0	1500	2.0	15	2.1	11.8	25.7	1600.0	18.9	18.9
OS-4	2.64	A	2.0	0.09	0.36	100	2.0	14.7	400	2.0	15	2.1	3.1	17.8	500.0	12.8	12.8
OS-5	14.13	A	4.5	0.11	0.37	100	2.5	13.4	1600	3.0	15	2.6	10.3	23.6	1700.0	19.4	19.4
OS-6	5.38	A	65.0	0.45	0.59	100	2.0	9.4	600	2.0	15	2.1	4.7	14.2	700.0	13.9	13.9

NOTES:

$T_i = (0.395 * (1.1 - C_s) * (L)^{0.5}) / ((S)^{0.33})$, S in ft/ft

$T_t = L / 60V$ (Velocity From Fig. 501)

Velocity $V = C_v * S^{0.5}$, S in ft/ft

$T_c \text{ Check} = 10 + L / 180$

For Urbanized basins a minimum T_c of 5.0 minutes is required.

For non-urbanized basins a minimum T_c of 10.0 minutes is required

**STANDARD FORM SF-3: PROPOSED
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)**

Subdivision: Bent Grass Residential Filing No. 2
Location: CO, Colorado Springs
Design Storm: 5-Year

Project Name: Bent Grass
Project No.: CLH000014
Calculated By: CMWJ
Checked By: SMB
Date: 1/13/20

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
	40	OS-1	32.28	0.16	22.2	5.16	2.93	15.1													Flows collect into Swale - A and is conveyed to existing channel (Tract H)
	1	A-1	2.70	0.33	13.6	0.89	3.67	3.3					1	3.3				160	2.0	1.3	Total flow on North side of Niebrara Drive
	2	A-2	1.19	0.32	10.5	0.38	4.06	1.5													
	2								14.9	1.27	3.53	4.5	1.5	4.5				290	2.4	2.0	Total flow at DP-2
	3	A-3	1.57	0.36	14.2	0.57	3.61	2.1													
	3								16.9	1.84	3.34	6.1	1.4	6.1				60	2.4	0.4	Total flow at NE corner of Bent Grass M.D. & Berwyn Ct.
	4	A-4	2.24	0.34	12.8	0.76	3.76	2.9													Total flow at NW corner of Bent Grass M.D. & Berwyn Ct.
	4								17.3	2.60	3.30	8.6	1.0	8.6				840	2.0	7.0	Total flow entering Bent Grass M.D. from Berwyn Ct.
	5	D-2	5.15	0.33	16.1	1.70	3.41	5.8						0.0	5.8						Future total flow captured by inlet = 5.8 cfs
	6	D-1	12.49	0.32	17.1	4.00	3.32	13.3					1.1	0.4	12.9						Future total flow by-passing inlet = 0.4 cfs Future total flow captured by inlet = 12.9 cfs
	6								17.1	5.59	3.32	18.5									Total flow piped to future storm infrastructure.
	6								17.1	0.11	3.32	0.4		0.4				430	2.0	3.6	Future total flow entering Bent Grass M.D. = 0.4 cfs // Routed to inlet at DP-8
	7	E-3	0.78	0.81	7.4	0.63	4.59	2.9						0	2.9						Total flow captured by inlet = 2.9 cfs
	8	E-2	0.68	0.76	6.9	0.52	4.70	2.4													
	8-W								17.1	0.63	3.32	2.1									Total flow approaching DP-8 from the West
	8	E-1	1.71	0.55	11.8	0.94	3.88	3.6													
	8-E								24.3	3.54	2.79	9.9									Total flow approaching DP-8 from the East
	8								24.3	4.17	2.79	11.6			11.6						Total flow captured by inlet = 11.6 cfs
	8								24.34	10.39	2.79	29.0			29.0						Total flow at DP-8 = 29 cfs // Piped to North Water Quality Pond Total flow at the west point of Silky Thread Rd.
	9	B-3	0.46	0.45	5.2	0.21	5.10	1.1					2.5	1.1				350	3.2	1.8	
	10	B-4	1.19	0.09	15.5	0.11	3.47	0.4													Total flow at south west corner of Basin B-4. Flows into Swale B.
	10								15.5	0.32	3.47	1.1									Total flows into Swale B - Directs flows to North Water Quality Pond
	11	B-1	4.46	0.36	15.6	1.61	3.46	5.6													Total flow on North side of Willmore Dr.
	12	B-2	1.17	0.45	12.9	0.53	3.75	2.0													Total flow on South side of Willmore Dr.
	13								15.6	2.14	3.46	7.4	2.5	7.4				200	3.2	1.1	Total flow going West off of Willmore Dr. into Swale B
	14	B-5	1.56	0.09	11.7	0.14	3.90	0.5													Total flow sheet flowing from Basin B-4 into Swale B
	14								16.7	2.60	3.36	8.7									Total flow entering proposed North Water Quality Pond from Swale B
	15	B-6	0.62	0.09	10.7	0.06	4.02	0.2													Sheet Flows directly into proposed North Water Quality Pond
	15								24.3	13.05	2.79	36.4									Total flow entering proposed North Water Quality Pond
Flow values from UD-Detention Spreadsheet	15A											12.2									Peak Outflow from WQCV North Detention Pond = 12.2 cfs

STANDARD FORM SF-3: PROPOSED
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

Subdivision: Bent Grass Residential Filing No. 2
Location: CO, Colorado Springs
Design Storm: 5-Year

Project Name: Bent Grass
Project No.: CLH000014
Calculated By: CMWJ
Checked By: SMB
Date: 1/13/20

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
	16	C-5	7.86	0.42	17.2	3.30	3.31	10.9					1.0	1.1	9.8			150	2.0	1.3	Total flow by-passing inlet = 1.1 cfs Total flow at DP-16 = 9.8 cfs // Piped to inlet at DP-17
	17	C-6	5.54	0.38	17.4	2.11	3.30	7.0					1	1.2	5.8			150	2.0	1.3	Total flow by-passing inlet = 1.2 cfs Total flow captured by inlet = 5.8 cfs
	17								17.4	4.72	3.30	15.6			15.6						Total flow at DP-17 = 15.6 cfs // Piped to manhole at DP-19A
	18	C-4	3.61	0.42	15.6	1.52	3.46	5.3													
	18								18.5	1.86	3.21	6.0									Total flow approaching DP-18 from the NW
	18	C-3	2.38	0.40	15.1	0.95	3.52	3.3													Total flow approaching DP-18 from the SE
	18								18.5	2.81	3.21	9.0			9.0						Total flow captured by inlet = 9 cfs Total flow at DP-18 = 9 cfs // Piped to inlet at DP-19
	19	C-1	1.35	0.42	7.7	0.57	4.52	2.6					1.5	2.6				1400	2.4	9.5	
	19	C-2	6.80	0.34	20.4	2.31	3.06	7.1													
	19								20.4	2.88	3.06	8.8									Total flow approaching DP-19 from the SE
	19								20.4	3.23	3.06	9.9			9.9						Total flow captured by inlet = 9.9 cfs
	19								20.4	6.04	3.06	18.5			18.5						Total flow at DP-19 = 18.5 cfs // Piped to manhole at DP-19A
	19A								20.4	10.76	3.06	32.9			32.9						Total flow at DP-19A = 32.9 cfs // Piped to South Water Quality Pond
	20	G-1	1.47	0.21	9.9	0.31	4.14	1.3													Total flows in Swale C into FES (DP-20) = 1.3 cfs // Piped to South WQ Pond
	20A	C-7	0.89	0.09	11.3	0.08	3.95	0.3													Flows directly into South Water Quality Pond
	20A								20.4	11.15	3.06	34.1			34.1						Total flow to South Water Quality Pond
Flow values from UD-Detention Spreadsheet	20B											21.2									Peak Outflow from South WQCV Detention Pond into Swale C = 21.2 cfs
	21	D-3	9.16	0.30	16.2	2.75	3.41	9.4					1.5	9.0	9.4			1800	2.4	12.2	Total flow at DP-21 = 9.4 cfs // Piped to future inlet at DP-22
	22	OS-2	20.08	0.14	18.3	2.81	3.22	9.0													
	22	D-4	9.53	0.24	20.0	2.29	3.09	7.1													
	22								30.6	5.10	2.45	12.5		0.2	12.3						Total flow by-passing inlet = 0.2 cfs Total flow captured by inlet = 12.3 cfs
	22								30.6	7.77	2.45	19.0			19.0						Total flow at DP-22 = 19 cfs // Piped to inlet at DP-23
	22								30.6	0.08	2.45	0.2	2.5	0.2				550	3.2	2.9	Total flow entering Bent Grass M.D. from DP-21&22
	23	OS-3	10.62	0.14	18.9	1.49	3.18	4.7					2	4.7				470	2.8	2.8	Flows into Swale D and routed to area inlet
	23								21.7	1.49	2.97	4.4			4.4						Total flow captured by area inlet = 4.4 cfs
	23								30.6	9.26	2.45	22.7			22.7	2.0		600	2.8	3.5	Total flow at DP-23A = 22.7 cfs // // Piped under Bent Grass M.D. into Swale E

STANDARD FORM SF-3: PROPOSED
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

Subdivision: Bent Grass Residential Filing No. 2
Location: CO, Colorado Springs
Design Storm: 5-Year

Project Name: Bent Grass
Project No.: CLH000014
Calculated By: CMWJ
Checked By: SMB
Date: 1/13/20

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
	24	E-4	0.91	0.74	8.0	0.67	4.46	3.0													
	24	OS-4	2.64	0.09	12.8	0.24	3.76	0.9					2.8	0.9				150	3.3	0.7	
	24								33.5	0.99	2.32	2.3			2.3						Total flow at DP-24 = 2.3 cfs // Piped to inlet at DP-25
	25	E-5	0.89	0.81	7.3	0.72	4.60	3.3							3.3						Total flow captured by inlet = 3.3 cfs
	25								33.5	1.71	2.32	4.0			4.0						Total flow at DP-25 = 4 cfs // Piped to Sediment Basin at DP-26
	26								33.5	10.97	2.32	25.5			25.5						Total flow at DP-26 = 25.5 cfs // Overflows into Swale F ultimately into RWT210
		C-8	0.42	0.09	11.5	0.04	3.92	0.2													Pervious/Landscape - Flows directly into RWT204 & RWT210
		F-1	0.44	0.29	9.0	0.13	4.29	0.6													Flows offsite
		F-2	0.55	0.55	5.9	0.30	4.91	1.5													Flows offsite
		H-1	0.52	0.09	8.1	0.05	4.44	0.2													Flows offsite
		I-1	0.31	0.66	5.0	0.20	5.17	1.0													Flows offsite
Value from The Meadows Fil. 3 FDR (DP-12)	30							98.1													Total flow from existing culvert into Basin OS-5 = 98.1 cfs
		OS-5	14.13	0.11	19.4	1.55	3.13	4.9													
	31											103.0									Total flow into Basin OS-6 = 103 cfs
		OS-6	5.38	0.45	13.9	2.42	3.64	8.8													Basin to be developed in the future
	32											111.8									Flows from Sediment pond routed East towards Meridian Road

STANDARD FORM SF-3: PROPOSED
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

Subdivision: Bent Grass Residential Filing No. 2
Location: CO, Colorado Springs
Design Storm: 100-Year

Project Name: Bent Grass
Project No.: CLH000014
Calculated By: CMWJ
Checked By: SMB
Date: 1/13/20

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
	40	OS-1	32.28	0.41	22.2	13.23	4.92	65.1													Flows collect into Swale - A and is conveyed to existing channel (Tract H)
	1	A-1	2.70	0.52	13.6	1.40	6.16	8.6					1.0	8.6				160	2.0	1.3	Total flow on North side of Niebrara Drive
	2	A-2	1.19	0.51	10.5	0.61	6.82	4.2													
	2								14.9	2.01	5.92	11.9	1.5	11.9				290	2.4	2.0	Total flow at DP-2
	3	A-3	1.57	0.53	14.2	0.83	6.05	5.0					1.4	15.9				60	2.4	0.4	Total flow at NE corner of Bent Grass M.D. & Berwyn Ct.
	3								16.9	2.84	5.61	15.9									
	4	A-4	2.24	0.53	12.8	1.19	6.31	7.5					1.0	22.4				840	2.0	7.0	Total flow at NW corner of Bent Grass M.D. & Berwyn Ct.
	4								17.3	4.03	5.55	22.4									Total flow entering Bent Grass M.D. from Berwyn Ct.
	5	D-2	5.15	0.52	16.1	2.68	5.73	15.4													Total flow at DP-5
	6	D-1	12.49	0.51	17.1	6.37	5.58	35.5													Total flow at DP-6
	5&6								17.1	9.05	5.58	50.5 25.2									Q at each inlet = 25.2 cfs
	5								17.1	4.53	5.58	25.2	1.1	9.6	15.6			60	2.1	0.5	Future total flow by-passing inlet = 9.6 cfs Future total flow captured by inlet = 15.6 cfs
	6								17.1	4.53	5.58	25.2	1.0	5.7	19.5						Future total flow by-passing inlet = 5.7 cfs Future total flow captured by inlet = 19.5 cfs
	6								17.1	6.29	5.58	35.1									Total flow piped to future storm infrastructure
	6								17.6	2.75	5.51	15.2	1	15.2				430	2.0	3.6	Future total flow entering Bent Grass M.D. = 15.2 cfs // Routed to inlet at DP-8
	7	E-3	0.78	0.89	7.4	0.69	7.70	5.3													Total flow at DP-7 along South side of Bent Grass M.D.
	8	E-2	0.68	0.85	6.9	0.58	7.89	4.6													
	8-W								21.2	3.33	5.04	16.8									Total flow approaching DP-8 from the West
	8	E-1	1.71	0.69	11.8	1.18	6.51	7.7													
	8-E								24.3	5.21	4.69	24.4									Total flow approaching DP-8 from the East
	8								24.3	8.54	4.69	40.1									Total flow at DP-8 along North side of Bent Grass M.D.
	7&8								24.3	9.23	4.69	43.3 21.6									Total flow at DP-7&8 Q at each inlet = 21.6 cfs
	7													21.6							Total flow captured by inlet = 21.6 cfs
	7													21.6							Total flow at DP-7 = 21.6 cfs // Piped to inlet at DP-8
	8													21.6							Total flow captured by inlet = 21.6 cfs
	8								24.3	15.52	4.69	72.8			72.8						Total flow at DP-8 = 72.8 cfs // Piped to North Water Quality Pond
	9	B-3	0.46	0.59	5.2	0.27	8.56	2.3					2.5	2.3				350	3.2	1.8	Total flow at the west point of Silky Thread Rd.
	10	B-4	1.19	0.36	15.5	0.43	5.83	2.5													Total flow at south west corner of Basin B-4. Flows into Swale B.
	10								15.5	0.70	5.83	4.1									Total flow to Swale B - directs flow to North Water Quality Pond

STANDARD FORM SF-3: PROPOSED
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

Subdivision: Bent Grass Residential Filing No. 2
Location: CO, Colorado Springs
Design Storm: 100-Year

Project Name: Bent Grass
Project No.: CLH000014
Calculated By: CMWJ
Checked By: SMB
Date: 1/13/20

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
	11	B-1	4.46	0.54	15.6	2.41	5.81	14.0													Total flow on North side of Willmore Dr.
	12	B-2	1.17	0.59	12.9	0.69	6.30	4.3													Total flow on South side of Willmore Dr.
	13								15.6	3.10	5.81	18.0	2.5	18.0				200	3.2	1.1	Total flow going West off of Willmore Dr. into Swale B
	14	B-5	1.56	0.36	11.7	0.56	6.54	3.7													Total flow sheet flowing from Basin B-4 to Swale B
	14								16.7	4.36	5.65	24.6									Total flow entering proposed North Water Quality Pond from Swale B
	15	B-6	0.62	0.36	10.7	0.22	6.76	1.5													Sheet flows directly into proposed North Water Quality Pond
	15								24.3	20.10	4.69	94.3									Total flow entering proposed North Water Quality Pond
Flow values from UD-Detention Spreadsheet	15A											37.0									Peak Outflow from North WQCV Detention Pond = 37 cfs
	16	C-5	7.86	0.57	17.2	4.48	5.56	24.9					1.0	9.4	15.5			150	2.0	1.3	Total flow by-passing inlet = 9.4 cfs Total flow at DP-16 = 15.5 cfs // Piped to inlet at DP-17
	17	C-6	5.54	0.55	17.4	3.05	5.54	16.9					1	7.7	9.2			150	2.0	1.3	Total flow by-passing inlet = 7.7 cfs Total flow captured by inlet = 9.2 cfs
	17								17.4	4.45	5.54	24.6			24.6						Total flow at DP-17 = 24.6 cfs // Piped to manhole at DP-19A
	18	C-4	3.61	0.57	15.6	2.06	5.81	12.0													
	18								18.5	3.75	5.39	20.2									Total flow approaching DP-18 from the NW
	18	C-3	2.38	0.56	15.1	1.33	5.90	7.8													Total flow approaching DP-18 from the SE
	18								18.5	5.08	5.39	27.4			27.4						Total flow at DP-18 = 27.4 cfs // Piped to inlet at DP-19
	19	C-1	1.35	0.57	7.7	0.77	7.59	5.8					1.5	5.8				1400	2.4	9.5	
	19	C-2	6.80	0.53	20.4	3.60	5.14	18.5													
	19								20.4	4.37	5.14	22.5									Total flow approaching DP-19 from the SE
	19								20.4	5.76	5.14	29.6			29.6						Total flow captured by inlet = 29.6 cfs
	19								20.4	10.84	5.14	55.7			55.7						Total flow at DP-19 = 55.7 cfs // Piped to manhole at DP-19A
	19A								20.4	15.29	5.14	78.6			78.6						Total flow at DP-19 = 78.6 cfs // Piped to South Water Quality Pond
	20	G-1	1.47	0.44	9.9	0.65	6.95	4.5													Total flow at FES (DP-20) = 4.5 cfs // Piped to South Water Quality Pond
	20A	C-7	0.89	0.36	11.3	0.32	6.63	2.1													Flows directly into South Water Quality Pond
	20A								20.4	16.26	5.14	83.6			83.6						Total flow to South Water Quality Pond
Flow values from UD-Detention Spreadsheet	20B											64.9									Peak Outflow from South WQCV Detention Pond into Swale C = 64.9 cfs
	21	D-3	9.16	0.50	16.2	4.58	5.72	26.2							26.2						Total Flow at DP-21
	22	OS-2	20.08	0.40	18.3	8.03	5.41	43.4					1.5	43.4				1800	2.4	12.2	
	22	D-4	9.53	0.47	20.0	4.48	5.19	23.3													
	22								30.6	12.51	4.12	51.5									Total flow at DP-22
	21&22								30.6	17.09	4.12	70.4									Total flow at DP-21&22 Q at each inlet = 35.2 cfs

STANDARD FORM SF-3: PROPOSED
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

Subdivision: Bent Grass Residential Filing No. 2
Location: CO, Colorado Springs
Design Storm: 100-Year

Project Name: Bent Grass
Project No.: CLH000014
Calculated By: CMWJ
Checked By: SMB
Date: 1/13/20

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
	21								30.6	8.55	4.12	35.2	1.25	12.1	23.1			60	2.2	0.4	Total flow by-passing inlet = 12.1 cfs Total flow at DP-21 = 23.1 cfs // Piped to inlet at DP-22
	22								30.6	8.55	4.12	35.2		12.1	23.1						Total flow by-passing inlet = 12.1 cfs Total flow captured by inlet = 23.1 cfs
	22								31.0	5.88	4.08	24.0	2.5	24.0				550	3.2	2.9	Total flow entering Bent Grass M.D. from DP-21&22
	22								30.6	11.21	4.12	46.2			46.2						Total flow at DP-22 = 46.2 cfs // Piped to inlet at DP-23
	23	OS-3	10.62	0.40	18.9	4.25	5.33	22.7					2	22.7				470	2.8	2.8	Flows into Swale D and routed to area inlet
	23								21.7	4.25	4.99	21.2			21.2						Total flow captured by area inlet = 21.2 cfs
	23								30.6	15.46	4.12	63.7			63.7	2.0		600	2.8	3.5	Total flow at DP-23 = 63.7 cfs // Piped under Bent Grass M.D. into Swale E
	24	E-4	0.91	0.84	8.0	0.76	7.50	5.7													
	24	OS-4	2.64	0.36	12.8	0.95	6.31	6.0													
	24								31.0	7.59	4.08	31.0									Total flow at DP-24
	25	E-5	0.89	0.89	7.3	0.79	7.73	6.1													Total flow at DP-25
	24&25								31.0	8.38	4.08	34.2		0.1	17.0						Total flow at DP-24&25 Q at each inlet = 17.1 cfs
	24								31.0	4.19	4.08	17.1		0.1	17.0						Total flow by-passing inlet = 0.1 cfs Total flow at DP-24 = 17 cfs // Piped to inlet at DP-25
	25								31.0	4.19	4.08	17.1		0.1	17.0						Total flow by-passing inlet = 0.1 cfs Total flow captured by inlet = 17 cfs
	25								31.0	8.33	4.08	34.0			34.0						Total flow at DP-25 = 34 cfs // Piped to Sediment Basin at DP-26
	26								34.1	23.80	3.84	91.4			91.4						Total flow at DP-26 = 91.4 cfs // Overflows into Swale F ultimately into RWT210
		C-8	0.42	0.36	11.5	0.15	6.58	1.0													Pervious/Landscape - Flows directly into RWT204 & RWT210
		F-1	0.44	0.50	9.0	0.22	7.20	1.6													Flows offsite
		F-2	0.55	0.69	5.9	0.38	8.25	3.1													Flows offsite
		G-1	1.47	0.44	9.9	0.65	6.95	4.5													Flows offsite
		H-1	0.52	0.36	8.1	0.19	7.45	1.4													Flows offsite
		I-1	0.31	0.79	5.0	0.24	8.68	2.1													
Value from The Meadows Fil. 3 FDR (DP-12)	30							226.0													Total flow from existing culvert into Basin OS-5 = 226 cfs
		OS-5	14.13	0.37	19.4	5.23	5.26	27.5													
	31											253.5									Total flow into Basin OS-6 = 253.5 cfs
		OS-6	5.38	0.59	13.9	3.17	6.10	19.3													Basin to be developed in the future
	32											272.8									Flows from Sediment pond routed East towards Meridian Road

APPENDIX C
Hydraulic Computations

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

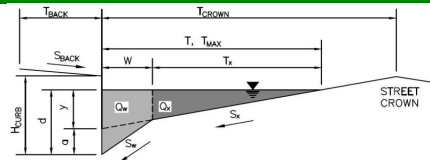
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-1

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.010$ ft/ft
 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	10.9	113.0	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

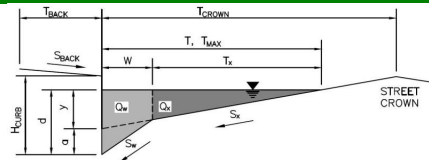
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-2 (North Approach)

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.023$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	16.5	127.8	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

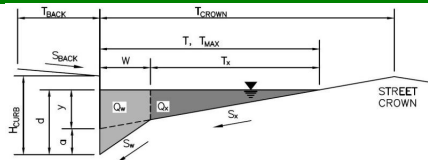
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-2

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.015$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	13.3	138.4	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-3

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.013$ ft/ft
 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion**MAJOR STORM** Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	12.4	128.8	cfs

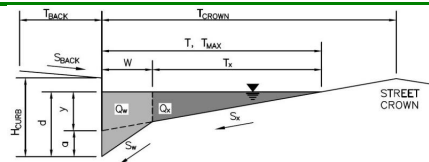
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **Bent Grass Residential Filing No. 2**
 Inlet ID: **DP-4 @ Bent Grass M.D.**

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 14.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 26.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_W = 0.083$ ft/ft
 $S_O = 0.010$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	26.0	26.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion**MAJOR STORM** Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	13.8	143.2	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

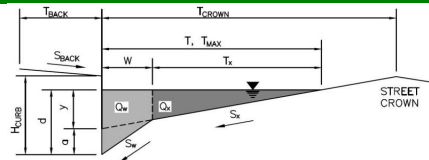
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-4

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.015$ ft/ft
 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	13.3	138.4	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-5

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.020$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

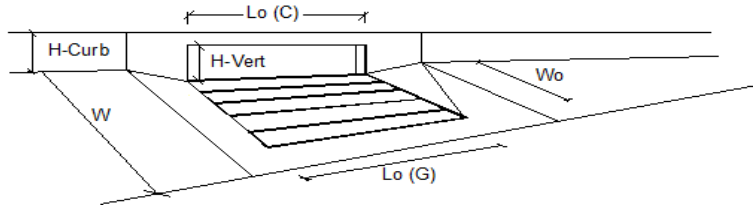
	Minor Storm	Major Storm	
$Q_{allow} =$	15.4	133.3	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR
Type of Inlet	CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a')	3.0	3.0
Total Number of Units in the Inlet (Grate or Curb Opening)	1	1
Length of a Single Unit Inlet (Grate or Curb Opening)	15.00	15.00
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10
Street Hydraulics: OK - Q < Allowable Street Capacity		
Total Inlet Interception Capacity	5.8	15.6
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	9.6
Capture Percentage = Q_i/Q_o =	100	62

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

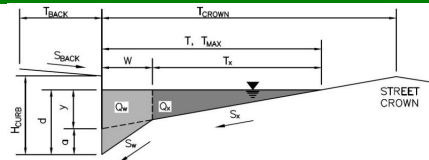
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-6 @ Bent Grass M.D.

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.020$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	15.4	133.3	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-6

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.020$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

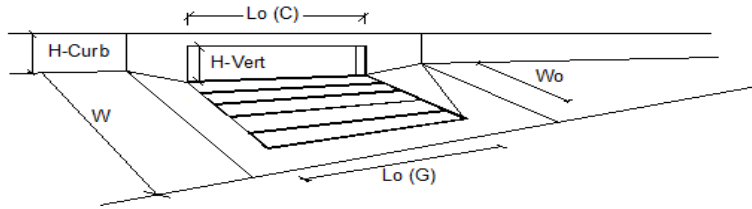
	Minor Storm	Major Storm	
$Q_{allow} =$	15.4	133.3	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		$C_F G$ =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		$C_F C$ =	0.10	0.10	
Street Hydraulics: OK - $Q < Q_{allowable}$ Street Capacity.			MINOR	MAJOR	
Total Inlet Interception Capacity		Q =	12.9	19.5	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)		Q_b =	0.4	5.7	cfs
Capture Percentage = Q_i/Q_o =		$C\%$ =	97	78	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-7

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Check boxes are not applicable in SUMP conditions

MINOR STORM Allowable Capacity is based on Depth Criterion**MAJOR STORM** Allowable Capacity is based on Depth Criterion

$T_{BACK} = 14.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 26.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.000$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm
$T_{MAX} =$	26.0	26.0
$d_{MAX} =$	6.0	12.0

inches

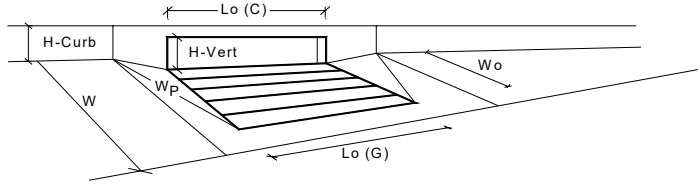
$Q_{allow} =$

	Minor Storm	Major Storm
	SUMP	SUMP

cfs

INLET IN A SUMP OR SAG LOCATION

Version 4.05 Released March 2017



Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a _{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)		No =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	6.0	12.0	inches
Grate Information			MINOR	MAJOR	<input checked="" type="checkbox"/> Override Depths
Length of a Unit Grate		L _o (G) =	N/A	N/A	feet
Width of a Unit Grate		W _o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A _{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C _l (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C _w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C _o (G) =	N/A	N/A	
Curb Opening Information			MINOR	MAJOR	
Length of a Unit Curb Opening		L _o (C) =	10.00	10.00	feet
Height of Vertical Curb Opening in Inches		H _{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H _{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W _p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C _l (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C _w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C _o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)			MINOR	MAJOR	
Depth for Grate Midwidth		d _{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d _{Curb} =	0.33	0.83	ft
Combination Inlet Performance Reduction Factor for Long Inlets		RF _{Combination} =	0.57	1.00	
Curb Opening Performance Reduction Factor for Long Inlets		RF _{Curb} =	0.93	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets		RF _{Grate} =	N/A	N/A	
Total Inlet Interception Capacity (assumes clogged condition)			MINOR	MAJOR	
		Q _a =	8.3	25.5	cfs
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)		Q _{PEAK REQUIRED} =	2.9	21.0	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

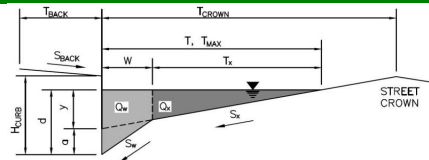
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-8 (East Approach)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} = 14.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 26.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.019$ ft/ft
 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

	Minor Storm	Major Storm	
$T_{MAX} =$	26.0	26.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	19.0	171.5	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-8 (West Approach)

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} = 14.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 26.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.011$ ft/ft
 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

	Minor Storm	Major Storm	
$T_{MAX} =$	26.0	26.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion**MAJOR STORM** Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	14.5	150.2	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

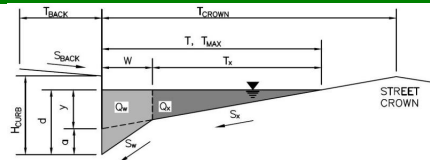
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-8

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Check boxes are not applicable in SUMP conditions

MINOR STORM Allowable Capacity is based on Depth Criterion**MAJOR STORM** Allowable Capacity is based on Depth Criterion

T_{BACK} = 14.0 ft
 S_{BACK} = 0.020 ft/ft
 n_{BACK} = 0.013

H_{CURB} = 6.00 inches
 T_{CROWN} = 26.0 ft
 W = 2.00 ft
 S_x = 0.020 ft/ft
 S_w = 0.083 ft/ft
 S_o = 0.000 ft/ft
 n_{STREET} = 0.016

	Minor Storm	Major Storm
T_{MAX} =	26.0	26.0
d_{MAX} =	6.0	12.0

inches

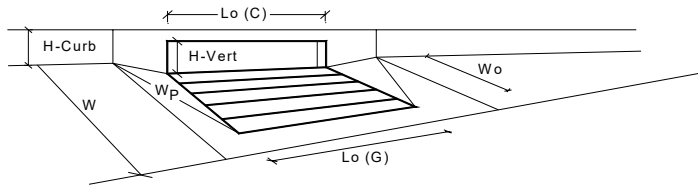
Q_{allow} =

Minor Storm	Major Storm
SUMP	SUMP

cfs

INLET IN A SUMP OR SAG LOCATION

Version 4.05 Released March 2017



Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a _{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)		No =	2	2	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	6.0	12.0	inches
Grate Information			MINOR	MAJOR	<input checked="" type="checkbox"/> Override Depths
Length of a Unit Grate		L _o (G) =	N/A	N/A	feet
Width of a Unit Grate		W _o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A _{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C _l (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C _w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C _o (G) =	N/A	N/A	
Curb Opening Information			MINOR	MAJOR	
Length of a Unit Curb Opening		L _o (C) =	10.00	10.00	feet
Height of Vertical Curb Opening in Inches		H _{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H _{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W _p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C _l (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C _w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C _o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)			MINOR	MAJOR	
Depth for Grate Midwidth		d _{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d _{Curb} =	0.33	0.83	ft
Combination Inlet Performance Reduction Factor for Long Inlets		RF _{Combination} =	0.57	1.00	
Curb Opening Performance Reduction Factor for Long Inlets		RF _{Curb} =	0.79	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets		RF _{Grate} =	N/A	N/A	
Total Inlet Interception Capacity (assumes clogged condition)			MINOR	MAJOR	
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)		Q _a =	14.4	52.7	cfs
		Q _{PEAK REQUIRED} =	11.6	21.6	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-11

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.015$ ft/ft
 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion**MAJOR STORM** Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	13.3	138.4	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

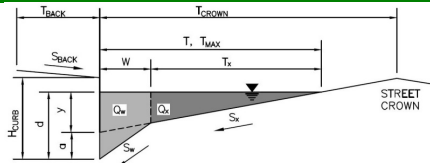
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-12

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 8.0$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.013$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 6.00$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 17.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_x = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_w = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_o = 0.015$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

☐ ☒ check = yes
MINOR STORM Allowable Capacity is based on Spread Criterion**MAJOR STORM Allowable Capacity is based on Depth Criterion**

	Minor Storm	Major Storm	
$Q_{allow} =$	13.3	138.4	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-16

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.015$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

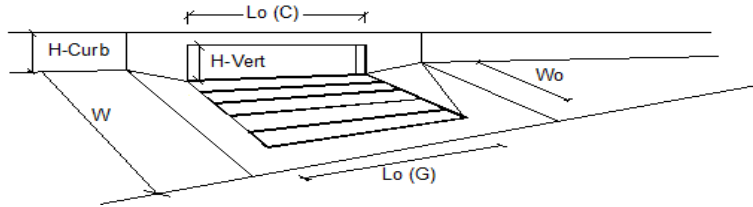
	Minor Storm	Major Storm	
$Q_{allow} =$	13.1	136.0	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR
Type of Inlet	CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a')	3.0	3.0
Total Number of Units in the Inlet (Grate or Curb Opening)	1	1
Length of a Single Unit Inlet (Grate or Curb Opening)	15.00	15.00
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10
Street Hydraulics: OK - Q < Allowable Street Capacity		
Total Inlet Interception Capacity	9.8	15.5
Total Inlet Carry-Over Flow (flow bypassing inlet)	1.1	9.4
Capture Percentage = Q_i/Q_o =	90	62

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

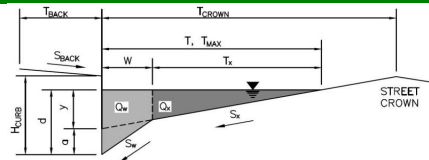
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-17

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.015$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

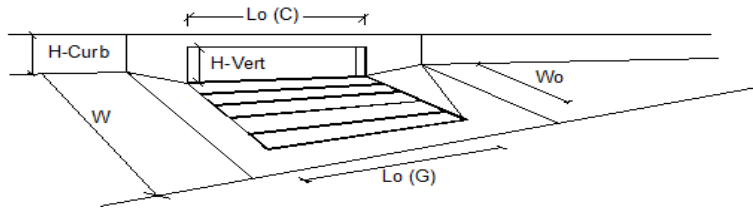
	Minor Storm	Major Storm	
$Q_{allow} =$	13.1	136.0	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR
Type of Inlet	CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a')	3.0	3.0
Total Number of Units in the Inlet (Grate or Curb Opening)	1	1
Length of a Single Unit Inlet (Grate or Curb Opening)	10.00	10.00
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10
Street Hydraulics: OK - Q < Allowable Street Capacity		
Total Inlet Interception Capacity	5.8	9.2
Total Inlet Carry-Over Flow (flow bypassing inlet)	1.2	7.7
Capture Percentage = Q_i/Q_o =	83	54

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

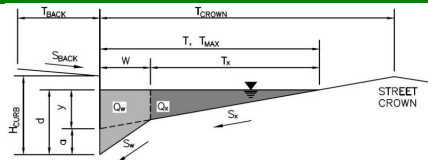
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-18 (NW Approach)

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.015$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	13.3	138.4	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

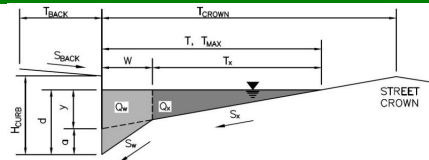
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-18 (SE Approach)

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.015$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	13.3	138.4	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-18

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Check boxes are not applicable in SUMP conditions

MINOR STORM Allowable Capacity is based on Depth Criterion**MAJOR STORM** Allowable Capacity is based on Depth Criterion

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.000$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm
$T_{MAX} =$	17.0	17.0
$d_{MAX} =$	6.0	12.0

inches

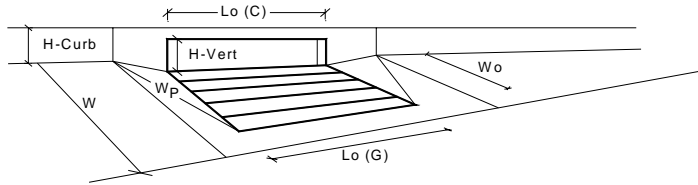
$Q_{allow} =$

	Minor Storm	Major Storm
	SUMP	SUMP

cfs

INLET IN A SUMP OR SAG LOCATION

Version 4.05 Released March 2017



Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a _{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)		No =	2	2	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	5.6	12.0	inches
Grate Information			MINOR	MAJOR	<input checked="" type="checkbox"/> Override Depths
Length of a Unit Grate		L _o (G) =	N/A	N/A	feet
Width of a Unit Grate		W _o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A _{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C _l (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C _w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C _o (G) =	N/A	N/A	
Curb Opening Information			MINOR	MAJOR	
Length of a Unit Curb Opening		L _o (C) =	10.00	10.00	feet
Height of Vertical Curb Opening in Inches		H _{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H _{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W _p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C _l (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C _w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C _o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)			MINOR	MAJOR	
Depth for Grate Midwidth		d _{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d _{Curb} =	0.30	0.83	ft
Combination Inlet Performance Reduction Factor for Long Inlets		RF _{Combination} =	0.53	1.00	
Curb Opening Performance Reduction Factor for Long Inlets		RF _{Curb} =	0.76	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets		RF _{Grate} =	N/A	N/A	
Total Inlet Interception Capacity (assumes clogged condition)			MINOR	MAJOR	
		Q _a =	11.8	52.7	cfs
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)		Q _{PEAK REQUIRED} =	9.0	27.4	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

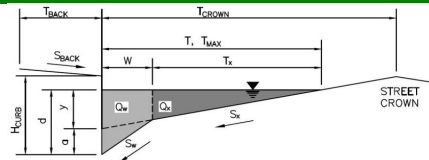
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-19 (SE Approach)

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.010$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	10.9	113.0	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

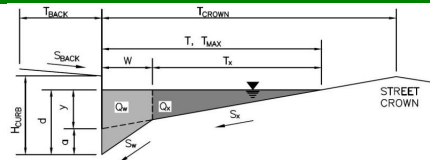
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-19

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Check boxes are not applicable in SUMP conditions

MINOR STORM Allowable Capacity is based on Depth Criterion**MAJOR STORM** Allowable Capacity is based on Depth Criterion

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_W = 0.083$ ft/ft
 $S_0 = 0.000$ ft/ft
 $n_{STREET} = 0.016$

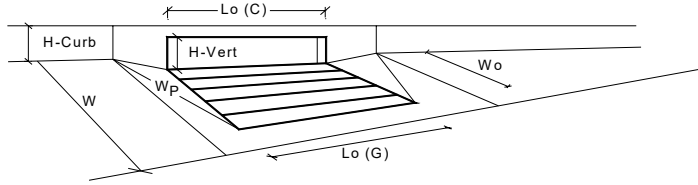
	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches

☐ ☐

	Minor Storm	Major Storm	
$Q_{allow} =$	SUMP	SUMP	cfs

INLET IN A SUMP OR SAG LOCATION

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	2	2	
Water Depth at Flowline (outside of local depression)	5.6	12.0	inches
Grate Information			<input checked="" type="checkbox"/> Override Depths
Length of a Unit Grate	N/A	N/A	feet
Width of a Unit Grate	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	N/A	N/A	
Curb Opening Information			
Length of a Unit Curb Opening	10.00	10.00	feet
Height of Vertical Curb Opening in Inches	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	0.67	0.67	
Low Head Performance Reduction (Calculated)			
Depth for Grate Midwidth	N/A	N/A	ft
Depth for Curb Opening Weir Equation	0.30	0.83	ft
Combination Inlet Performance Reduction Factor for Long Inlets	0.53	1.00	
Curb Opening Performance Reduction Factor for Long Inlets	0.76	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets	N/A	N/A	
Total Inlet Interception Capacity (assumes clogged condition)			
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)	11.8	52.7	cfs
Q PEAK REQUIRED	9.9	29.6	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-21

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.015$ ft/ft
 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

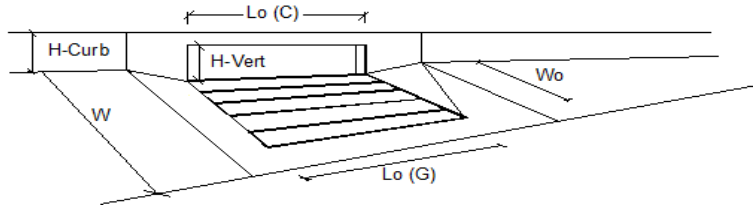
	Minor Storm	Major Storm	
$Q_{allow} =$	13.3	138.4	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR
Type of Inlet	CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a')	3.0	3.0 inches
Total Number of Units in the Inlet (Grate or Curb Opening)	2	2
Length of a Single Unit Inlet (Grate or Curb Opening)	10.00	10.00 ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10
Street Hydraulics: OK - $Q < \text{Allowable Street Capacity}$		
Total Inlet Interception Capacity	9.4	23.1 cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	12.1 cfs
Capture Percentage = Q_i/Q_o	100	66 %

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

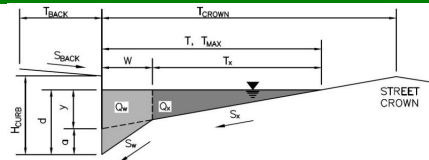
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-22 @ Bent Grass M.D.

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 14.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 26.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.015$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	26.0	26.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	16.9	175.4	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-22

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} = 8.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.015$ ft/ft
 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion**MAJOR STORM** Allowable Capacity is based on Depth Criterion

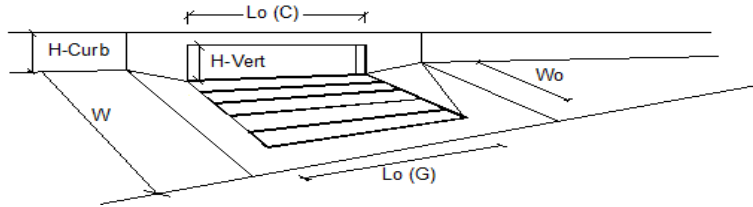
	Minor Storm	Major Storm	
$Q_{allow} =$	13.3	138.4	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017

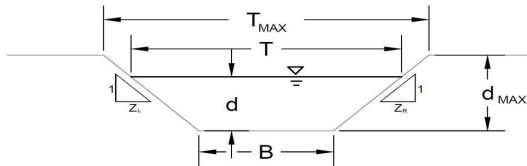


Design Information (Input)	MINOR	MAJOR
Type of Inlet	CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a')	3.0	3.0
Total Number of Units in the Inlet (Grate or Curb Opening)	2	2
Length of a Single Unit Inlet (Grate or Curb Opening)	10.00	10.00
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10
Street Hydraulics: OK - Q < Allowable Street Capacity		
Total Inlet Interception Capacity	12.3	23.1
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.2	12.1
Capture Percentage = Q_i/Q_o	98	66

AREA INLET IN A SWALE

Bent Grass Residential Filing No. 2

DP-23



This worksheet uses the NRCS
vegetal retardance method to
determine Manning's n.

For more information see
Section 7.2.3 of the USDCM.

Analysis of Trapezoidal Grass-Lined Channel Using SCS Method

NRCS Vegetal Retardance (A, B, C, D, or E)

Manning's n (Leave cell D16 blank to manually enter an n value)

Channel Invert Slope

Bottom Width

Left Side Slope

Right Side Slope

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

A, B, C, D or E

n =	0.030	
S_0 =	0.0030	ft/ft
B =	3.00	ft
Z1 =	4.00	ft/ft
Z2 =	4.00	ft/ft

Choose One:

- ☒ Non-Cohesive
☐ Cohesive
☐ Paved

Max. Allowable Top Width of Channel for Minor & Major Storm

Max. Allowable Water Depth in Channel for Minor & Major Storm

	Minor Storm	Major Storm	
T_{MAX} =	19.00	19.00	feet
d_{MAX} =	1.50	1.50	feet

Maximum Channel Capacity Based On Allowable Top Width**Max. Allowable Top Width**

Water Depth

Flow Area

Wetted Perimeter

Hydraulic Radius

Manning's n

Flow Velocity

Velocity-Depth Product

Hydraulic Depth

Froude Number

Max. Flow Based On Allowable Top Width

	Minor Storm	Major Storm	
T_{MAX} =	19.00	19.00	ft
d =	2.00	2.00	ft
A =	22.00	22.00	sq ft
P =	19.49	19.49	ft
R =	1.13	1.13	ft
n =	0.030	0.030	
V =	2.95	2.95	fps
VR =	3.33	3.33	ft ³ /s
D =	1.16	1.16	ft
Fr =	0.48	0.48	
Q_T =	64.9	64.9	cfs

Maximum Channel Capacity Based On Allowable Water Depth**Max. Allowable Water Depth**

Top Width

Flow Area

Wetted Perimeter

Hydraulic Radius

Manning's n

Flow Velocity

Velocity-Depth Product

Hydraulic Depth

Froude Number

Max. Flow Based On Allowable Water Depth

	Minor Storm	Major Storm	
d_{MAX} =	1.50	1.50	feet
T =	15.00	15.00	feet
A =	13.50	13.50	square feet
P =	15.37	15.37	feet
R =	0.88	0.88	feet
n =	0.030	0.030	
V =	2.50	2.50	fps
VR =	2.19	2.19	ft ³ /s
D =	0.90	0.90	feet
Fr =	0.46	0.46	
Q_d =	33.7	33.7	cfs

Allowable Channel Capacity Based On Channel Geometry

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
Q_{allow} =	33.7	33.7	cfs
d_{allow} =	1.50	1.50	ft

Water Depth in Channel Based On Design Peak Flow**Design Peak Flow****Water Depth**

Top Width

Flow Area

Wetted Perimeter

Hydraulic Radius

Manning's n

Flow Velocity

Velocity-Depth Product

Hydraulic Depth

Froude Number

	Minor Storm	Major Storm	
Q_o =	4.4	21.2	cfs
d =	0.57	1.22	feet
T =	7.57	12.73	feet
A =	3.02	9.57	square feet
P =	7.71	13.03	feet
R =	0.39	0.73	feet
n =	0.030	0.030	
V =	1.46	2.21	fps
VR =	0.57	1.63	ft ³ /s
D =	0.40	0.75	feet
Fr =	0.41	0.45	

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

AREA INLET IN A SWALE

Bent Grass Residential Filing No. 2

DP-23

Inlet Design Information (Input)								
Type of Inlet	CDOT TYPE D (Parallel & Depressed)							
Inlet Type =	CDOT TYPE D (Parallel & Depressed)							
Angle of Inclined Grate (must be <= 30 degrees)	$\theta = 0.17$ degrees							
Width of Grate	$W = 6.00$ feet							
Length of Grate	$L = 3.00$ feet							
Open Area Ratio	$A_{\text{RATIO}} = 0.70$							
Height of Inclined Grate	$H_B = 0.01$ feet							
Clogging Factor	$C_1 = 0.38$							
Grate Discharge Coefficient	$C_d = 0.67$							
Orifice Coefficient	$C_o = 0.45$							
Weir Coefficient	$C_w = 1.44$							
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	<table border="1"> <thead> <tr> <th></th> <th>MINOR</th> <th>MAJOR</th> </tr> </thead> <tbody> <tr> <td>$d =$</td> <td>1.57</td> <td>2.22</td> </tr> </tbody> </table>			MINOR	MAJOR	$d =$	1.57	2.22
	MINOR	MAJOR						
$d =$	1.57	2.22						
Grate Capacity as a Weir								
Submerged Side Weir Length	$X = 3.00$ feet							
Inclined Side Weir Flow	$Q_{ws} = 14.9$ cfs							
Base Weir Flow	$Q_{wb} = 42.7$ cfs							
Interception without Clogging	$Q_{w0} = 72.4$ cfs							
Interception with Clogging	$Q_{w0c} = 45.3$ cfs							
Grate Capacity as an Orifice								
Interception without Clogging	$Q_{o0} = 81.5$ cfs							
Interception with Clogging	$Q_{o0c} = 50.9$ cfs							
Total Inlet Interception Capacity (assumes clogged condition)	$Q_a = 45.3$ cfs							
Bypassed Flow, Q_b	$Q_b = 0.0$ cfs							
Capture Percentage = $Q_a/Q_o = C\%$	100 %							

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

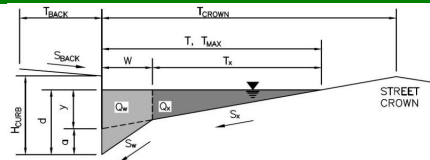
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-24 (10' Inlet)

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} =$ 14.0 ft
 $S_{BACK} =$ 0.020 ft/ft
 $n_{BACK} =$ 0.013

$H_{CURB} =$ 6.00 inches
 $T_{CROWN} =$ 26.0 ft
 $W =$ 2.00 ft
 $S_x =$ 0.020 ft/ft
 $S_w =$ 0.083 ft/ft
 $S_o =$ 0.028 ft/ft
 $n_{STREET} =$ 0.016

	Minor Storm	Major Storm	
$T_{MAX} =$	26.0	26.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

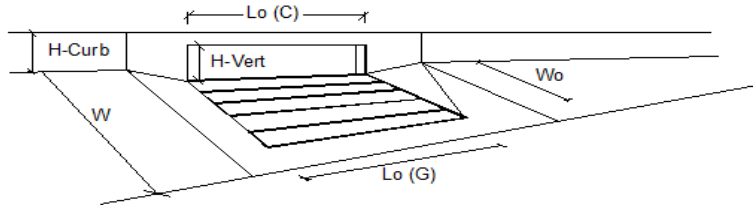
	Minor Storm	Major Storm	
$Q_{allow} =$	18.1	152.7	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR
Type of Inlet	CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a')	3.0	3.0
Total Number of Units in the Inlet (Grate or Curb Opening)	1	1
Length of a Single Unit Inlet (Grate or Curb Opening)	10.00	10.00
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10
Street Hydraulics: OK - Q < Allowable Street Capacity		
Total Inlet Interception Capacity	Q = 0.0	4.2 cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	Q _b = 0.0	0.1 cfs
Capture Percentage = Q _i /Q _o =	C% = 0	98 %

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

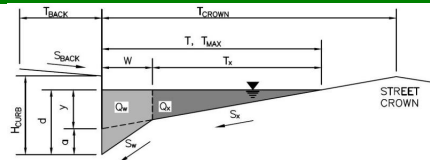
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-24 (15' Inlet)

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 14.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 26.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.028$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	26.0	26.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

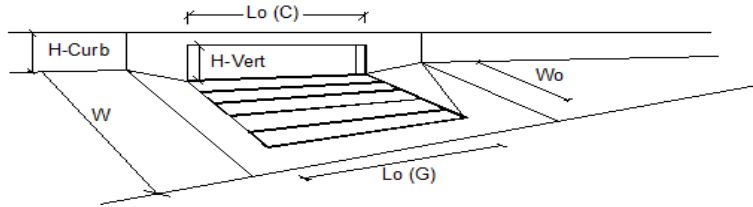
	Minor Storm	Major Storm	
$Q_{allow} =$	18.1	152.7	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR
Type of Inlet	CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a')	3.0	3.0
Total Number of Units in the Inlet (Grate or Curb Opening)	1	1
Length of a Single Unit Inlet (Grate or Curb Opening)	15.00	15.00
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10
Street Hydraulics: OK - Q < Allowable Street Capacity		
Total Inlet Interception Capacity	2.3	12.8
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	4.3
Capture Percentage = Q_i/Q_o =	100	75

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

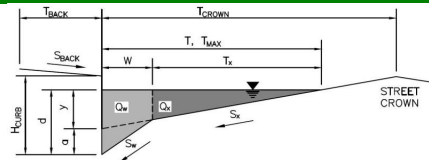
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-25 (10' Inlet)

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} =$ 14.0 ft
 $S_{BACK} =$ 0.020 ft/ft
 $n_{BACK} =$ 0.013

$H_{CURB} =$ 6.00 inches
 $T_{CROWN} =$ 26.0 ft
 $W =$ 2.00 ft
 $S_x =$ 0.020 ft/ft
 $S_w =$ 0.083 ft/ft
 $S_o =$ 0.028 ft/ft
 $n_{STREET} =$ 0.016

	Minor Storm	Major Storm	
$T_{MAX} =$	26.0	26.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

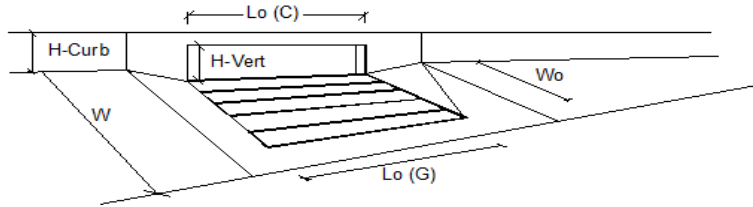
	Minor Storm	Major Storm	
$Q_{allow} =$	18.1	152.7	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR
Type of Inlet	CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a')	3.0	3.0 inches
Total Number of Units in the Inlet (Grate or Curb Opening)	1	1
Length of a Single Unit Inlet (Grate or Curb Opening)	10.00	10.00 ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10
Street Hydraulics: OK - Q < Allowable Street Capacity		
Total Inlet Interception Capacity	Q = 0.0	4.2 cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	Q _b = 0.0	0.1 cfs
Capture Percentage = Q _i /Q _o =	C% = 0	98 %

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential Filing No. 2

Inlet ID:

DP-25 (15' Inlet)

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 14.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 26.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.028$ ft/ft
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	26.0	26.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

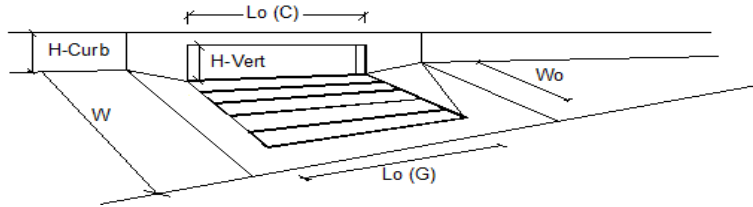
	Minor Storm	Major Storm	
$Q_{allow} =$	18.1	152.7	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

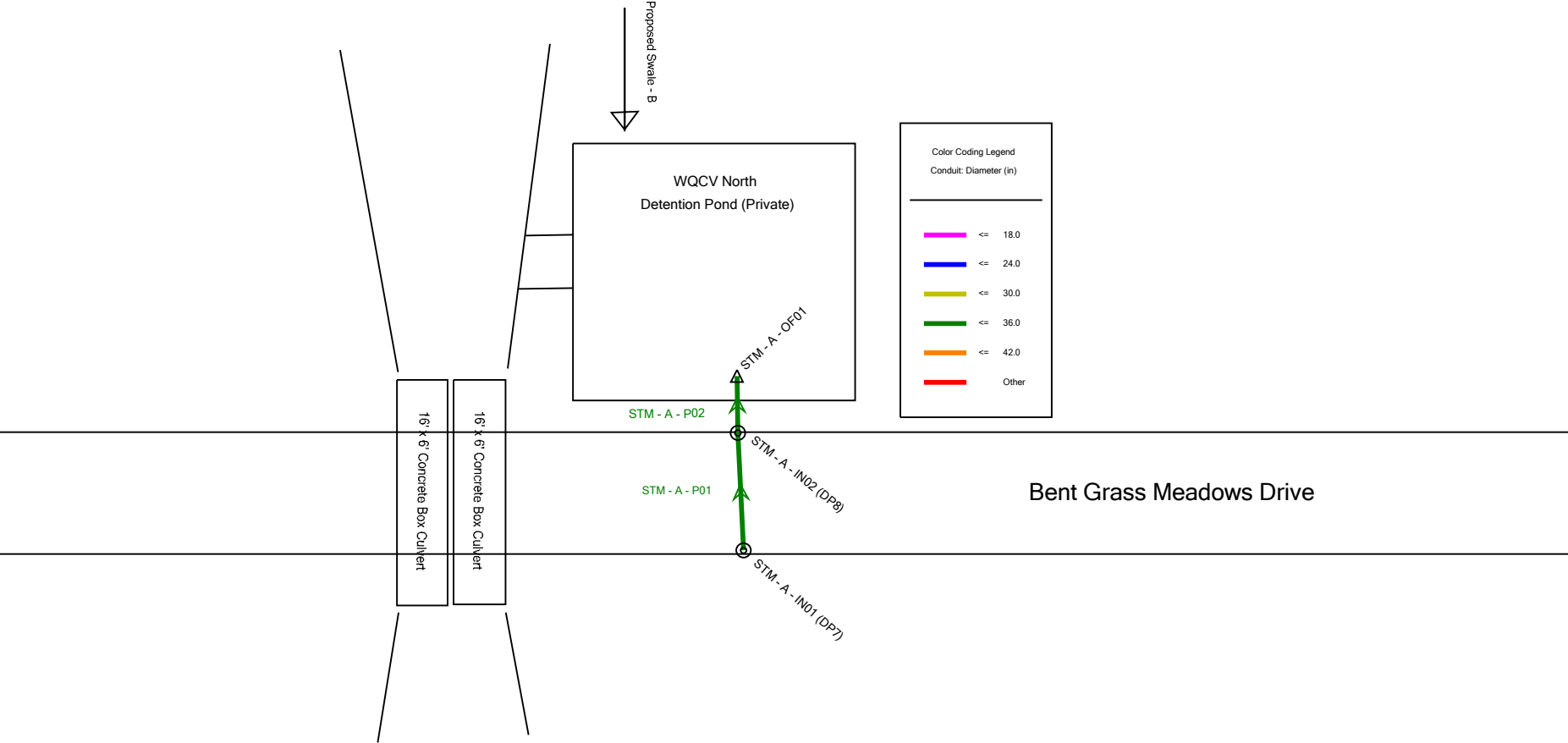
INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017

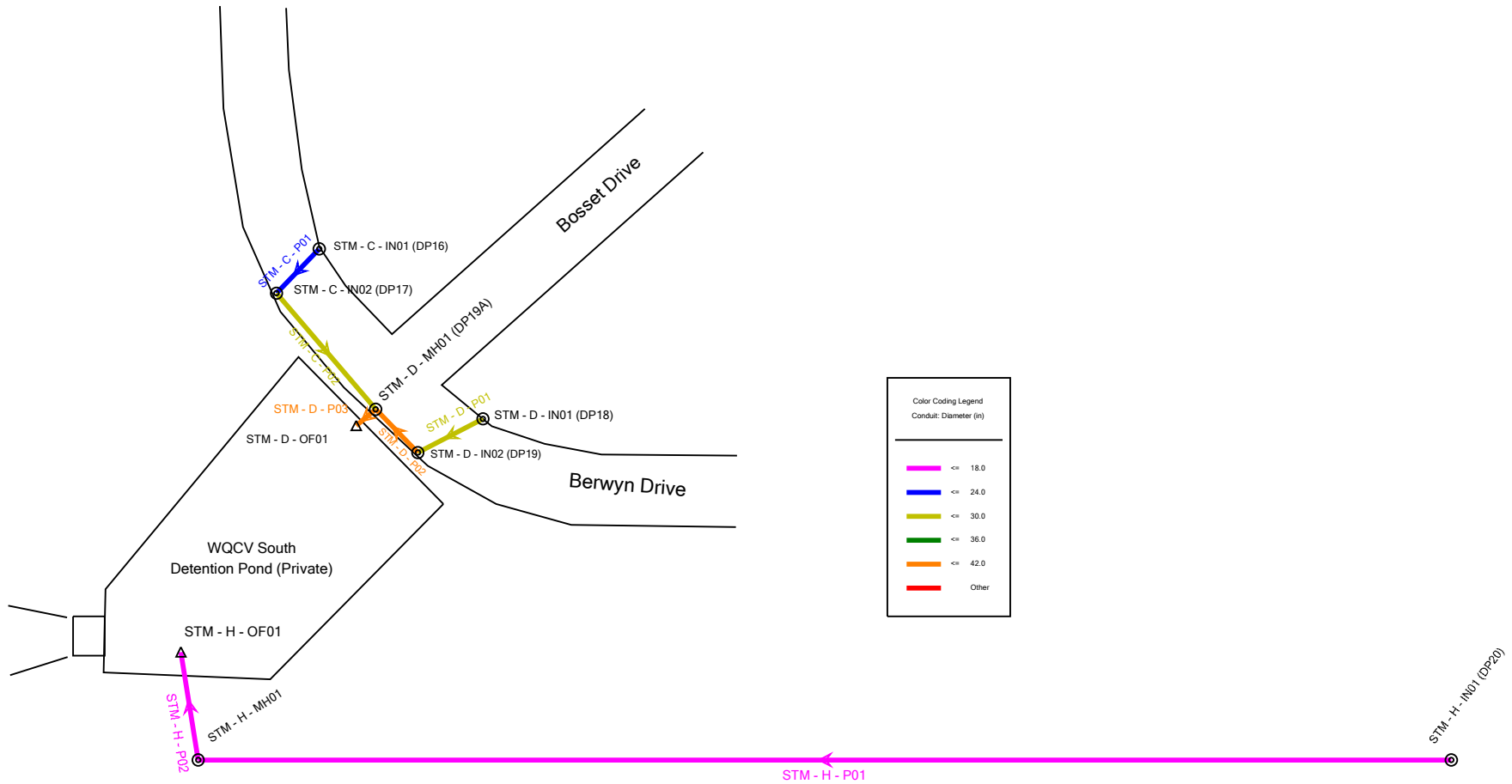


Design Information (Input)	MINOR	MAJOR
Type of Inlet	CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a')	3.0	3.0
Total Number of Units in the Inlet (Grate or Curb Opening)	1	1
Length of a Single Unit Inlet (Grate or Curb Opening)	15.00	15.00
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10
Street Hydraulics: OK - Q < Allowable Street Capacity		
Total Inlet Interception Capacity	3.3	12.8
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	4.3
Capture Percentage = Q_i/Q_o =	100	75

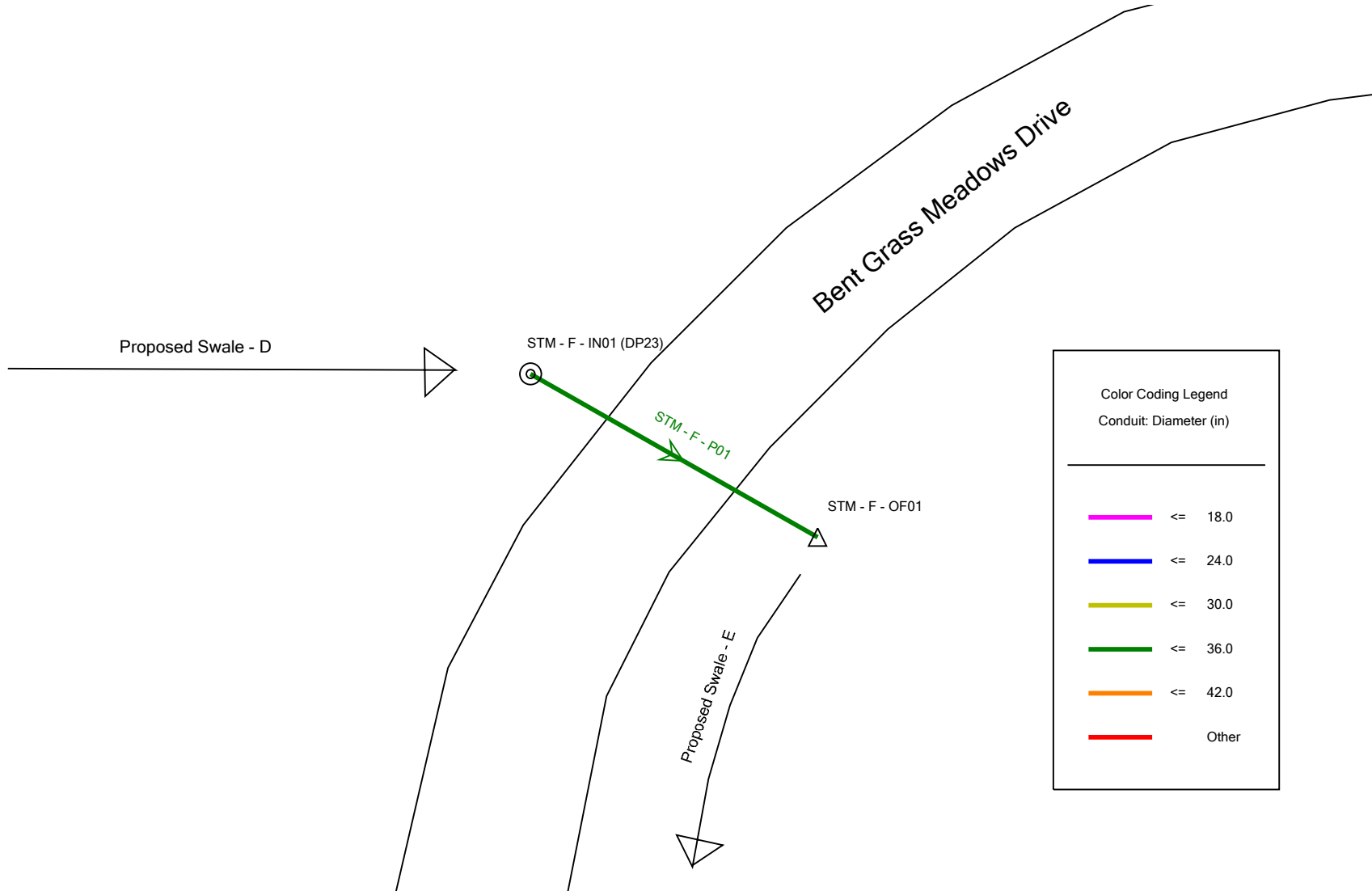
Storm A



Storm C, D, and H

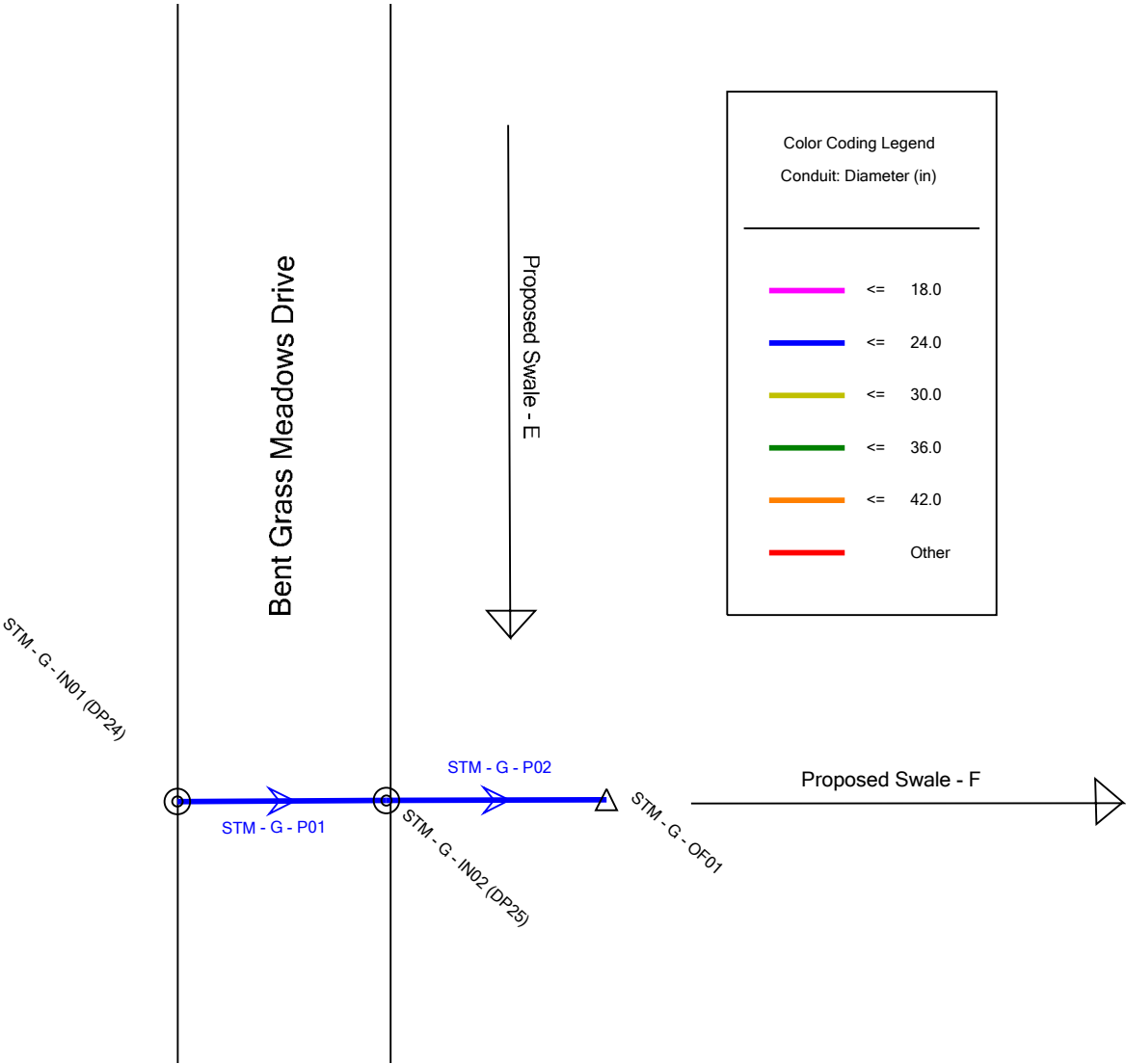


Storm F



Color Coding Legend	
Conduit: Diameter (in)	
—	<= 18.0
—	<= 24.0
—	<= 30.0
—	<= 36.0
—	<= 42.0
—	Other

Storm G



FlexTable: Conduit Table

Active Scenario: 5 YR

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Flow (cfs)	Velocity (ft/s)	Capacity (Full Flow) (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
STM - A - P01	STM - A - IN01 (DP7)	STM - A - IN02 (DP8)	6,940.04	6,939.80	49.0	0.005	36.0	0.013	2.90	3.67	46.66	6,940.80	6,940.80	6,940.86	6,940.83
STM - G - P01	STM - G - IN01 (DP24)	STM - G - IN02 (DP25)	6,931.91	6,931.67	49.0	0.005	24.0	0.013	2.40	3.64	15.83	6,932.45	6,932.38	6,932.64	6,932.47
STM - G - P02	STM - G - IN02 (DP25)	STM - G - OF01	6,931.67	6,931.41	51.4	0.005	24.0	0.013	4.00	4.25	16.09	6,932.37	6,932.09	6,932.63	6,932.37
STM - C - P01	STM - C - IN01 (DP16)	STM - C - IN02 (DP17)	6,926.43	6,926.25	36.2	0.005	24.0	0.013	9.80	5.33	15.94	6,927.82	6,927.79	6,928.10	6,928.01
STM - D - P01	STM - D - IN01 (DP18)	STM - D - IN02 (DP19)	6,925.97	6,925.79	36.5	0.005	30.0	0.013	9.00	5.18	28.79	6,927.18	6,927.19	6,927.41	6,927.35
STM - D - P03	STM - D - MH01 (DP19A)	STM - D - OF01	6,924.32	6,924.25	13.2	0.005	42.0	0.013	32.90	7.41	73.29	6,926.10	6,925.94	6,926.80	6,926.74
STM - A - P02	STM - A - IN02 (DP8)	STM - A - OF01	6,938.70	6,938.50	40.5	0.005	36.0	0.013	29.00	6.98	46.87	6,940.44	6,940.21	6,941.16	6,940.96
STM - F - P01	STM - F - IN01 (DP23)	STM - F - OF01	6,934.42	6,933.64	155.0	0.005	36.0	0.013	22.70	6.62	47.31	6,935.95	6,935.10	6,936.56	6,935.79
STM - C - P02	STM - C - IN02 (DP17)	STM - D - MH01 (DP19A)	6,925.75	6,925.32	85.4	0.005	30.0	0.013	15.60	6.03	29.11	6,927.08	6,927.02	6,927.62	6,927.32
STM - D - P02	STM - D - IN02 (DP19)	STM - D - MH01 (DP19A)	6,924.79	6,924.62	34.1	0.005	42.0	0.013	18.50	6.21	71.06	6,927.02	6,927.02	6,927.15	6,927.13
STM - H - P01	STM - H - IN01 (DP20)	STM - H - MH01	6,928.96	6,924.27	938.9	0.005	18.0	0.013	1.30	3.16	7.42	6,929.39	6,924.69	6,929.54	6,924.85
STM - H - P02	STM - H - MH01	STM - H - OF01	6,923.97	6,923.76	41.9	0.005	18.0	0.013	1.30	3.16	7.44	6,924.40	6,924.18	6,924.55	6,924.34

FlexTable: Manhole Table

Active Scenario: 5 YR

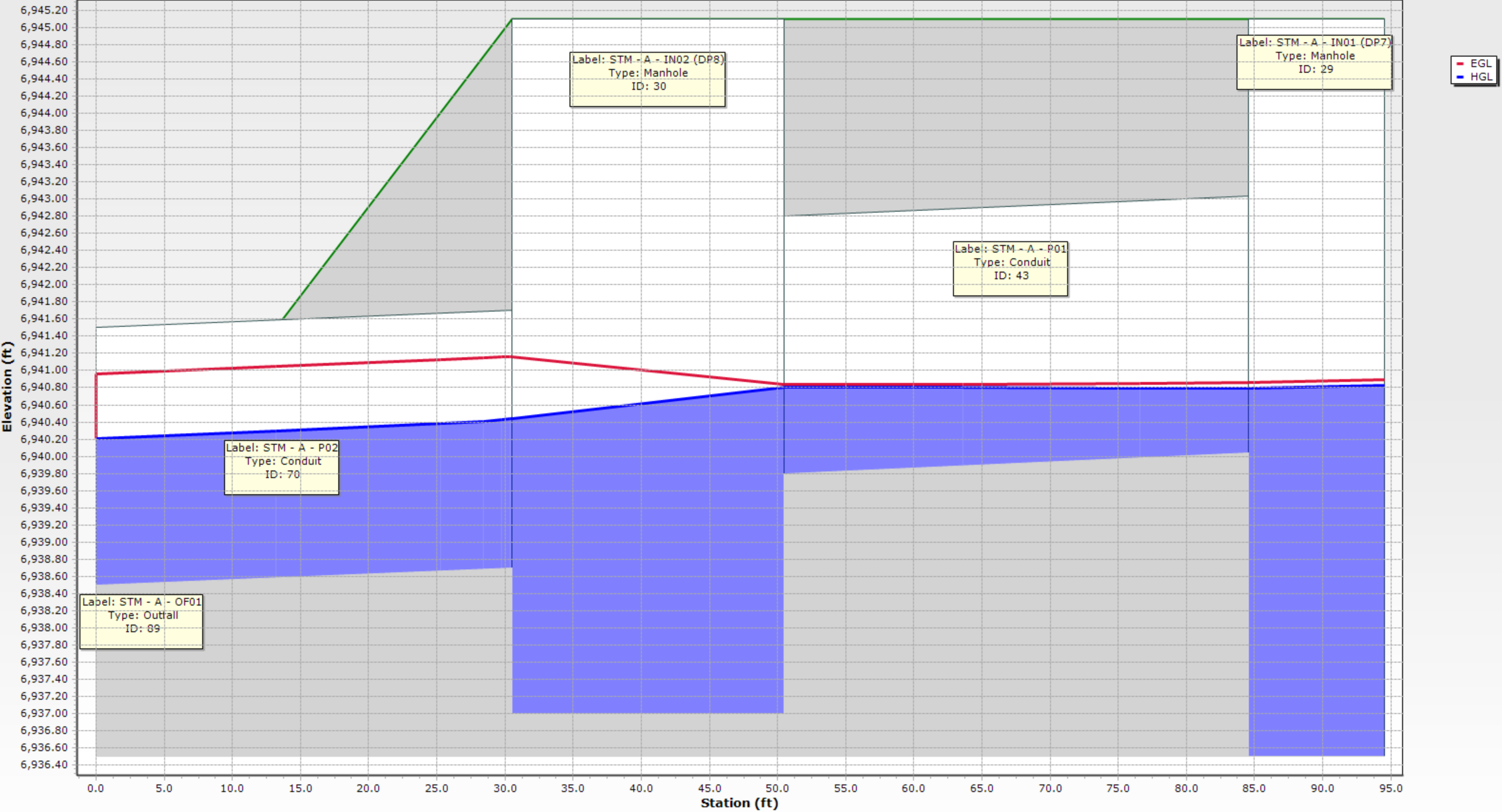
Label	Elevation (Rim) (ft)	Headloss Coefficient (Standard)	Headloss Method	Headloss (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
STM - A - IN01 (DP7)	6,945.10	0.500	Standard	0.03	6,940.83	6,940.80	6,940.90	6,940.86
STM - A - IN02 (DP8)	6,945.10	0.500	Standard	0.36	6,940.80	6,940.44	6,940.83	6,941.16
STM - G - IN02 (DP25)	6,937.01	0.050	Standard	0.01	6,932.38	6,932.37	6,932.47	6,932.63
STM - G - IN01 (DP24)	6,937.01	1.320	Standard	0.25	6,932.70	6,932.45	6,932.90	6,932.64
STM - C - IN02 (DP17)	6,932.39	1.320	Standard	0.70	6,927.79	6,927.08	6,928.01	6,927.62
STM - C - IN01 (DP16)	6,932.52	0.000	Standard	0.00	6,927.82	6,927.82	6,928.10	6,928.10
STM - D - IN01 (DP18)	6,931.23	0.000	Standard	0.00	6,927.18	6,927.18	6,927.41	6,927.41
STM - D - IN02 (DP19)	6,931.21	1.320	Standard	0.17	6,927.19	6,927.02	6,927.35	6,927.15
STM - F - IN01 (DP23)	6,945.20	0.000	Standard	0.00	6,935.95	6,935.95	6,936.56	6,936.56
STM - D - MH01 (DP19A)	6,930.74	1.320	Standard	0.92	6,927.02	6,926.10	6,927.13	6,926.80
STM - H - IN01 (DP20)	6,932.00	0.000	Standard	0.00	6,929.39	6,929.39	6,929.54	6,929.54
STM - H - MH01	6,928.75	1.320	Standard	0.20	6,924.60	6,924.40	6,924.75	6,924.55

FlexTable: Outfall Table

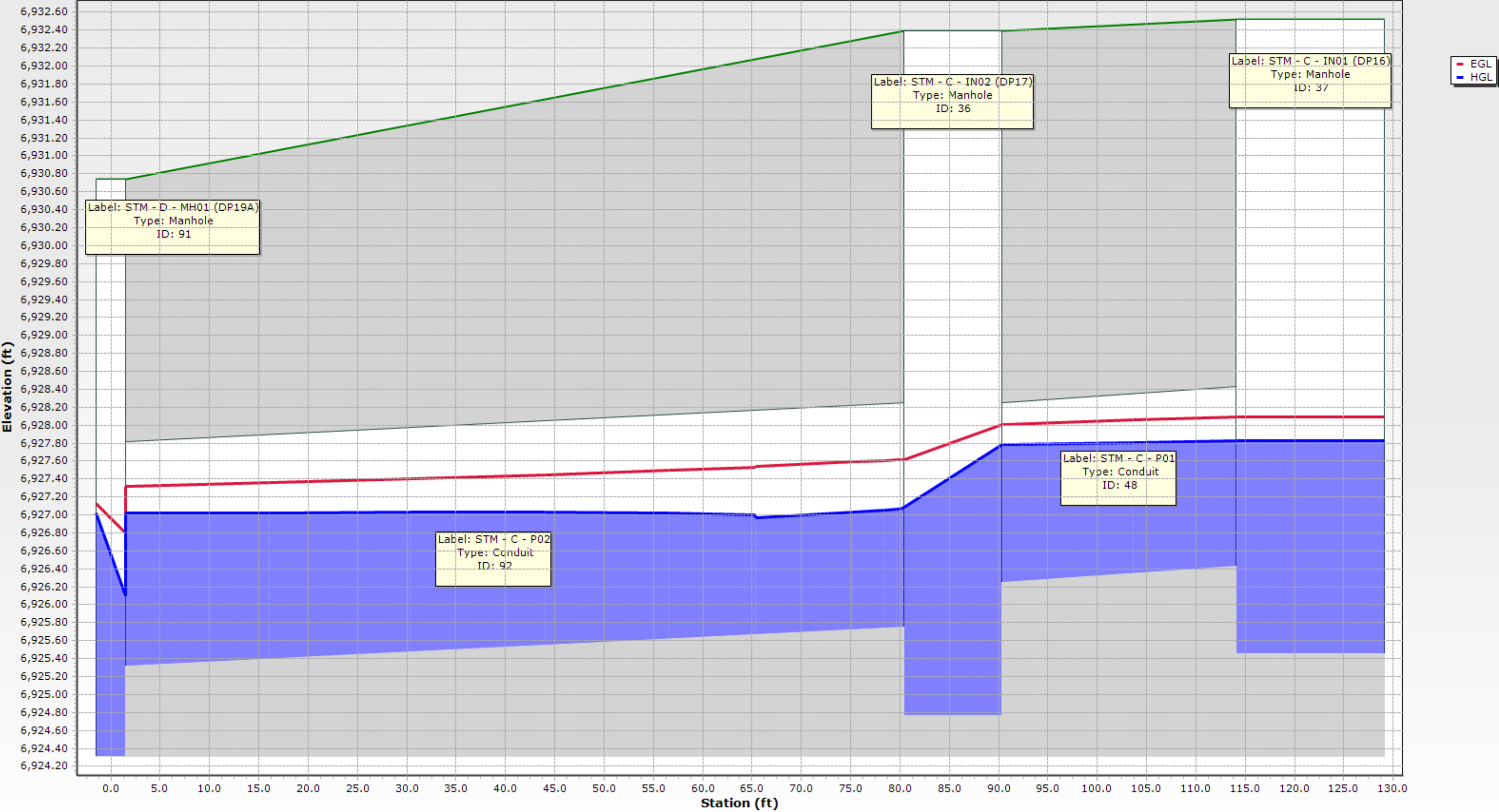
Active Scenario: 5 YR

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Boundary Condition Type	Elevation (User Defined Tailwater) (ft)	Hydraulic Grade (ft)	Energy Grade Line (ft)	Flow (Total Out) (cfs)
STM - G - OF01	6,938.13	6,931.41	Free Outfall		6,932.09	6,932.09	4.00
STM - D - OF01	6,923.50	6,919.81	Free Outfall		6,925.94	6,925.94	32.90
STM - F - OF01	6,933.64	6,933.64	Free Outfall		6,935.10	6,935.10	22.70
STM - A - OF01	6,938.75	6,937.29	Free Outfall		6,940.21	6,940.21	29.00
STM - H - OF01	6,923.77	6,923.77	Free Outfall		6,924.18	6,924.18	1.30

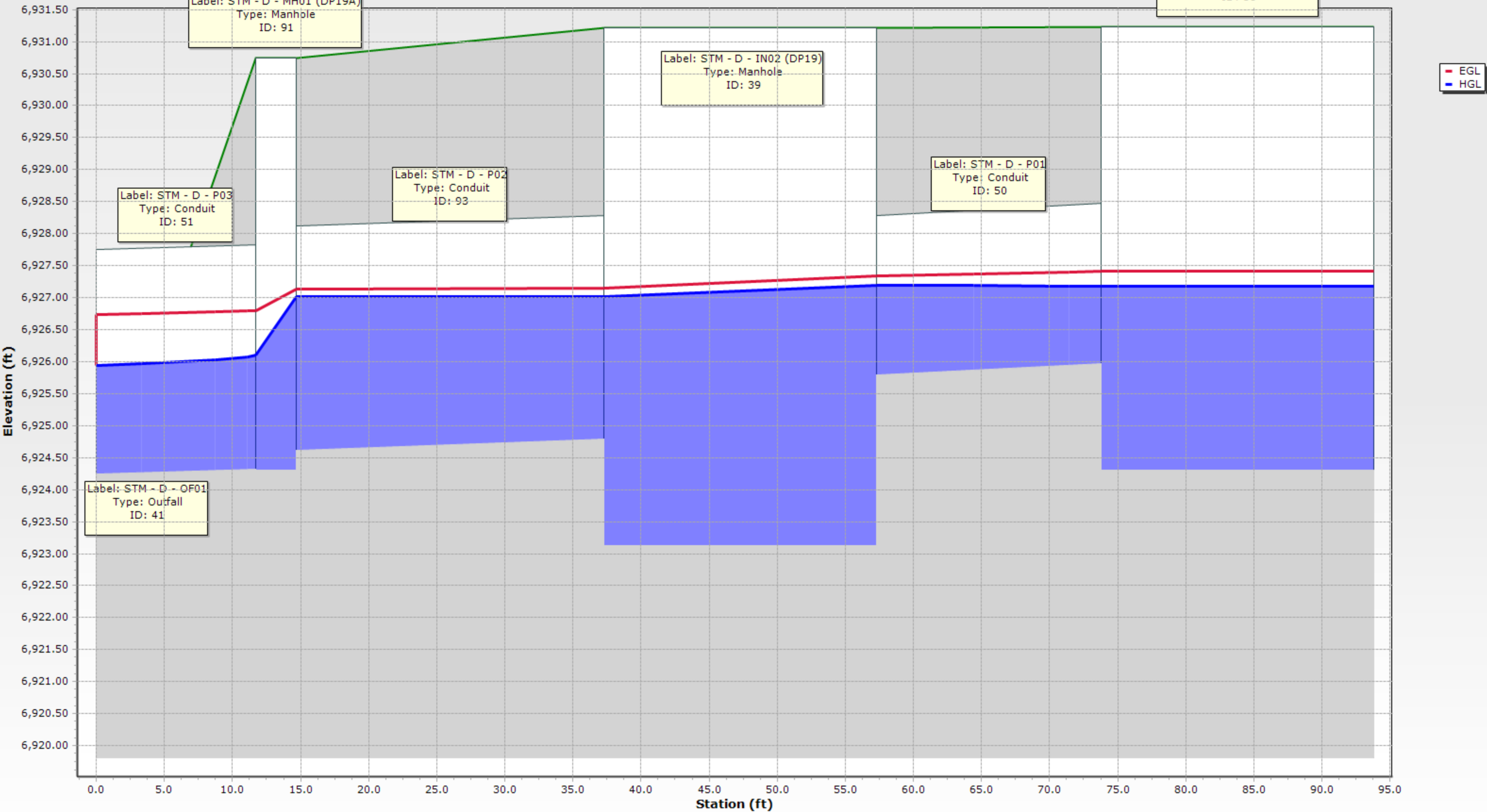
Storm - A - 5 YR



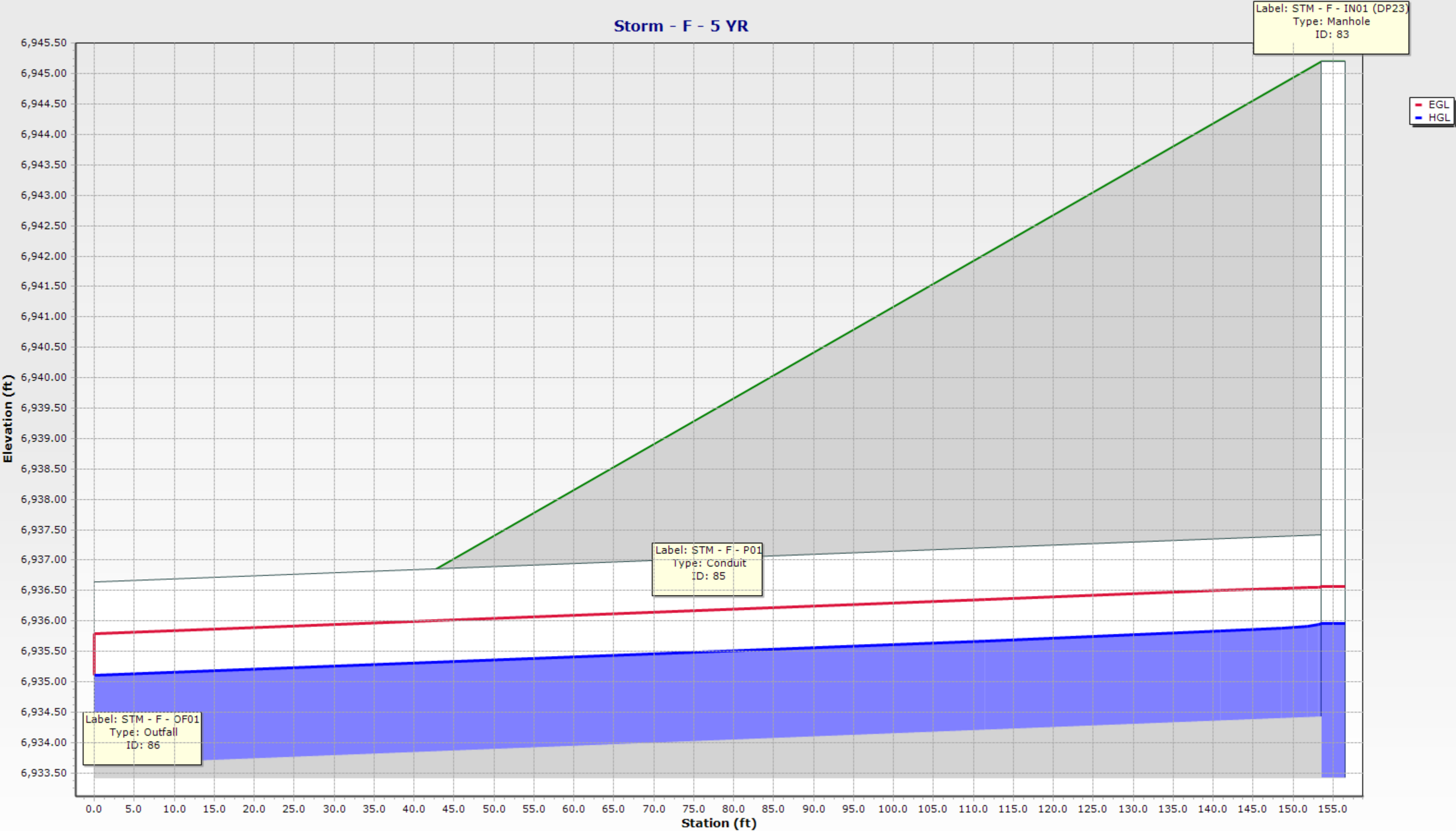
Storm - C - 5 YR



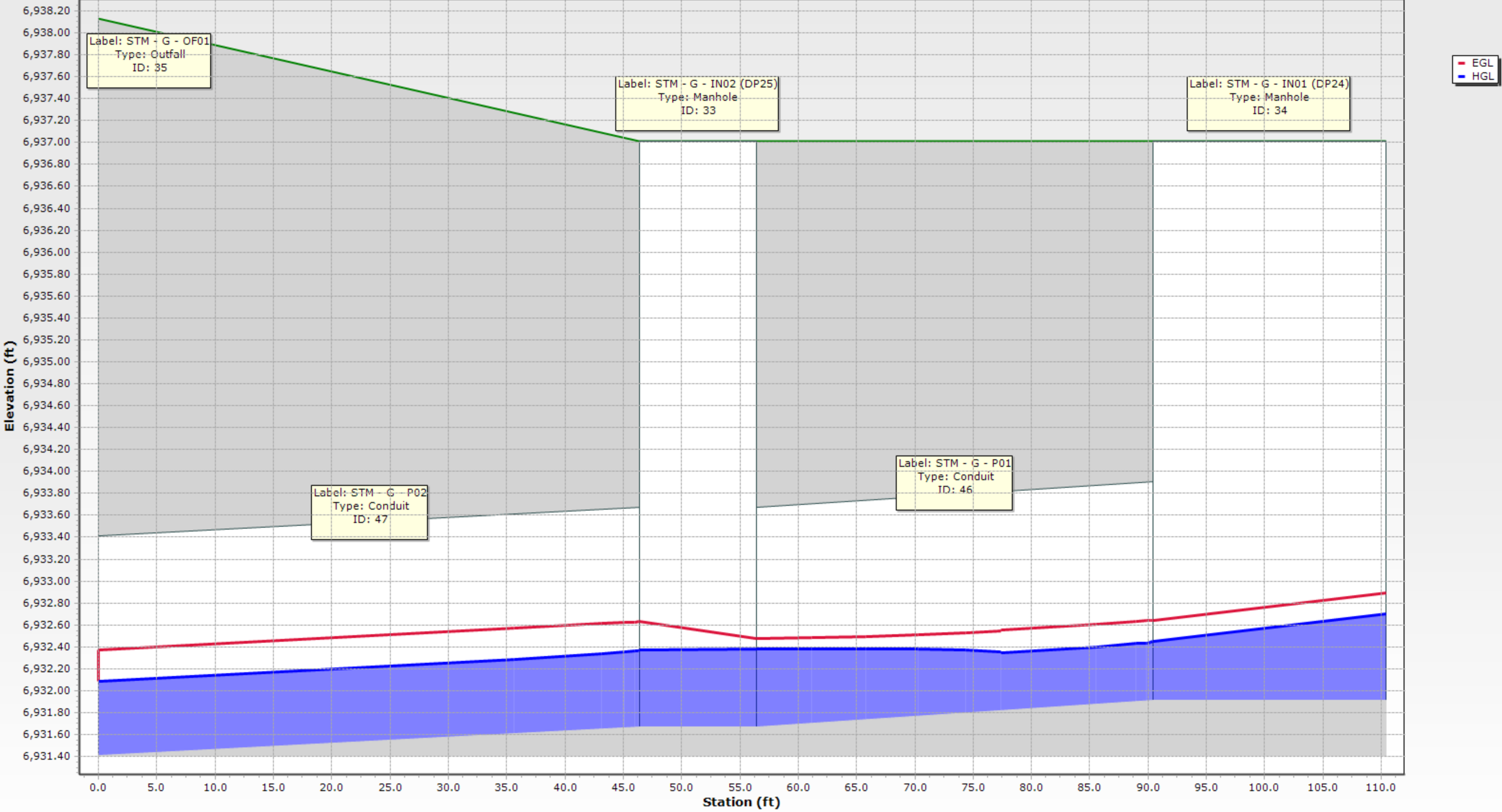
Storm - D - 5 YR



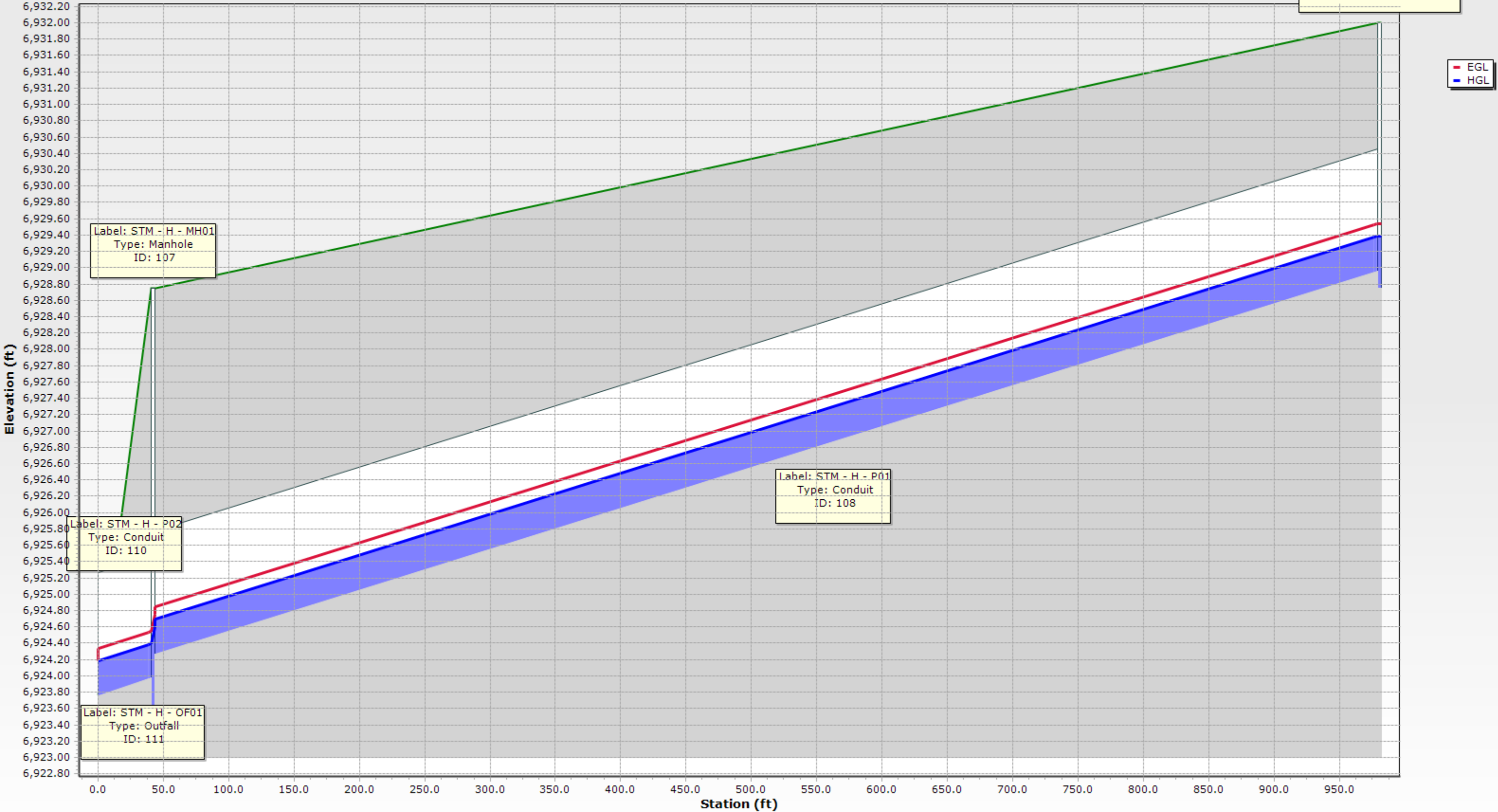
Storm - F - 5 YR



Storm - G - 5 YR



Storm - H - 5 YR



FlexTable: Conduit Table

Active Scenario: 100 YR

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Flow (cfs)	Velocity (ft/s)	Capacity (Full Flow) (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
STM - A - P01	STM - A - IN01 (DP7)	STM - A - IN02 (DP8)	6,940.04	6,939.80	49.0	0.005	36.0	0.013	21.00	2.97	46.66	6,943.16	6,943.11	6,943.30	6,943.25
STM - G - P01	STM - G - IN01 (DP24)	STM - G - IN02 (DP25)	6,931.91	6,931.67	49.0	0.005	24.0	0.013	17.00	5.41	15.83	6,934.94	6,934.66	6,935.39	6,935.12
STM - G - P02	STM - G - IN02 (DP25)	STM - G - OF01	6,931.67	6,931.41	51.4	0.005	24.0	0.013	34.00	10.82	16.09	6,934.57	6,933.41	6,936.39	6,935.23
STM - C - P01	STM - C - IN01 (DP16)	STM - C - IN02 (DP17)	6,926.43	6,926.25	36.2	0.005	24.0	0.013	15.50	4.93	15.94	6,929.96	6,929.79	6,930.34	6,930.17
STM - D - P01	STM - D - IN01 (DP18)	STM - D - IN02 (DP19)	6,925.97	6,925.79	36.5	0.005	30.0	0.013	27.40	5.58	28.79	6,929.92	6,929.76	6,930.40	6,930.24
STM - D - P03	STM - D - MH01 (DP19A)	STM - D - OF01	6,924.32	6,924.25	13.2	0.005	42.0	0.013	78.60	8.51	73.29	6,927.22	6,927.02	6,928.54	6,928.46
STM - A - P02	STM - A - IN02 (DP8)	STM - A - OF01	6,938.70	6,938.50	40.5	0.005	36.0	0.013	71.50	10.12	46.87	6,942.32	6,941.85	6,943.91	6,943.44
STM - F - P01	STM - F - IN01 (DP23)	STM - F - OF01	6,934.42	6,933.64	155.0	0.005	36.0	0.013	63.70	9.01	47.31	6,938.05	6,936.64	6,939.32	6,937.90
STM - C - P02	STM - C - IN02 (DP17)	STM - D - MH01 (DP19A)	6,925.75	6,925.32	85.4	0.005	30.0	0.013	24.60	5.01	29.11	6,929.27	6,928.96	6,929.66	6,929.35
STM - D - P02	STM - D - IN02 (DP19)	STM - D - MH01 (DP19A)	6,924.79	6,924.62	34.1	0.005	42.0	0.013	55.70	5.79	71.06	6,929.07	6,928.96	6,929.59	6,929.49
STM - H - P01	STM - H - IN01 (DP20)	STM - H - MH01	6,928.96	6,924.27	938.9	0.005	18.0	0.013	4.50	4.40	7.42	6,929.80	6,926.89	6,930.10	6,926.99
STM - H - P02	STM - H - MH01	STM - H - OF01	6,923.97	6,923.76	41.9	0.005	18.0	0.013	4.50	2.55	7.44	6,926.76	6,926.68	6,926.86	6,926.78

FlexTable: Manhole Table

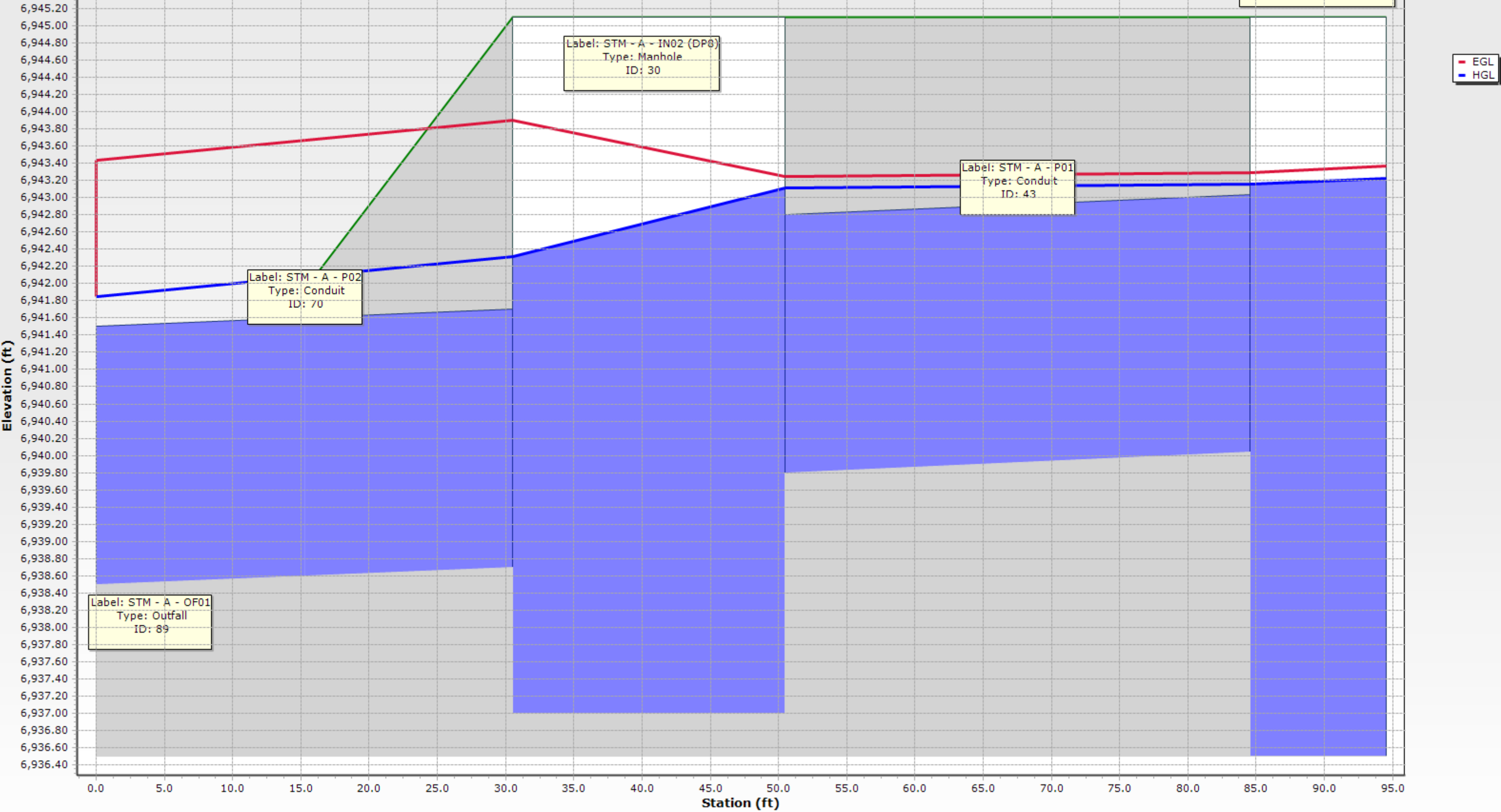
Active Scenario: 100 YR

Label	Elevation (Rim) (ft)	Headloss Coefficient (Standard)	Headloss Method	Headloss (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
STM - A - IN01 (DP7)	6,945.10	0.500	Standard	0.07	6,943.23	6,943.16	6,943.36	6,943.30
STM - A - IN02 (DP8)	6,945.10	0.500	Standard	0.80	6,943.11	6,942.32	6,943.25	6,943.91
STM - G - IN02 (DP25)	6,937.01	0.050	Standard	0.09	6,934.66	6,934.57	6,935.12	6,936.39
STM - G - IN01 (DP24)	6,937.01	1.320	Standard	0.60	6,935.54	6,934.94	6,935.99	6,935.39
STM - C - IN02 (DP17)	6,932.39	1.320	Standard	0.52	6,929.79	6,929.27	6,930.17	6,929.66
STM - C - IN01 (DP16)	6,932.52	0.000	Standard	0.00	6,929.96	6,929.96	6,930.34	6,930.34
STM - D - IN01 (DP18)	6,931.23	0.000	Standard	0.00	6,929.92	6,929.92	6,930.40	6,930.40
STM - D - IN02 (DP19)	6,931.21	1.320	Standard	0.69	6,929.76	6,929.07	6,930.24	6,929.59
STM - F - IN01 (DP23)	6,945.20	0.000	Standard	0.00	6,938.05	6,938.05	6,939.32	6,939.32
STM - D - MH01 (DP19A)	6,930.74	1.320	Standard	1.75	6,928.96	6,927.22	6,929.49	6,928.54
STM - H - IN01 (DP20)	6,932.00	0.000	Standard	0.00	6,929.80	6,929.80	6,930.10	6,930.10
STM - H - MH01	6,928.75	1.320	Standard	0.13	6,926.89	6,926.76	6,926.99	6,926.86

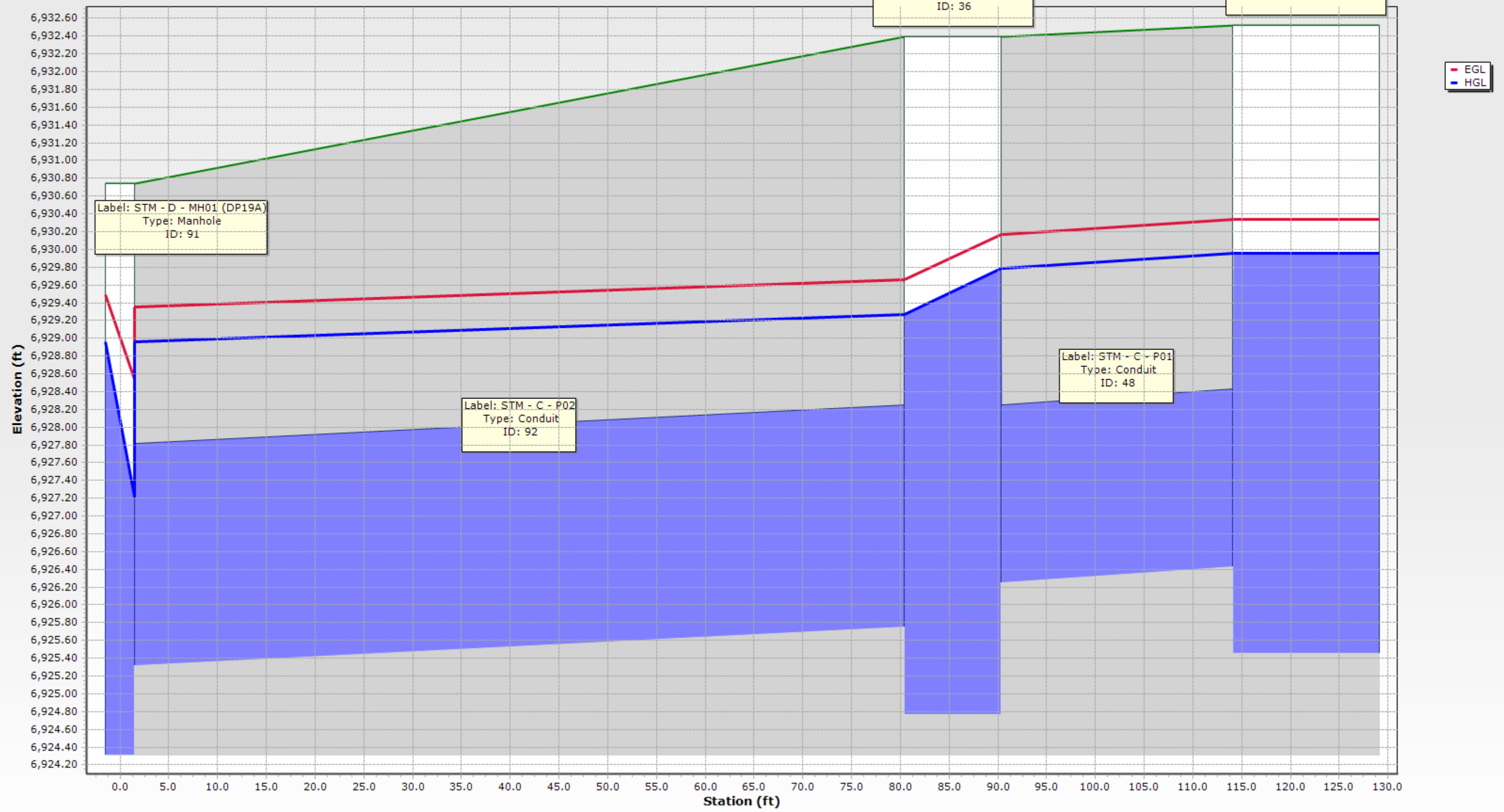
FlexTable: Outfall Table
Active Scenario: 100 YR

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Boundary Condition Type	Elevation (User Defined Tailwater) (ft)	Hydraulic Grade (ft)	Energy Grade Line (ft)	Flow (Total Out) (cfs)
STM - G - OF01	6,938.13	6,931.41	Crown		6,933.41	6,933.41	34.00
STM - D - OF01	6,923.50	6,919.81	User Defined Tailwater	6,926.68	6,927.02	6,927.02	78.60
STM - F - OF01	6,933.64	6,933.64	Crown		6,936.64	6,936.64	63.70
STM - A - OF01	6,938.75	6,937.29	User Defined Tailwater	6,941.85	6,941.85	6,941.85	71.50
STM - H - OF01	6,923.77	6,923.77	User Defined Tailwater	6,926.68	6,926.68	6,926.68	4.50

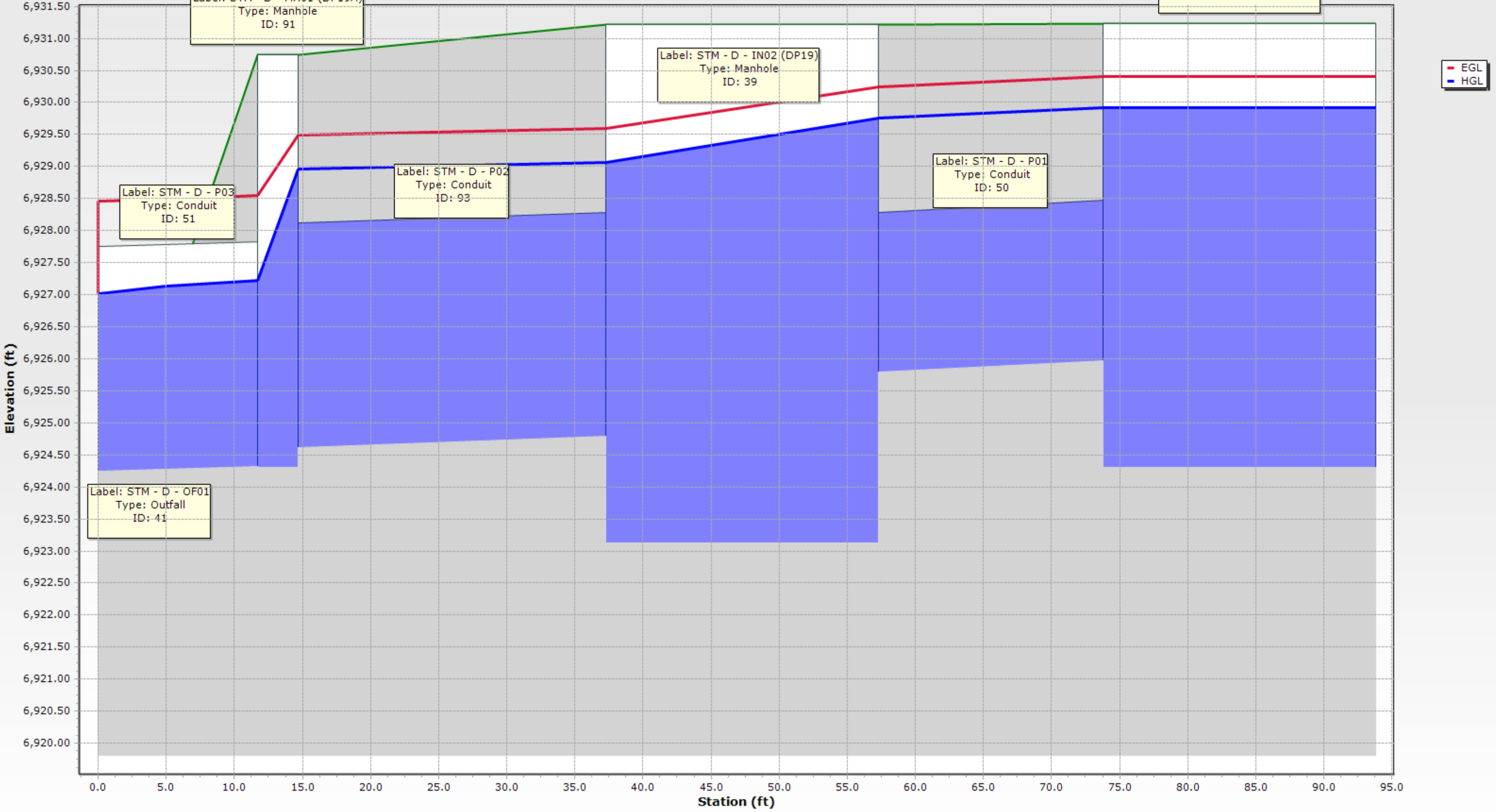
Storm - A - 100 YR



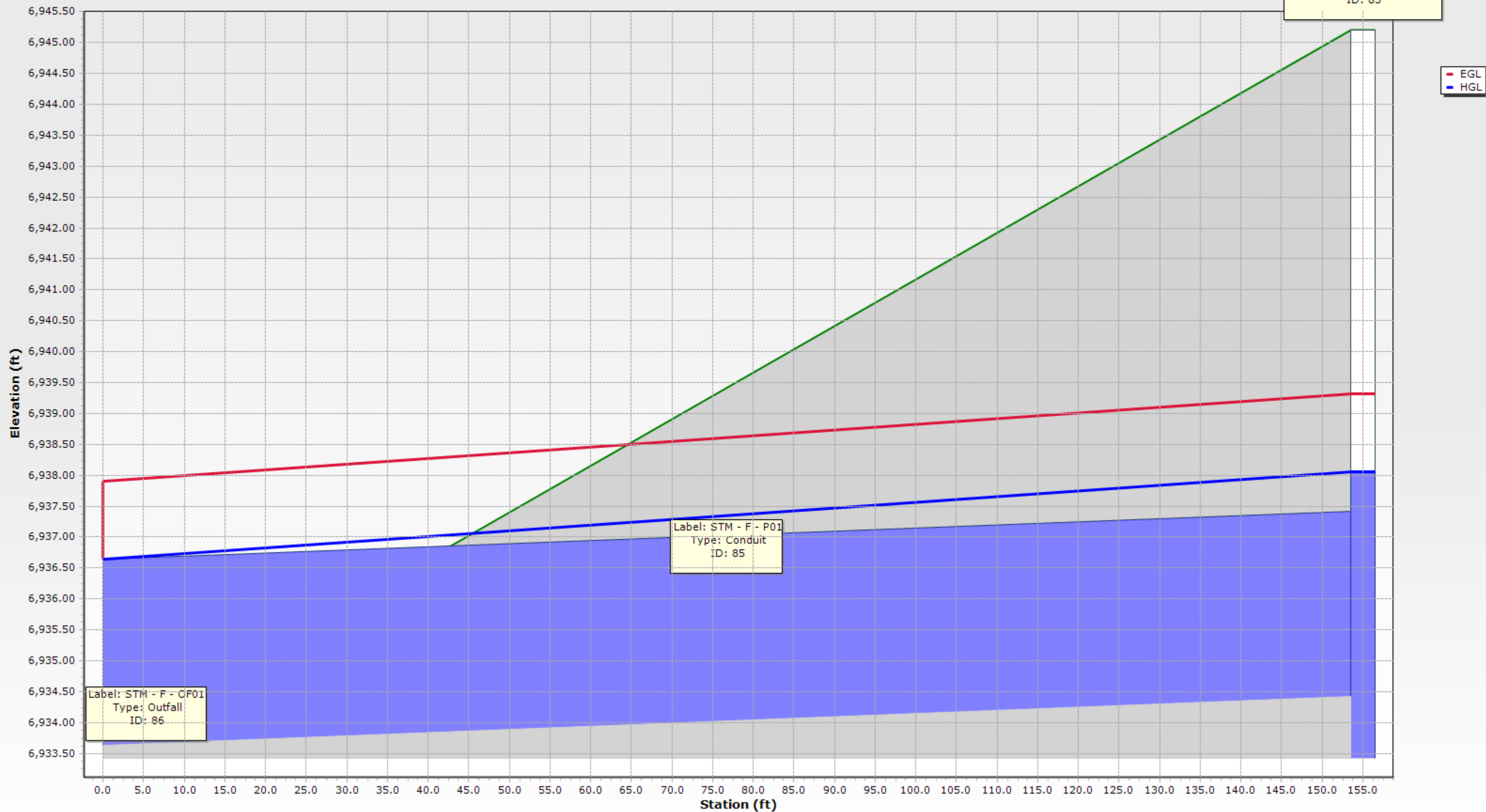
Storm - C - 100 YR



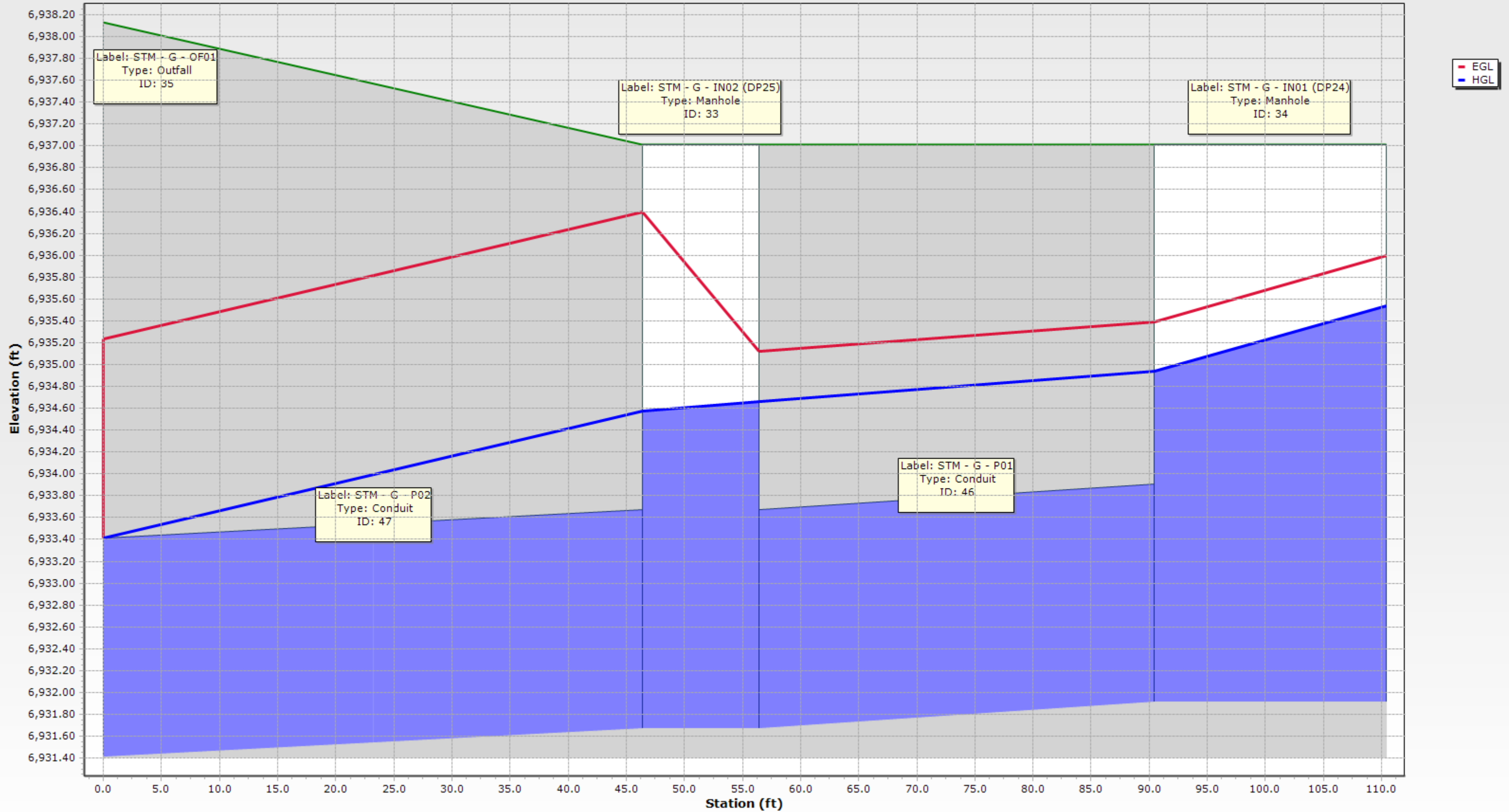
Storm - D - 100 YR



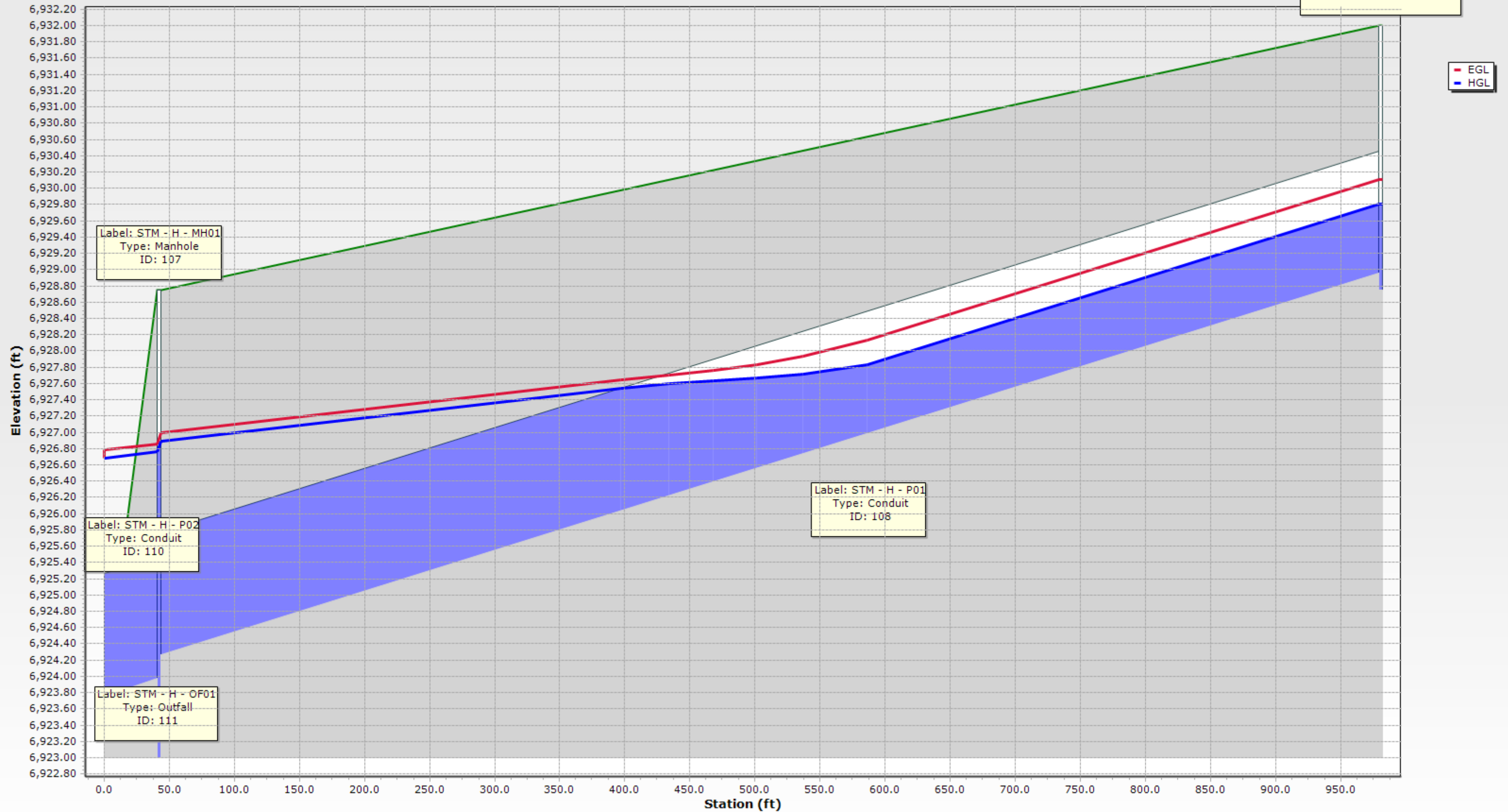
Storm - F - 100 YR



Storm - G - 100 YR



Storm - H - 100 YR



Swale - A

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00540	ft/ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	1.00	ft
Discharge	65.10	ft ³ /s

Results

Normal Depth	1.98	ft
Flow Area	17.66	ft ²
Wetted Perimeter	17.33	ft
Hydraulic Radius	1.02	ft
Top Width	16.84	ft
Critical Depth	1.63	ft
Critical Slope	0.01424	ft/ft
Velocity	3.69	ft/s
Velocity Head	0.21	ft
Specific Energy	2.19	ft
Froude Number	0.63	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.98	ft
Critical Depth	1.63	ft
Channel Slope	0.00540	ft/ft

Swale - A

GVF Output Data

Critical Slope	0.01424	ft/ft
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Swale - B

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.05000	ft/ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	5.00	ft
Discharge	24.60	ft³/s

Results

Normal Depth	0.55	ft
Flow Area	3.98	ft²
Wetted Perimeter	9.55	ft
Hydraulic Radius	0.42	ft
Top Width	9.42	ft
Critical Depth	0.74	ft
Critical Slope	0.01646	ft/ft
Velocity	6.18	ft/s
Velocity Head	0.59	ft
Specific Energy	1.15	ft
Froude Number	1.68	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.55	ft
Critical Depth	0.74	ft
Channel Slope	0.05000	ft/ft

Swale - B

GVF Output Data

Critical Slope	0.01646	ft/ft
----------------	---------	-------

Swale - C

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.01000	ft/ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	5.00	ft
Discharge	66.00	ft³/s

Results

Normal Depth	1.38	ft
Flow Area	14.46	ft²
Wetted Perimeter	16.35	ft
Hydraulic Radius	0.88	ft
Top Width	16.01	ft
Critical Depth	1.26	ft
Critical Slope	0.01428	ft/ft
Velocity	4.56	ft/s
Velocity Head	0.32	ft
Specific Energy	1.70	ft
Froude Number	0.85	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.38	ft
Critical Depth	1.26	ft
Channel Slope	0.01000	ft/ft

Swale - C

GVF Output Data

Critical Slope	0.01428	ft/ft
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Swale - D

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00500	ft/ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	3.00	ft
Discharge	21.20	ft³/s

Results

Normal Depth	1.08	ft
Flow Area	7.94	ft²
Wetted Perimeter	11.93	ft
Hydraulic Radius	0.67	ft
Top Width	11.66	ft
Critical Depth	0.82	ft
Critical Slope	0.01660	ft/ft
Velocity	2.67	ft/s
Velocity Head	0.11	ft
Specific Energy	1.19	ft
Froude Number	0.57	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.08	ft
Critical Depth	0.82	ft
Channel Slope	0.00500	ft/ft

Swale - D

GVF Output Data

Critical Slope	0.01660	ft/ft
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Swale - E

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00500	ft/ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	3.00	ft
Discharge	63.70	ft³/s

Results

Normal Depth	1.78	ft
Flow Area	17.97	ft²
Wetted Perimeter	17.66	ft
Hydraulic Radius	1.02	ft
Top Width	17.22	ft
Critical Depth	1.41	ft
Critical Slope	0.01428	ft/ft
Velocity	3.54	ft/s
Velocity Head	0.20	ft
Specific Energy	1.97	ft
Froude Number	0.61	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.78	ft
Critical Depth	1.41	ft
Channel Slope	0.00500	ft/ft

Swale - E

GVF Output Data

Critical Slope	0.01428	ft/ft
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Swale - F

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.01300	ft/ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	6.67	ft
Discharge	91.40	ft³/s

Results

Normal Depth	1.39	ft
Flow Area	16.93	ft²
Wetted Perimeter	18.10	ft
Hydraulic Radius	0.94	ft
Top Width	17.76	ft
Critical Depth	1.37	ft
Critical Slope	0.01372	ft/ft
Velocity	5.40	ft/s
Velocity Head	0.45	ft
Specific Energy	1.84	ft
Froude Number	0.98	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.39	ft
Critical Depth	1.37	ft
Channel Slope	0.01300	ft/ft

Swale - F

GVF Output Data

Critical Slope	0.01372	ft/ft
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Swale - G

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.02500	ft/ft
Left Side Slope	40.00	ft/ft (H:V)
Right Side Slope	40.00	ft/ft (H:V)
Discharge	5.80	ft ³ /s

Results

Normal Depth	0.27	ft
Flow Area	2.84	ft ²
Wetted Perimeter	21.32	ft
Hydraulic Radius	0.13	ft
Top Width	21.32	ft
Critical Depth	0.26	ft
Critical Slope	0.02574	ft/ft
Velocity	2.04	ft/s
Velocity Head	0.06	ft
Specific Energy	0.33	ft
Froude Number	0.99	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.27	ft
Critical Depth	0.26	ft
Channel Slope	0.02500	ft/ft
Critical Slope	0.02574	ft/ft

Swale - H

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.01000	ft/ft
Left Side Slope	10.00	ft/ft (H:V)
Right Side Slope	10.00	ft/ft (H:V)
Discharge	4.50	ft ³ /s

Results

Normal Depth	0.48	ft
Flow Area	2.35	ft ²
Wetted Perimeter	9.74	ft
Hydraulic Radius	0.24	ft
Top Width	9.69	ft
Critical Depth	0.42	ft
Critical Slope	0.02227	ft/ft
Velocity	1.92	ft/s
Velocity Head	0.06	ft
Specific Energy	0.54	ft
Froude Number	0.69	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

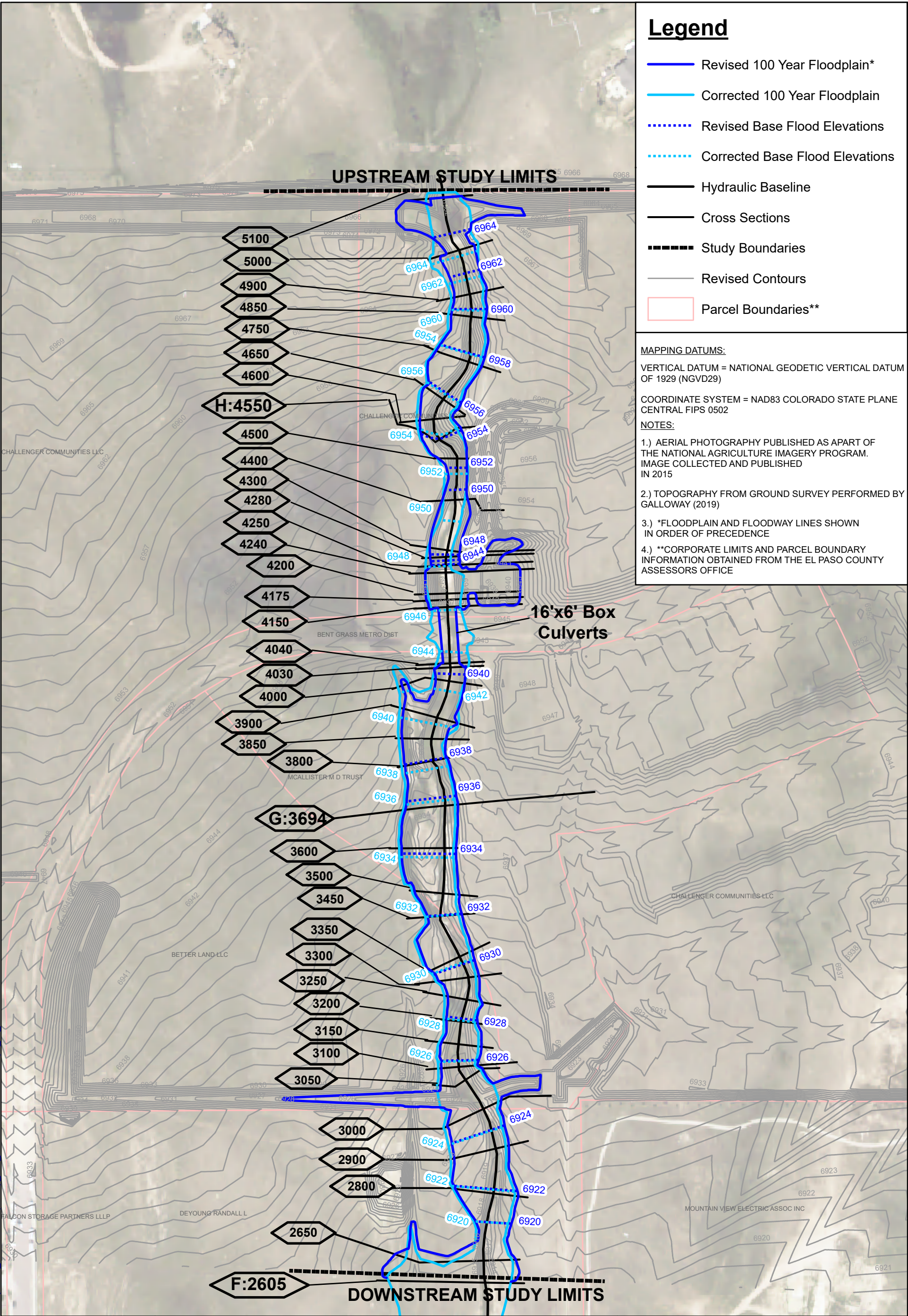
GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.48	ft
Critical Depth	0.42	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.02227	ft/ft

APPENDIX D

Preliminary Channel HEC-RAS Models

Document Path: C:\Users\patrick_oshea\Desktop\Temp_GIS_Data\Bent Grass Workmap1_21_2020.mxd



 Planning, Architecture, Engineering, 5265 Ronald Reagan Blvd., Suite 210 Johnstown, CO 80534 970.800.3300 GallowayUS.com	 Original Scale: 1" = 200' 0 50 100 200 300 400 Feet	DRAWN BY: PMO	PROJECT NUMBER: CLH0000014.20	CORRECTED AND REVISED FLOODPLAINS, UNNAMED TRIBUTARY TO BLACK SQUIRREL CREEK #2	FIGURE 1
		DESIGNED BY: PMO	PROJECT FILE: Effective Workmap		
		CHECKED BY: AL/CJP	DATE: 1/21/2020		

Existing Conditions Model

Ex RAS Input Report.txt

HEC-RAS HEC-RAS 5.0.7 March 2019
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X      X  XXXXXX      XXXX      XXXX      XX      XXXX
X      X  X          X      X      X      X      X
X      X  X          X          X      X      X      X
XXXXXXXX XXXX      X          XXX XXXX      XXXXXX      XXXX
X      X  X          X          X      X      X      X
X      X  X          X      X      X      X      X
X      X  XXXXXX      XXXX      X      X      X      XXXXX
```

PROJECT DATA

Project Title: HEC-RAS Model
Project File : CLH14_Final.prj
Run Date and Time:

Project in English units

Project Description:

CRS Info=<SpatialReference> <CoordinateSystem Code="3502"
Unit="US_survey_Foot" AcadCode="" /> <Registration OffsetX="0" OffsetY="0"
OffsetZ="0" ScaleX="1" ScaleY="1" ScaleZ="1" /></SpatialReference>

PLAN DATA

Plan Title:
Plan File :

Geometry Title: CE_Reduced2

Geometry File : h:\Challenger Homes Inc\CO, El Paso
County-CLH0000014.20-Bent Grass\2. P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras
1_24_2020 Final\CLH14_Final.g08

Flow Title : Phase 1

Flow File : h:\Challenger Homes Inc\CO, El Paso
County-CLH0000014.20-Bent Grass\2. P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras
1_24_2020 Final\CLH14_Final.f03

Ex RAS Input Report.txt

Plan Description:

revised condition model for the Bent Grass Subdivision Project. Effective Hydrologic information was incorporated into a Revised condition with both resurveyed topography as of 2019 and design topography for the Bent Grass Subdivision.

Calculated using Hec-Ras v. 5.0.3

Plan Summary Information:

Number of:	Cross Sections	=	33	Multiple Openings	=	0
	Culverts	=	0	Inline Structures	=	0
	Bridges	=	0	Lateral Structures	=	0

Computational Information

Water surface calculation tolerance	=	0.01
Critical depth calculation tolerance	=	0.01
Maximum number of iterations	=	20
Maximum difference tolerance	=	0.33
Flow tolerance factor	=	0.001

Computation Options

Critical depth computed only where necessary	
Conveyance Calculation Method:	At breaks in n values only
Friction Slope Method:	Average Conveyance
Computational Flow Regime:	Subcritical Flow

FLOW DATA

Flow Title: Phase 1

Flow File : h:\Challenger Homes Inc\CO, El Paso County-CLH0000014.20-Bent Grass\2. P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras 1_24_2020 Final\CLH14_Final.f03

Flow Data (cfs)

River	Reach	RS	DBPS 100-YR	DBPS 2-YR
100-YR				
UT_BSC2	NCONFL-BGM	5100	1200	110
1450				
UT_BSC2	NCONFL-BGM	3694	1200	110
1482				

Ex RAS Input Report.txt

Boundary Conditions

River Downstream	Reach	Profile	Upstream
UT_BSC2	NCONFL-BGM	DBPS 100-YR	Normal S = 0.003463
Normal S = 0.025094			
UT_BSC2	NCONFL-BGM	DBPS 2-YR	Normal S = 0.003463
Normal S = 0.025094			
UT_BSC2	NCONFL-BGM	100-YR	Normal S = 0.003463
Known WS = 6918.85			

GEOMETRY DATA

Geometry Title: CE_Reduced2

Geometry File : h:\Challenger Homes Inc\CO, El Paso County-CLH0000014.20-Bent
Grass\2. P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras 1_24_2020 Final\CLH14_Final.g08

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM RS: 5100

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 448

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6968.99	.52	6968.99	.67	6968.98	1.32	6968.94	1.52	6968.93
1.76	6968.92	2.25	6968.9	2.53	6968.88	2.85	6968.86	3.17	6968.85
3.53	6968.83	3.95	6968.81	4.1	6968.8	4.53	6968.78	5.03	6968.75
5.04	6968.75	5.54	6968.72	5.95	6968.7	6.14	6968.69	6.54	6968.67
6.88	6968.65	7.23	6968.64	7.54	6968.62	7.81	6968.6	8.32	6968.58
8.55	6968.57	8.73	6968.56	9.42	6968.52	9.55	6968.51	9.66	6968.51
10.51	6968.46	10.59	6968.46	11	6968.44	11.51	6968.41	11.61	6968.41
12.44	6968.36	12.56	6968.36	12.7	6968.35	13.37	6968.31	13.56	6968.3
13.79	6968.29	14.29	6968.26	14.57	6968.25	14.89	6968.23	15.22	6968.22
15.57	6968.2	15.98	6968.18	16.15	6968.17	16.57	6968.14	17.07	6968.12
17.08	6968.09	17.58	6968.06	18	6967.96	18.17	6967.92	18.58	6967.82

Ex RAS Input Report.txt

18.93	6967.74	19.26	6967.68	19.58	6967.6	19.85	6967.55	20.36	6967.45
20.59	6967.4	20.78	6967.36	21.45	6967.22	21.59	6967.19	21.71	6967.17
22.55	6967	22.59	6966.99	22.63	6966.98	23.12	6966.88	23.56	6966.79
23.6	6966.78	23.64	6966.77	24.49	6966.6	24.6	6966.57	24.73	6966.55
25.41	6966.41	25.6	6966.37	25.83	6966.32	26.16	6966.26	26.34	6966.22
26.61	6966.16	26.92	6966.1	27.27	6966.02	27.61	6965.95	28.02	6965.87
28.19	6965.83	28.61	6965.75	29.11	6965.65	29.12	6965.64	29.62	6965.54
30.05	6965.45	30.2	6965.42	30.62	6965.34	30.97	6965.26	31.3	6965.2
31.62	6965.13	31.9	6965.07	32.39	6964.97	32.63	6964.92	32.83	6964.88
33.49	6964.75	33.63	6964.72	33.75	6964.69	34.58	6964.52	34.63	6964.51
34.68	6964.5	35.25	6964.39	35.61	6964.33	35.64	6964.32	35.67	6964.32
36.53	6964.19	36.64	6964.17	36.77	6964.15	37.46	6964.04	37.64	6964.01
37.86	6963.98	38.39	6963.9	38.65	6963.86	38.96	6963.81	39.31	6963.76
39.65	6963.71	40.05	6963.65	40.24	6963.62	40.65	6963.55	41.14	6963.48
41.17	6963.47	41.66	6963.4	42.09	6963.33	42.24	6963.31	42.66	6963.25
43.02	6963.19	43.33	6963.14	43.67	6963.09	43.95	6963.05	44.42	6962.97
44.67	6962.94	44.88	6962.91	45.52	6962.81	45.67	6962.78	45.8	6962.76
46.61	6962.64	46.68	6962.63	46.73	6962.62	47.37	6962.52	47.66	6962.48
47.68	6962.48	47.71	6962.47	48.58	6962.34	48.68	6962.32	48.8	6962.3
49.51	6962.19	49.69	6962.17	49.89	6962.14	50.44	6962.05	50.69	6962.01
50.99	6961.97	51.36	6961.91	51.69	6961.86	52.08	6961.8	52.29	6961.77
52.7	6961.71	53.18	6961.66	53.22	6961.66	53.7	6961.61	54.14	6961.62
54.27	6961.62	54.7	6961.63	55.07	6961.64	55.36	6961.65	55.71	6961.66
56	6961.66	56.46	6961.68	56.71	6961.68	56.92	6961.69	57.55	6961.7
57.71	6961.71	57.85	6961.71	58.65	6961.73	58.78	6961.73	59.5	6961.75
59.74	6961.75	60.63	6961.78	60.83	6961.78	61.56	6961.8	61.73	6961.8
61.93	6961.81	62.48	6961.82	62.73	6961.83	63.02	6961.83	63.41	6961.84
63.73	6961.85	64.1	6961.86	64.12	6961.86	64.34	6961.87	64.74	6961.88
65.21	6961.89	65.26	6961.89	65.74	6961.9	66.19	6961.91	66.3	6961.91
66.74	6961.92	67.12	6961.93	67.4	6961.94	67.75	6961.95	68.04	6961.96
68.49	6961.97	68.75	6961.97	68.97	6961.98	69.59	6961.99	69.75	6962
69.9	6962	70.68	6962.02	70.82	6962.02	71.62	6962.04	71.75	6962.05
71.77	6962.05	72.68	6962.07	72.87	6962.07	73.6	6962.09	73.77	6962.09
73.96	6962.1	74.53	6962.11	74.77	6962.12	75.06	6962.12	75.46	6962.14
75.77	6962.14	76.15	6962.15	76.38	6962.15	76.78	6962.16	77.24	6962.17
77.31	6962.17	77.78	6962.18	78.24	6962.18	78.34	6962.19	78.78	6962.19
79.16	6962.2	79.43	6962.2	79.79	6962.21	80.09	6962.24	80.53	6962.29
80.79	6962.31	81.02	6962.35	81.62	6962.44	81.8	6962.47	81.94	6962.49
82.71	6962.62	82.8	6962.63	82.87	6962.64	83.74	6962.78	83.8	6962.79
83.81	6962.79	84.72	6962.93	84.81	6962.94	84.9	6962.96	85.65	6963.08
85.81	6963.1	85.99	6963.13	86.58	6963.22	86.81	6963.26	87.09	6963.3
87.5	6963.37	87.82	6963.42	88.18	6963.47	88.43	6963.51	88.82	6963.57
89.28	6963.65	89.36	6963.66	89.82	6963.73	90.28	6963.81	90.37	6963.82
90.83	6963.9	91.21	6963.97	91.46	6964	91.83	6964.06	92.14	6964.12
92.56	6964.18	92.83	6964.23	93.06	6964.27	93.65	6964.38	93.84	6964.41
93.99	6964.44	94.64	6964.56	94.75	6964.58	94.84	6964.59	94.92	6964.61
95.84	6964.78	95.87	6964.78	96.77	6964.94	96.85	6964.96	96.93	6964.97
97.7	6965.11	97.85	6965.14	98.03	6965.17	98.63	6965.28	98.85	6965.32

Ex RAS Input Report.txt

99.12	6965.37	99.55	6965.45	99.86	6965.5	100.22	6965.57	100.48	6965.62
100.86	6965.69	101.31	6965.77	101.41	6965.79	101.86	6965.87	102.33	6965.95
102.4	6965.97	102.87	6966.05	103.26	6966.12	103.5	6966.17	103.87	6966.23
104.19	6966.29	104.59	6966.36	104.87	6966.41	105.11	6966.46	105.69	6966.56
105.88	6966.6	106.04	6966.63	106.78	6966.76	106.88	6966.78	106.97	6966.79
107.87	6966.96	107.89	6966.96	107.99	6966.98	108.82	6967.13	108.89	6967.14
108.97	6967.16	109.75	6967.3	109.89	6967.33	110.06	6967.36	110.67	6967.47
110.89	6967.51	111.16	6967.56	111.6	6967.64	111.9	6967.69	112.25	6967.75
112.53	6967.8	112.9	6967.87	113.34	6967.95	113.45	6967.97	113.9	6968.05
114.38	6968.12	114.44	6968.13	114.91	6968.2	115.31	6968.22	115.53	6968.24
115.91	6968.26	116.23	6968.28	116.63	6968.3	116.91	6968.32	117.16	6968.33
117.72	6968.36	117.92	6968.38	118.09	6968.39	118.81	6968.43	118.92	6968.43
119.01	6968.44	119.91	6968.49	119.94	6968.49	120.12	6968.5	120.87	6968.54
120.93	6968.55	121	6968.55	121.79	6968.59	121.93	6968.6	122.1	6968.61
122.72	6968.65	122.94	6968.66	123.19	6968.67	123.65	6968.7	123.94	6968.72
124.28	6968.74	124.57	6968.75	124.94	6968.77	125.38	6968.8	125.5	6968.8
125.95	6968.83	126.43	6968.86	126.47	6968.86	126.95	6968.89	127.35	6968.91
127.57	6968.92	127.95	6968.94	128.28	6968.96	128.66	6968.98	128.96	6969
129.21	6969.01	129.75	6969.04	129.96	6969.06	130.13	6969.06	130.85	6969.11
130.96	6969.11	131.06	6969.12	131.94	6969.17	131.99	6969.17	132.24	6969.18
132.91	6969.22	132.97	6969.22	133.03	6969.23	133.84	6969.27	133.97	6969.28
134.13	6969.29	134.77	6969.33	134.98	6969.34	135.22	6969.36	135.69	6969.38
135.98	6969.4	136.32	6969.42	136.62	6969.44	136.98	6969.46	137.41	6969.5
137.55	6969.5	137.99	6969.53	138.47	6969.57	138.5	6969.57	138.99	6969.61
139.4	6969.64	139.6	6969.65	139.99	6969.68	140.33	6969.71	140.69	6969.74
141	6969.76	141.25	6969.78	141.79	6969.82	142	6969.84	142.18	6969.85
142.88	6969.9	143	6969.91	143.11	6969.92	143.97	6969.99	144.03	6969.99
144.37	6970.02	144.96	6970.06	145.01	6970.07	145.07	6970.07	145.89	6970.13
146.01	6970.14	146.16	6970.16	146.81	6970.21	147.02	6970.22	147.26	6970.24
147.74	6970.28	148.02	6970.3	148.35	6970.32	148.67	6970.35	149.02	6970.37
149.44	6970.41	149.59	6970.42	149.76	6970.42				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	17.58	.035	114.44	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	17.58	114.44		105.09	123.89		.1	.3

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 5000

INPUT
 Description: Source: Corrected Effective Topo
 Datum: NGVD29

Ex RAS Input Report.txt

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 459

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6966.49	.34	6966.49	.65	6966.47	1.26	6966.43	1.39	6966.42
1.46	6966.41	1.69	6966.4	2.26	6966.36	2.43	6966.35	2.76	6966.33
3.06	6966.31	3.48	6966.28	3.86	6966.26	4.26	6966.23	4.52	6966.21
4.66	6966.2	5.12	6966.18	5.46	6966.15	5.57	6966.15	5.77	6966.13
6.26	6966.1	6.61	6966.08	7.06	6966.05	7.27	6966.03	7.66	6966.01
7.87	6966	8.55	6965.95	8.67	6965.94	8.77	6965.94	9.47	6965.89
9.75	6965.87	10.27	6965.84	10.28	6965.84	10.8	6965.81	11.07	6965.79
11.78	6965.74	11.87	6965.74	11.98	6965.73	12.67	6965.68	12.89	6965.67
13.28	6965.64	13.47	6965.63	13.93	6965.6	14.28	6965.58	14.79	6965.55
14.98	6965.53	15.08	6965.53	15.41	6965.51	15.88	6965.47	16.02	6965.47
16.29	6965.45	16.68	6965.42	17.07	6965.4	17.48	6965.37	17.8	6965.35
18.11	6965.33	18.28	6965.32	18.84	6965.28	19.08	6965.27	19.16	6965.26
19.3	6965.25	19.88	6965.21	20.2	6965.19	20.69	6965.16	20.8	6965.15
21.25	6965.12	21.49	6965.11	22.27	6965.06	22.31	6965.06	23.09	6965
23.34	6964.99	23.81	6964.96	23.89	6964.95	24.39	6964.92	24.69	6964.9
25.31	6964.86	25.43	6964.85	25.49	6964.85	25.7	6964.84	26.29	6964.8
26.48	6964.78	26.82	6964.76	27.1	6964.74	27.52	6964.72	27.9	6964.69
28.32	6964.66	28.57	6964.65	28.7	6964.64	29.13	6964.61	29.5	6964.59
29.61	6964.58	29.83	6964.57	30.3	6964.54	30.66	6964.51	31.1	6964.48
31.33	6964.47	31.7	6964.44	31.9	6964.43	32.56	6964.39	32.7	6964.38
32.75	6964.38	32.83	6964.37	33.51	6964.33	33.79	6964.31	34.31	6964.27
34.34	6964.27	34.84	6964.24	35.11	6964.22	35.84	6964.17	35.99	6964.17
36.71	6964.12	36.93	6964.1	37.34	6964.08	37.51	6964.07	37.98	6964.04
38.31	6964.01	38.49	6964	38.85	6963.98	39.02	6963.97	39.11	6963.96
39.42	6963.94	39.91	6963.91	40.07	6963.9	40.35	6963.88	40.72	6963.86
41.11	6963.83	41.52	6963.8	41.85	6963.78	42.16	6963.76	42.32	6963.75
42.85	6963.72	43.12	6963.7	43.2	6963.7	43.36	6963.69	43.92	6963.65
44.25	6963.63	44.72	6963.59	44.86	6963.56	45.29	6963.52	45.52	6963.49
46.28	6963.38	46.32	6963.37	46.37	6963.37	47.13	6963.26	47.38	6963.22
47.87	6963.15	47.93	6963.14	48.43	6963.07	48.73	6963.04	49.37	6962.96
49.48	6962.95	49.53	6962.94	49.71	6962.93	50.33	6962.86	50.52	6962.84
50.88	6962.81	51.13	6962.78	51.57	6962.74	51.93	6962.7	52.38	6962.66
52.61	6962.63	52.73	6962.62	53.14	6962.58	53.54	6962.54	53.66	6962.53
53.88	6962.5	54.34	6962.46	54.7	6962.42	55.14	6962.38	55.39	6962.35
55.75	6962.32	55.94	6962.3	56.57	6962.23	56.74	6962.21	56.79	6962.21
56.89	6962.2	57.54	6962.13	57.84	6962.1	58.34	6962.05	58.39	6962.05
58.88	6962	59.14	6961.97	59.9	6961.9	59.93	6961.89	60	6961.89
60.75	6961.81	60.97	6961.79	61.4	6961.74	61.55	6961.73	62.02	6961.68
62.35	6961.65	62.91	6961.59	63.07	6961.58	63.15	6961.57	63.43	6961.54
63.95	6961.49	64.11	6961.47	64.41	6961.44	64.75	6961.41	65.16	6961.37
65.55	6961.32	65.91	6961.29	66.2	6961.26	66.36	6961.24	66.86	6961.19
67.16	6961.16	67.25	6961.15	67.42	6961.14	67.96	6961.08	68.29	6961.05
68.76	6961	68.92	6960.98	69.34	6960.94	69.56	6960.92	70.29	6960.85
70.36	6960.84	70.38	6960.84	70.42	6960.83	71.16	6960.76	71.43	6960.73

Ex RAS Input Report.txt

71.93	6960.68	71.96	6960.68	72.47	6960.63	72.77	6960.61	73.43	6960.53
73.52	6960.52	73.57	6960.52	73.72	6960.5	74.37	6960.43	74.56	6960.41
74.94	6960.38	75.17	6960.38	75.61	6960.33	75.97	6960.32	76.13	6960.29
76.44	6960.23	76.66	6960.22	76.77	6960.22	77.15	6960.16	77.57	6960.13
77.7	6960.12	77.94	6960.09	78.37	6960.1	78.75	6960.05	79.17	6960.03
79.45	6959.97	79.79	6959.94	79.98	6959.93	80.58	6959.88	80.78	6959.88
80.84	6959.87	80.95	6959.88	81.58	6959.92	81.88	6959.94	82.38	6959.99
82.45	6960.04	82.93	6960.1	83.18	6960.13	83.96	6960.3	83.98	6960.3
84.01	6960.31	84.78	6960.47	85.02	6960.52	85.46	6960.61	85.58	6960.63
86.06	6960.73	86.39	6960.8	86.96	6960.92	87.11	6960.95	87.19	6960.97
87.44	6961.02	87.99	6961.13	88.16	6961.17	88.47	6961.23	88.79	6961.3
89.2	6961.38	89.59	6961.47	89.97	6961.54	90.25	6961.6	90.39	6961.63
90.87	6961.73	91.19	6961.8	91.29	6961.82	91.48	6961.86	91.99	6961.96
92.34	6962.04	92.8	6962.13	92.98	6962.17	93.38	6962.25	93.6	6962.3
94.3	6962.44	94.4	6962.46	94.43	6962.47	94.48	6962.48	95.2	6962.63
95.47	6962.69	95.99	6962.75	96	6962.79	96.52	6962.85	96.8	6962.86
97.49	6962.88	97.56	6962.88	97.6	6962.89	97.73	6962.89	98.4	6962.91
98.61	6962.92	98.99	6962.93	99.21	6962.94	99.65	6962.96	100.01	6962.97
100.5	6962.99	100.7	6962.99	100.81	6963	101.16	6963.01	101.61	6963.02
101.75	6963.03	102	6963.04	102.41	6963.05	102.79	6963.06	103.21	6963.08
103.51	6963.09	103.84	6963.1	104.01	6963.11	104.34	6963.12	104.59	6963.13
104.81	6963.14	105.01	6963.14	105.62	6963.16	105.93	6963.17	106.42	6963.19
106.51	6963.19	106.97	6963.21	107.22	6963.22	108.02	6963.25	108.82	6963.27
109.06	6963.28	109.52	6963.3	109.62	6963.3	110.11	6963.32	110.42	6963.33
111.02	6963.35	111.15	6963.35	111.22	6963.36	111.45	6963.36	112.02	6963.38
112.2	6963.39	112.53	6963.4	112.83	6963.41	113.25	6963.43	113.63	6963.44
114.03	6963.45	114.29	6963.46	114.43	6963.46	114.88	6963.48	115.23	6963.5
115.34	6963.5	115.53	6963.51	116.03	6963.47	116.38	6963.49	116.83	6963.48
117.04	6963.48	117.43	6963.47	117.63	6963.46	118.31	6963.44	118.54	6963.44
119.24	6963.42	119.52	6963.41	120.04	6963.4	120.05	6963.4	120.56	6963.39
120.84	6963.38	121.55	6963.36	121.74	6963.36	122.44	6963.34	122.65	6963.34
123.05	6963.33	123.24	6963.32	123.7	6963.31	124.04	6963.3	124.56	6963.29
124.74	6963.28	124.84	6963.28	125.17	6963.29	125.65	6963.31	125.79	6963.32
126.06	6963.35	126.45	6963.39	126.84	6963.43	127.25	6963.47	127.56	6963.49
127.88	6963.53	128.05	6963.54	128.6	6963.56	128.85	6963.57	128.93	6963.57
129.07	6963.58	129.65	6963.59	129.97	6963.61	130.45	6963.62	130.57	6963.62
131.02	6963.64	131.25	6963.65	132.03	6963.67	132.08	6963.67	132.86	6963.71
133.11	6963.72	133.58	6963.75	133.66	6963.75	134.15	6963.78	134.46	6963.8
135.08	6963.84	135.2	6963.85	135.26	6963.85	135.46	6963.86	136.06	6963.9
136.24	6963.92	136.59	6963.94	136.86	6963.96	137.29	6963.98	137.66	6964.01
138.09	6964.04	138.33	6964.05	138.47	6964.06	138.89	6964.09	139.27	6964.11
139.38	6964.12	139.59	6964.14	140.07	6964.17	140.43	6964.19	140.87	6964.22
141.1	6964.23	141.47	6964.26	141.67	6964.27	142.32	6964.31	142.47	6964.32
142.52	6964.33	142.6	6964.33	143.27	6964.38	143.56	6964.4	144.07	6964.43
144.1	6964.43	144.61	6964.46	144.88	6964.48	145.61	6964.53	145.68	6964.53
145.75	6964.54	146.48	6964.59	146.7	6964.6	147.11	6964.63	147.28	6964.64
147.74	6964.67	148.08	6964.69	148.62	6964.73	148.79	6964.74	148.88	6964.75
149.18	6964.77	149.68	6964.8	149.83	6964.81	150	6964.81		

Ex RAS Input Report.txt

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .05 45.52 .035 96 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
45.52 96 101.57 100.09 91.93 .1 .3

CROSS SECTION

RIVER: UT_BSC2
REACH: NCONFL-BGM RS: 4900

INPUT

Description: Source: Corrected Effective Topo
Datum: NGVD29
Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 464							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6964.23	.38	6964.23	.59	6964.22	1.02	6964.21	1.43	6964.19
1.67	6964.19	2.04	6964.17	2.28	6964.16	2.97	6964.14	3.06	6964.14
3.12	6964.13	3.41	6964.12	3.96	6964.1	4.08	6964.1	4.26	6964.09
4.81	6964.07	5.1	6964.06	5.56	6964.04	5.65	6964.04	6.13	6964.02
6.5	6964.01	6.85	6964	7.15	6963.99	7.34	6963.98	8.15	6963.95
8.25	6963.95	9.03	6963.92	9.19	6963.91	9.44	6963.9	9.87	6963.89
10.21	6963.88	10.72	6963.86	10.74	6963.86	11.24	6963.84	11.56	6963.83
12.03	6963.81	12.26	6963.8	12.4	6963.8	13.1	6963.77	13.25	6963.77
13.28	6963.76	13.33	6963.76	14.09	6963.74	14.3	6963.73	14.62	6963.72
14.94	6963.71	15.32	6963.69	15.78	6963.67	15.92	6963.67	16.35	6963.65
16.62	6963.64	17.21	6963.62	17.37	6963.62	17.47	6963.61	17.95	6963.59
18.31	6963.58	18.39	6963.58	18.51	6963.57	19.16	6963.55	19.41	6963.54
19.8	6963.52	20	6963.51	20.43	6963.49	20.84	6963.48	20.95	6963.48
21.1	6963.47	21.46	6963.45	21.69	6963.45	22.39	6963.42	22.48	6963.41
22.53	6963.41	22.79	6963.4	23.38	6963.38	23.5	6963.37	23.69	6963.37
24.22	6963.35	24.52	6963.33	24.98	6963.31	25.06	6963.31	25.54	6963.29
25.91	6963.28	26.28	6963.26	26.57	6963.25	26.75	6963.23	27.57	6963.15
27.6	6963.15	27.64	6963.14	28.44	6963.03	28.61	6963	28.87	6962.97
29.28	6962.91	29.63	6962.86	30.13	6962.79	30.16	6962.78	30.65	6962.71
30.97	6962.67	31.46	6962.6	31.68	6962.56	31.82	6962.54	32.48	6962.45
32.66	6962.42	32.7	6962.42	32.75	6962.41	33.5	6962.3	33.72	6962.27
34.05	6962.23	34.35	6962.18	34.74	6962.13	35.19	6962.07	35.34	6962.05
35.76	6962	36.04	6961.96	36.64	6961.88	36.79	6961.86	36.88	6961.85
37.33	6961.79	37.72	6961.74	37.81	6961.73	37.93	6961.71	38.57	6961.63
38.83	6961.59	39.23	6961.54	39.41	6961.52	39.85	6961.46	40.26	6961.41
40.52	6961.37	40.87	6961.33	41.1	6961.3	41.82	6961.2	41.9	6961.19
41.94	6961.19	42.18	6961.15	42.79	6961.07	42.92	6961.06	43.12	6961.03

Ex RAS Input Report.txt

43.63	6960.96	43.94	6960.92	44.41	6960.86	44.48	6960.85	44.96	6960.78
45.32	6960.73	45.71	6960.68	45.98	6960.64	46.16	6960.62	47	6960.51
47.01	6960.51	47.02	6960.5	47.85	6960.39	48.03	6960.37	48.3	6960.33
48.7	6960.28	49.05	6960.23	49.54	6960.16	49.59	6960.16	50.07	6960.09
50.38	6960.05	50.89	6959.98	51.09	6959.96	51.23	6959.94	51.87	6959.85
52.07	6959.82	52.12	6959.82	52.18	6959.81	52.92	6959.71	53.14	6959.68
53.48	6959.63	53.76	6959.6	54.16	6959.54	54.6	6959.48	54.77	6959.46
55.18	6959.4	55.45	6959.37	56.07	6959.28	56.2	6959.27	56.29	6959.25
56.72	6959.2	57.14	6959.14	57.23	6959.13	57.36	6959.11	57.98	6959.03
58.25	6958.99	58.66	6958.94	58.83	6958.91	59.27	6958.85	59.67	6958.8
59.95	6958.76	60.29	6958.72	60.51	6958.69	61.25	6958.59	61.31	6958.58
61.36	6958.57	61.56	6958.54	62.2	6958.46	62.34	6958.44	62.54	6958.42
63.05	6958.36	63.36	6958.32	63.84	6958.25	63.89	6958.25	64.38	6958.18
64.73	6958.14	65.13	6958.09	65.4	6958.06	65.58	6958.03	66.41	6957.93
66.43	6957.93	67.27	6957.82	67.45	6957.8	67.72	6957.77	68.11	6957.72
68.47	6957.67	68.95	6957.61	69.02	6957.6	69.49	6957.54	69.8	6957.51
70.31	6957.44	70.51	6957.42	70.64	6957.4	71.26	6957.32	71.49	6957.29
71.53	6957.29	71.61	6957.28	72.33	6957.19	72.56	6957.16	72.9	6957.12
73.17	6957.08	73.58	6957.03	74.02	6956.98	74.2	6956.96	74.6	6956.91
74.86	6956.87	75.49	6956.79	75.62	6956.78	75.71	6956.77	75.72	6956.76
76.1	6956.72	76.55	6956.66	76.64	6956.65	76.79	6956.63	77.39	6956.56
77.67	6956.52	78.08	6956.49	78.24	6956.47	78.69	6956.44	79.08	6956.41
79.38	6956.39	79.71	6956.36	79.93	6956.35	80.67	6956.29	80.73	6956.29
80.77	6956.28	80.95	6956.27	81.61	6956.22	81.75	6956.21	81.97	6956.2
82.46	6956.17	82.78	6956.15	83.26	6956.15	83.3	6956.13	83.8	6956.13
84.15	6956.19	84.56	6956.27	84.82	6956.31	84.99	6956.34	85.8	6956.48
85.83	6956.49	85.85	6956.49	86.68	6956.64	86.86	6956.67	87.15	6956.72
87.52	6956.79	87.89	6956.85	88.37	6956.94	88.44	6956.94	88.91	6957.03
89.21	6957.08	89.74	6957.16	89.93	6957.19	90.05	6957.21	90.64	6957.31
90.9	6957.35	90.95	6957.36	91.03	6957.37	91.74	6957.48	91.97	6957.52
92.33	6957.57	92.59	6957.62	92.99	6957.68	93.43	6957.75	93.62	6957.78
94.02	6957.84	94.27	6957.88	94.92	6957.99	95.04	6958.01	95.12	6958.02
95.49	6958.08	95.96	6958.15	96.06	6958.17	96.21	6958.19	96.81	6958.29
97.08	6958.33	97.51	6958.4	97.65	6958.42	98.1	6958.49	98.49	6958.56
98.8	6958.6	99.13	6958.66	99.34	6958.69	100.1	6958.81	100.15	6958.82
100.18	6958.82	100.34	6958.85	101.03	6958.96	101.17	6958.98	101.39	6959.02
101.87	6959.09	102.19	6959.14	102.69	6959.22	102.71	6959.23	103.21	6959.31
103.56	6959.36	103.98	6959.43	104.24	6959.47	104.4	6959.5	105.18	6959.62
105.25	6959.63	105.28	6959.63	106.09	6959.76	106.28	6959.79	106.57	6959.83
106.93	6959.89	107.3	6959.93	107.78	6959.97	107.87	6959.98	108.32	6960.02
108.62	6960.04	109.16	6960.09	109.35	6960.11	109.47	6960.12	110.03	6960.16
110.31	6960.19	110.37	6960.19	110.46	6960.2	111.15	6960.26	111.39	6960.28
111.75	6960.31	112	6960.33	112.41	6960.36	112.84	6960.4	113.05	6960.42
113.43	6960.45	113.69	6960.47	114.34	6960.53	114.46	6960.54	114.53	6960.54
114.88	6960.57	115.37	6960.62	115.48	6960.62	115.64	6960.64	116.22	6960.69
116.5	6960.71	116.93	6960.75	117.06	6960.76	117.52	6960.8	117.91	6960.83
118.23	6960.86	118.54	6960.88	118.75	6960.9	119.52	6960.97	119.59	6960.97
119.72	6960.98	120.44	6961.04	120.59	6961.06	120.82	6961.08	121.28	6961.11

Ex RAS Input Report.txt

121.61	6961.14	122.11	6961.18	122.13	6961.19	122.63	6961.23	122.97	6961.26
123.41	6961.29	123.65	6961.32	123.81	6961.33	124.57	6961.39	124.66	6961.4
124.7	6961.4	125.5	6961.47	125.7	6961.49	126	6961.51	126.33	6961.54
126.35	6961.54	126.72	6961.57	127.19	6961.61	127.29	6961.62	127.74	6961.66
128.03	6961.69	128.59	6961.73	128.76	6961.75	128.88	6961.76	129.42	6961.8
129.72	6961.83	129.79	6961.83	129.89	6961.84	130.57	6961.9	130.81	6961.92
131.18	6961.95	131.41	6961.97	131.83	6962.01	132.25	6962.04	132.48	6962.06
132.85	6962.09	133.1	6962.11	133.77	6962.17	133.87	6962.18	133.94	6962.18
134.26	6962.21	134.79	6962.25	134.9	6962.26	135.07	6962.27	135.63	6962.32
135.92	6962.34	136.36	6962.37	136.47	6962.38	136.94	6962.42	137.32	6962.44
137.66	6962.47	137.96	6962.49	138.16	6962.51	138.95	6962.56	138.98	6962.57
139.01	6962.57	139.11	6962.58	139.85	6962.63	140.01	6962.64	140.25	6962.66
140.69	6962.69	141.03	6962.71	141.54	6962.75	142.05	6962.79	142.38	6962.81
142.84	6962.85	143.07	6962.86	143.23	6962.87	143.96	6962.93	144.07	6962.94
144.13	6962.94	144.91	6963	145.12	6963.01	145.43	6963.03	145.76	6963.06
146.14	6963.09	146.6	6963.12	146.72	6963.13	147.16	6963.16	147.45	6963.18
148.02	6963.22	148.18	6963.24	148.29	6963.24	148.8	6963.28	149.13	6963.3
149.2	6963.31	149.31	6963.32	149.98	6963.37	150	6963.37		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	26.75	.035	106.93	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	26.75	106.93		70.83 50.05	32.48	.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4850

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		454					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6962.3	.62	6962.3	.78	6962.29	.98	6962.28	1.53	6962.25
1.79	6962.24	2.11	6962.22	2.43	6962.2	2.79	6962.18	3.24	6962.15
3.34	6962.15	3.8	6962.12	4.24	6962.1	4.38	6962.09	4.8	6962.06
5.15	6962.04	5.51	6962.02	5.81	6962.01	6.05	6961.99	6.64	6961.96
6.82	6961.95	6.96	6961.94	7.78	6961.89	7.86	6961.89	8.18	6961.87
8.76	6961.84	8.83	6961.83	8.91	6961.83	9.67	6961.78	9.84	6961.78
10.05	6961.76	10.57	6961.73	10.84	6961.72	11.18	6961.7	11.48	6961.68
11.85	6961.66	12.31	6961.63	12.38	6961.63	12.86	6961.6	13.29	6961.58
13.45	6961.57	13.86	6961.54	14.19	6961.53	14.58	6961.5	14.87	6961.49

Ex RAS Input Report.txt

15.1	6961.47	15.72	6961.44	15.87	6961.43	16	6961.42	16.85	6961.37
16.9	6961.37	17.12	6961.36	17.81	6961.32	17.89	6961.31	17.98	6961.31
18.71	6961.27	18.89	6961.26	19.12	6961.24	19.62	6961.22	19.9	6961.2
20.25	6961.18	20.52	6961.16	20.91	6961.14	21.39	6961.11	21.43	6961.11
21.91	6961.08	22.33	6961.06	22.52	6961.05	22.92	6961.03	23.24	6961.01
23.65	6960.98	23.92	6960.97	24.14	6960.96	24.79	6960.92	24.93	6960.91
25.05	6960.9	25.92	6960.85	26.06	6960.85	26.85	6960.8	26.94	6960.8
27.06	6960.79	27.76	6960.75	27.95	6960.74	28.19	6960.72	28.66	6960.7
28.96	6960.68	29.32	6960.66	29.57	6960.65	29.96	6960.62	30.46	6960.59
30.47	6960.59	30.97	6960.57	31.38	6960.54	31.59	6960.53	31.98	6960.51
32.28	6960.49	32.72	6960.46	32.98	6960.45	33.19	6960.44	33.86	6960.4
33.99	6960.39	34.09	6960.39	34.99	6960.34	35.01	6960.33	35.9	6960.28
36	6960.28	36.13	6960.27	36.8	6960.23	37.01	6960.22	37.26	6960.21
37.71	6960.18	38.01	6960.16	38.39	6960.14	38.61	6960.13	39.02	6960.1
39.52	6960.08	39.53	6960.08	40.03	6960.05	40.42	6960.02	40.66	6960.01
41.03	6959.99	41.33	6959.97	41.8	6959.95	42.04	6959.93	42.23	6959.92
42.93	6959.88	43.04	6959.87	43.14	6959.87	43.95	6959.83	44.04	6959.82
44.06	6959.82	44.95	6959.77	45.06	6959.77	45.2	6959.76	45.85	6959.72
46.06	6959.71	46.33	6959.7	46.75	6959.67	47.07	6959.66	47.47	6959.64
47.66	6959.63	48.08	6959.6	48.56	6959.58	48.6	6959.58	49.08	6959.55
49.47	6959.53	49.73	6959.52	50.09	6959.5	50.37	6959.48	50.87	6959.45
51.1	6959.44	51.28	6959.43	52	6959.39	52.1	6959.39	52.18	6959.38
52.89	6959.35	53.09	6959.34	53.11	6959.33	53.14	6959.33	53.99	6959.29
54.11	6959.28	54.27	6959.27	54.42	6959.26	54.89	6959.24	55.12	6959.23
55.4	6959.21	55.8	6959.19	56.13	6959.17	56.54	6959.15	56.7	6959.14
57.13	6959.12	57.61	6959.09	57.67	6959.09	58.14	6959.07	58.51	6959.05
58.8	6959.03	59.15	6959.01	59.42	6959	59.94	6958.96	60.15	6958.94
60.32	6958.91	61.07	6958.73	61.16	6958.71	61.23	6958.69	61.83	6958.55
62.13	6958.48	62.16	6958.47	62.21	6958.46	63.04	6958.26	63.17	6958.23
63.34	6958.19	63.94	6958.05	64.18	6957.99	64.47	6957.92	64.84	6957.83
65.18	6957.75	65.61	6957.65	65.75	6957.62	66.19	6957.51	66.65	6957.4
66.74	6957.38	67.2	6957.28	67.56	6957.19	67.88	6957.11	68.2	6957.04
68.46	6956.98	69.01	6956.85	69.21	6956.8	69.37	6956.76	70.14	6956.58
70.21	6956.56	70.27	6956.55	70.78	6956.43	71.18	6956.33	71.22	6956.32
71.28	6956.31	72.08	6956.12	72.23	6956.08	72.41	6956.04	72.99	6955.9
73.23	6955.84	73.55	6955.77	73.89	6955.69	74.24	6955.6	74.46	6955.55
74.68	6955.5	74.79	6955.47	75.25	6955.36	75.7	6955.26	75.81	6955.23
76.25	6955.13	76.6	6955.04	76.95	6954.96	77.26	6954.89	77.51	6954.83
78.08	6954.69	78.27	6954.65	78.41	6954.63	79.21	6954.56	79.32	6954.56
79.72	6954.55	80.22	6954.53	80.35	6954.53	81.13	6954.51	81.28	6954.52
81.48	6954.54	82.03	6954.59	82.29	6954.61	82.62	6954.65	82.94	6954.68
83.3	6954.73	83.75	6954.8	83.84	6954.81	84.3	6954.89	84.74	6954.96
84.88	6954.98	85.31	6955.05	85.65	6955.1	86.02	6955.16	86.32	6955.21
86.55	6955.24	87.15	6955.34	87.32	6955.36	87.46	6955.39	88.29	6955.52
88.33	6955.52	88.36	6955.53	88.66	6955.58	89.27	6955.67	89.33	6955.68
89.42	6955.7	90.17	6955.82	90.34	6955.84	90.55	6955.88	91.08	6955.96
91.35	6956	91.69	6956.06	91.98	6956.1	92.35	6956.16	92.82	6956.24
92.88	6956.25	93.36	6956.32	93.79	6956.39	93.96	6956.42	94.37	6956.48

Ex RAS Input Report.txt

94.69	6956.53	95.09	6956.6	95.37	6956.64	95.6	6956.68	96.22	6956.78
96.38	6956.8	96.5	6956.82	97.36	6956.96	97.41	6956.96	97.61	6957
98.31	6957.11	98.39	6957.12	98.49	6957.14	99.22	6957.26	99.4	6957.28
99.63	6957.32	100.12	6957.42	100.4	6957.46	100.76	6957.52	101.03	6957.57
101.41	6957.64	101.89	6957.73	101.93	6957.74	102.42	6957.82	102.83	6957.9
103.03	6957.93	103.42	6958	103.74	6958.03	104.16	6958.07	104.43	6958.1
104.64	6958.11	105.29	6958.16	105.44	6958.17	105.55	6958.18	106.43	6958.24
106.44	6958.24	106.45	6958.25	106.55	6958.25	107.36	6958.31	107.45	6958.32
107.56	6958.33	108.26	6958.38	108.45	6958.39	108.7	6958.41	109.17	6958.45
109.46	6958.47	109.83	6958.5	110.07	6958.51	110.47	6958.55	110.96	6958.59
110.98	6958.59	111.09	6958.6	111.47	6958.63	111.88	6958.66	112.1	6958.68
112.48	6958.71	112.78	6958.73	113.23	6958.77	113.49	6958.79	113.69	6958.81
114.37	6958.86	114.49	6958.87	114.59	6958.88	115.49	6958.96	115.5	6958.96
116.4	6959.03	116.51	6959.04	116.63	6959.05	117.31	6959.11	117.51	6959.12
117.77	6959.14	118.21	6959.18	118.52	6959.2	118.9	6959.24	119.12	6959.25
119.52	6959.29	120.02	6959.33	120.04	6959.33	120.53	6959.37	120.93	6959.4
121.17	6959.42	121.54	6959.45	121.83	6959.48	122.3	6959.51	122.54	6959.53
122.73	6959.55	123.44	6959.61	123.55	6959.62	123.64	6959.62	124.43	6959.69
124.54	6959.7	124.57	6959.7	125.45	6959.77	125.56	6959.78	125.71	6959.79
126.35	6959.85	126.57	6959.86	126.84	6959.89	127.26	6959.92	127.57	6959.95
127.97	6959.98	128.16	6959.99	128.58	6960.03	129.07	6960.07	129.11	6960.07
129.59	6960.11	129.97	6960.14	130.24	6960.16	130.59	6960.19	130.87	6960.22
131.37	6960.26	131.6	6960.28	131.78	6960.29	132.51	6960.35	132.61	6960.36
132.68	6960.36	133.38	6960.42	133.59	6960.44	133.64	6960.44	134.49	6960.52
134.62	6960.53	134.78	6960.54	135.4	6960.6	135.63	6960.62	135.91	6960.65
136.3	6960.68	136.63	6960.71	137.04	6960.75	137.21	6960.76	137.64	6960.8
138.11	6960.85	138.18	6960.85	138.64	6960.9	139.02	6960.93	139.31	6960.96
139.65	6960.99	139.92	6961.01	140.45	6961.06	140.66	6961.08	140.82	6961.09
141.58	6961.16	141.66	6961.17	141.73	6961.18	142.32	6961.23	142.63	6961.26
142.67	6961.26	142.71	6961.27	143.54	6961.34	143.68	6961.35	143.85	6961.37
144.44	6961.42	144.68	6961.45	144.98	6961.47	145.35	6961.51	145.69	6961.54
146.12	6961.58	146.25	6961.59	146.69	6961.63	147.16	6961.67	147.25	6961.68
147.7	6961.72	148.06	6961.75	148.38	6961.78	148.71	6961.81	148.97	6961.84
149.52	6961.89	149.71	6961.91	149.87	6961.92	150	6961.92		

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
0	.05	60.15	.035
		104.16	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	60.15	104.16		109.19	100.34		.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4750

Ex RAS Input Report.txt

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 448

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6959.53	.14	6959.53	.37	6959.52	.6	6959.52	1.17	6959.5
1.5	6959.49	1.96	6959.48	2.16	6959.47	2.55	6959.46	2.76	6959.46
3.38	6959.44	3.55	6959.44	3.61	6959.43	3.71	6959.43	4.34	6959.41
4.66	6959.41	5.14	6959.39	5.27	6959.39	5.71	6959.38	5.93	6959.37
6.62	6959.35	6.83	6959.35	7.52	6959.33	7.81	6959.32	8.31	6959.31
8.38	6959.3	8.86	6959.29	9.11	6959.29	9.86	6959.26	9.94	6959.26
10.69	6959.24	10.96	6959.23	11.49	6959.22	11.5	6959.22	12.02	6959.21
12.28	6959.2	13.05	6959.18	13.1	6959.18	13.87	6959.16	14.12	6959.15
14.61	6959.14	14.66	6959.13	15.17	6959.12	15.46	6959.11	16.16	6959.09
16.34	6959.09	17.04	6959.07	17.27	6959.06	17.72	6959.05	17.84	6959.05
18.32	6959.03	18.63	6959.03	19.28	6959.01	19.37	6959.01	19.43	6959
19.58	6959	20.22	6958.98	20.43	6958.98	20.83	6958.97	21.01	6958.96
21.48	6958.95	21.81	6958.94	22.39	6958.92	22.6	6958.92	22.82	6958.91
23.39	6958.9	23.58	6958.89	23.94	6958.88	24.19	6958.88	24.63	6958.86
24.98	6958.85	25.5	6958.84	25.68	6958.83	25.78	6958.83	26.06	6958.82
26.57	6958.81	26.73	6958.81	27.06	6958.8	27.36	6958.79	27.79	6958.78
28.16	6958.77	28.61	6958.76	28.84	6958.75	28.95	6958.75	29.3	6958.74
29.74	6958.73	30.94	6958.73	31.33	6958.72	33.04	6958.72	33.28	6958.71
35.3	6958.71	35.78	6958.7	37.25	6958.7	37.68	6958.69	39.03	6958.69
39.27	6958.68	39.35	6958.68	39.51	6958.67	40.06	6958.64	40.25	6958.62
40.4	6958.61	40.86	6958.57	41.06	6958.55	41.45	6958.52	41.65	6958.5
42.27	6958.45	42.45	6958.44	42.5	6958.43	42.62	6958.42	43.24	6958.37
43.55	6958.34	44.03	6958.3	44.17	6958.29	44.61	6958.26	44.83	6958.24
45.51	6958.18	45.62	6958.17	45.66	6958.17	45.73	6958.15	46.41	6958.03
46.71	6957.98	47.21	6957.89	47.29	6957.88	47.76	6957.8	48	6957.76
48.75	6957.63	48.8	6957.62	48.81	6957.61	48.84	6957.61	49.59	6957.48
49.86	6957.43	50.38	6957.34	50.4	6957.34	50.91	6957.25	51.18	6957.2
51.95	6957.06	51.99	6957.06	52.76	6956.92	53.02	6956.88	53.51	6956.79
53.56	6956.78	54.07	6956.69	54.35	6956.64	55.07	6956.52	55.12	6956.51
55.15	6956.5	55.23	6956.49	55.94	6956.37	56.17	6956.32	56.62	6956.25
56.73	6956.23	57.22	6956.14	57.53	6956.09	58.18	6955.97	58.27	6955.95
58.32	6955.95	58.47	6955.92	59.11	6955.81	59.32	6955.77	59.74	6955.7
59.91	6955.67	60.38	6955.58	60.7	6955.52	61.29	6955.42	61.43	6955.4
61.5	6955.38	61.71	6955.35	62.29	6955.24	62.48	6955.21	62.85	6955.15
63.08	6955.1	63.53	6955.02	63.88	6954.96	64.4	6954.87	64.58	6954.84
64.67	6954.82	64.95	6954.77	65.47	6954.68	65.63	6954.65	65.96	6954.59
66.26	6954.54	66.68	6954.47	67.05	6954.4	67.52	6954.32	67.73	6954.28
67.85	6954.26	68.19	6954.2	68.64	6954.12	68.79	6954.09	69.07	6954.04
69.43	6953.98	69.84	6953.91	70.23	6953.84	70.63	6953.77	70.89	6953.72
71.02	6953.7	71.43	6953.62	71.82	6953.56	71.94	6953.54	72.18	6953.49
72.61	6953.42	72.99	6953.35	73.4	6953.28	73.69	6953.23	73.74	6953.22

Ex RAS Input Report.txt

74.04	6953.16	74.2	6953.14	74.67	6953.05	74.99	6953	75.09	6952.98
75.3	6952.94	75.78	6952.85	76.15	6952.79	76.58	6952.71	76.85	6952.67
77.2	6952.6	77.37	6952.57	77.91	6952.48	78.17	6952.43	78.25	6952.42
78.41	6952.42	78.96	6952.39	79.3	6952.38	79.75	6952.37	79.96	6952.36
80.35	6952.35	80.55	6952.35	81.15	6952.36	81.34	6952.37	81.4	6952.37
81.52	6952.38	82.13	6952.42	82.45	6952.48	82.93	6952.59	83.08	6952.62
83.5	6952.72	83.72	6952.77	84.39	6952.92	84.52	6952.95	84.56	6952.96
84.63	6952.98	85.31	6953.13	85.61	6953.2	86.1	6953.32	86.19	6953.34
86.66	6953.44	86.9	6953.5	87.64	6953.67	87.69	6953.68	87.71	6953.69
87.75	6953.69	88.49	6953.87	88.76	6953.93	89.28	6954.05	89.3	6954.05
89.81	6954.17	90.07	6954.23	90.86	6954.39	90.87	6954.39	91.66	6954.54
91.91	6954.59	92.41	6954.69	92.45	6954.7	92.97	6954.8	93.25	6954.85
93.97	6954.99	94.02	6955	94.04	6955.01	94.12	6955.02	94.84	6955.16
95.07	6955.21	95.53	6955.29	95.63	6955.31	96.12	6955.41	96.38	6955.46
96.42	6955.47	97.08	6955.6	97.17	6955.61	97.22	6955.62	97.36	6955.65
98.01	6955.78	98.22	6955.82	98.64	6955.9	98.8	6955.93	99.27	6956.02
99.6	6956.09	100.19	6956.2	100.33	6956.23	100.39	6956.24	100.6	6956.28
101.19	6956.39	101.38	6956.43	101.75	6956.48	101.98	6956.52	102.43	6956.57
102.77	6956.59	103.31	6956.62	103.48	6956.63	103.57	6956.63	103.84	6956.65
104.36	6956.67	104.53	6956.68	104.86	6956.7	105.15	6956.71	105.58	6956.73
105.95	6956.75	106.42	6956.78	106.63	6956.79	106.74	6956.79	107.08	6956.81
107.54	6956.83	107.68	6956.84	107.97	6956.85	108.33	6956.87	108.74	6956.89
109.12	6956.9	109.53	6956.89	109.79	6956.9	111.09	6956.9	111.51	6956.89
114.68	6956.89	115.04	6956.88	118.2	6956.88	118.65	6956.87	121.98	6956.87
122.4	6956.86	128.17	6956.86	128.2	6956.85	134.53	6956.85	135.02	6956.84
139.3	6956.84	139.54	6956.86	139.96	6956.86	140.39	6956.89	140.72	6956.91
141.46	6956.95	141.48	6956.95	141.5	6956.96	142.24	6957	142.58	6957.02
142.99	6957.05	143.46	6957.07	143.67	6957.09	143.75	6957.09	143.93	6957.1
144.51	6957.14	144.76	6957.15	145.27	6957.18	145.43	6957.19	145.86	6957.22
146.03	6957.23	146.4	6957.25	146.78	6957.27	146.95	6957.28	147.39	6957.31
147.54	6957.32	148.05	6957.35	148.3	6957.37	148.87	6957.4	149.06	6957.41
149.14	6957.42	149.35	6957.43	149.82	6957.46	150.23	6957.48	150.57	6957.5
151.32	6957.55	151.34	6957.55	152.09	6957.6	152.42	6957.62	152.85	6957.64
153.28	6957.67	153.51	6957.68	153.61	6957.69	153.81	6957.7	154.36	6957.73
154.61	6957.75	155.12	6957.78	155.24	6957.79	155.7	6957.81	155.88	6957.82
156.28	6957.85	156.64	6957.87	156.79	6957.88	157.2	6957.9	157.4	6957.92
157.89	6957.95	158.15	6957.96	158.75	6958	158.91	6958.01	158.98	6958.01
159.17	6958.02	159.67	6958.05	160.08	6958.08	160.43	6958.1	161.13	6958.14
161.19	6958.14	161.22	6958.15	161.94	6958.18	162.26	6958.2	162.7	6958.21
163.09	6958.23	163.36	6958.24	163.46	6958.25	163.69	6958.25	164.22	6958.28
164.45	6958.28	164.98	6958.31	165.06	6958.31	165.54	6958.33	165.73	6958.34
166.16	6958.35	166.49	6958.37	166.64	6958.37	167.02	6958.39	167.25	6958.4
167.73	6958.41	168.01	6958.43	168.63	6958.45	168.77	6958.46	168.98	6958.46
169.52	6958.49	169.92	6958.5	170.28	6958.52	170.94	6958.54	171.01	6958.55
171.1	6958.55	171.8	6958.58	172.11	6958.59	172.56	6958.61	172.91	6958.62
173.2	6958.63	173.31	6958.64	173.57	6958.65	174.07	6958.67	174.29	6958.68
174.83	6958.7	174.87	6958.7	175.39	6958.72	175.59	6958.73	176.04	6958.75
176.35	6958.76	176.48	6958.76	176.83	6958.78	177.1	6958.79	177.57	6958.81

Ex RAS Input Report.txt

177.86 6958.82 178.51 6958.84 178.53 6958.84

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 0 .05 44.61 .035 104.53 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 44.61 104.53 111.78 100.72 82.51 .1 .3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4650

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 403							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6957	.01	6957	.38	6956.99	.64	6956.98	1.1	6956.96
1.75	6956.93	1.86	6956.93	2.14	6956.91	2.53	6956.9	3.09	6956.88
3.25	6956.87	3.48	6956.86	3.97	6956.84	4.31	6956.83	4.68	6956.81
5.21	6956.79	5.4	6956.78	5.53	6956.78	6.12	6956.76	6.31	6956.75
6.76	6956.73	6.84	6956.73	6.95	6956.72	7.55	6956.7	7.98	6956.68
8.27	6956.67	8.68	6956.65	8.99	6956.64	9.21	6956.63	9.71	6956.61
10.41	6956.58	10.47	6956.58	11.14	6956.55	11.66	6956.53	11.86	6956.53
12.15	6956.51	12.58	6956.5	12.88	6956.48	13.29	6956.47	13.88	6956.44
14.01	6956.44	14.1	6956.43	14.64	6956.4	14.73	6956.39	15.33	6956.36
15.45	6956.35	15.62	6956.35	16.16	6956.31	16.55	6956.28	16.88	6956.26
17.35	6956.23	17.6	6956.21	17.78	6956.2	18.32	6956.17	18.8	6956.14
19	6956.12	19.08	6956.12	19.75	6956.07	20.22	6956.04	20.47	6956.03
20.82	6956	21.19	6955.98	21.45	6955.96	21.9	6955.93	22.55	6955.89
22.62	6955.88	22.67	6955.88	22.97	6955.86	23.34	6955.83	23.9	6955.8
24.06	6955.78	24.28	6955.76	24.77	6955.72	25.12	6955.7	25.49	6955.67
26.02	6955.62	26.21	6955.61	26.35	6955.6	26.93	6955.55	27.13	6955.53
27.57	6955.5	27.64	6955.49	27.75	6955.48	28.36	6955.43	28.79	6955.4
29.08	6955.38	29.48	6955.34	29.8	6955.32	30.02	6955.3	30.51	6955.26
31.22	6955.2	31.3	6955.2	31.95	6955.14	32.47	6955.1	32.67	6955.09
32.95	6955.06	33.38	6955.03	33.69	6955	34.1	6954.97	34.69	6954.92
34.82	6954.91	34.91	6954.9	35.46	6954.86	35.54	6954.85	36.14	6954.8
36.25	6954.8	36.42	6954.78	36.97	6954.74	37.36	6954.71	37.69	6954.68
38.15	6954.64	38.41	6954.62	38.59	6954.61	39.12	6954.56	39.63	6954.52
39.7	6954.52	39.81	6954.51	39.84	6954.51	39.89	6954.5	40.56	6954.45
41.04	6954.41	41.28	6954.39	41.62	6954.36	42	6954.33	42.26	6954.31
42.71	6954.27	43.35	6954.16	43.43	6954.15	43.48	6954.14	43.8	6954.09

Ex RAS Input Report.txt

44.15	6954.02	44.71	6953.92	44.87	6953.89	45.09	6953.85	45.58	6953.76
45.93	6953.7	46.3	6953.64	46.82	6953.54	47.02	6953.51	47.16	6953.48
47.74	6953.38	47.96	6953.34	48.38	6953.26	48.45	6953.25	48.56	6953.23
49.17	6953.12	49.6	6953.04	49.89	6952.99	50.29	6952.92	50.61	6952.86
50.83	6952.82	51.32	6952.73	52.02	6952.61	52.04	6952.6	52.05	6952.6
52.13	6952.59	52.76	6952.48	53.28	6952.38	53.48	6952.35	53.76	6952.3
54.19	6952.22	54.5	6952.16	54.91	6952.09	55.49	6951.99	55.63	6951.96
55.73	6951.95	56.29	6951.85	56.35	6951.84	56.95	6951.73	57.06	6951.71
57.22	6951.68	57.78	6951.58	58.17	6951.51	58.5	6951.46	58.96	6951.37
59.18	6951.34	59.22	6951.33	59.4	6951.3	59.93	6951.2	60.46	6951.11
60.62	6951.08	60.65	6951.08	60.69	6951.07	61.37	6950.95	61.85	6950.86
62.09	6950.82	62.42	6950.76	62.8	6950.7	63.07	6950.68	63.52	6950.66
64.16	6950.7	64.24	6950.71	64.29	6950.71	64.62	6950.73	64.96	6950.75
65.52	6950.78	65.67	6950.79	65.89	6950.8	66.39	6950.83	66.74	6950.85
67.11	6950.87	67.63	6950.93	67.83	6950.95	67.97	6950.98	68.54	6951.1
68.79	6951.14	69.19	6951.22	69.26	6951.24	69.36	6951.26	69.98	6951.38
70.42	6951.46	70.7	6951.51	71.09	6951.59	71.41	6951.65	71.64	6951.7
72.13	6951.79	72.83	6951.92	72.85	6951.93	72.86	6951.93	72.95	6951.95
73.57	6952.07	74.09	6952.17	74.28	6952.2	74.56	6952.26	75	6952.34
75.31	6952.4	75.72	6952.48	76.29	6952.59	76.44	6952.62	76.54	6952.64
77.12	6952.75	77.15	6952.76	77.76	6952.87	77.87	6952.89	78.03	6952.92
78.59	6953.03	78.98	6953.11	79.31	6953.17	79.76	6953.26	80.02	6953.31
80.21	6953.34	80.74	6953.45	81.28	6953.55	81.43	6953.58	81.46	6953.58
81.49	6953.59	81.56	6953.6	82.18	6953.72	82.66	6953.82	82.89	6953.86
83.23	6953.92	83.61	6954	83.88	6954.05	84.33	6954.14	84.96	6954.26
85.05	6954.28	85.11	6954.28	85.45	6954.31	85.76	6954.35	86.33	6954.38
86.48	6954.39	86.7	6954.4	87.2	6954.42	87.55	6954.44	87.92	6954.46
88.43	6954.48	88.63	6954.49	88.78	6954.5	89.35	6954.52	89.62	6954.54
90	6954.55	90.07	6954.56	90.16	6954.56	90.79	6954.59	91.23	6954.61
91.5	6954.63	91.9	6954.65	92.22	6954.66	92.45	6954.67	92.94	6954.69
93.63	6954.73	93.67	6954.73	93.78	6954.74	94.37	6954.78	94.9	6954.81
95.09	6954.82	95.36	6954.84	95.81	6954.87	96.12	6954.89	96.53	6954.92
97.1	6954.95	97.24	6954.96	97.35	6954.97	97.95	6955.01	97.96	6955.01
98.57	6955.05	98.68	6955.06	98.83	6955.07	99.4	6955.11	99.8	6955.14
100.11	6955.16	100.57	6955.19	100.83	6955.2	101.02	6955.22	101.55	6955.25
102.11	6955.29	102.24	6955.3	102.3	6955.3	102.98	6955.35	103.47	6955.38
103.7	6955.4	104.03	6955.42	104.42	6955.45	104.69	6955.46	105.14	6955.49
105.77	6955.54	105.85	6955.54	105.92	6955.55	106.28	6955.57	106.57	6955.59
107.14	6955.63	107.29	6955.64	107.5	6955.65	108.01	6955.69	108.36	6955.71
108.72	6955.74	109.23	6955.77	109.44	6955.78	109.59	6955.79	110.16	6955.83
110.44	6955.85	110.81	6955.88	110.97	6955.88	111.59	6955.9	112.04	6955.91
112.31	6955.91	112.7	6955.92	113.03	6955.92	113.26	6955.93	113.75	6955.93
114.43	6955.94	114.46	6955.95	114.61	6955.95	115.18	6955.96	115.71	6955.96
115.9	6955.97	116.17	6955.97	116.62	6955.98	116.93	6955.98	117.33	6955.99
117.9	6955.99	118.05	6956	118.16	6956	118.77	6956.01	119.38	6956.01
119.49	6956.02	119.64	6956.02	120.2	6956.03	120.61	6956.03	120.92	6956.04
121.37	6956.04	121.64	6956.05	121.83	6956.05	122.36	6956.06	122.94	6956.08
123.1	6956.08	123.79	6956.1	124.28	6956.11	124.51	6956.12	124.84	6956.13

Ex RAS Input Report.txt

125.23	6956.14	125.5	6956.15	125.94	6956.16	126.57	6956.18	126.73	6956.18
127.1	6956.19	127.38	6956.2	127.95	6956.22	128.1	6956.22	128.3	6956.23
128.81	6956.24	129.18	6956.25	129.53	6956.26	130.04	6956.28	130.25	6956.28
130.4	6956.29	130.97	6956.3	131.27	6956.31	131.62	6956.32	131.77	6956.32
132.4	6956.34	132.85	6956.35	133.12	6956.36	133.5	6956.37	133.84	6956.38
134.07	6956.39	134.56	6956.4	135.24	6956.42	135.3	6956.42	135.44	6956.43
135.99	6956.44	136.52	6956.46	136.54	6956.46				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	42.71	.035	85.05	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	42.71	85.05		17.98 49.31	85.86		.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4600

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 348							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6956.76	.77	6956.76	.96	6956.75	1.69	6956.69	1.76	6956.68
1.85	6956.67	2.61	6956.61	2.77	6956.6	2.96	6956.58	3.52	6956.54
3.77	6956.52	4.07	6956.49	4.44	6956.46	4.78	6956.43	5.19	6956.4
5.35	6956.39	5.78	6956.35	6.27	6956.31	6.3	6956.31	6.78	6956.27
7.18	6956.24	7.41	6956.22	7.79	6956.19	8.1	6956.16	8.53	6956.13
8.79	6956.11	9.02	6956.09	9.64	6956.04	9.8	6956.03	9.93	6956.01
10.75	6955.94	10.8	6955.94	10.85	6955.93	11.28	6955.89	11.76	6955.84
11.81	6955.83	11.86	6955.83	12.68	6955.74	12.81	6955.73	12.98	6955.71
13.59	6955.65	13.82	6955.63	14.09	6955.6	14.51	6955.55	14.82	6955.52
15.2	6955.48	15.42	6955.46	15.83	6955.42	16.32	6955.37	16.34	6955.37
16.83	6955.32	17.26	6955.28	17.43	6955.26	17.84	6955.22	18.17	6955.21
18.54	6955.18	18.84	6955.17	19.09	6955.16	19.66	6955.12	19.85	6955.11
20	6955.1	20.77	6955.06	20.85	6955.06	20.92	6955.05	21.61	6955.02
21.83	6955	21.88	6955	22.75	6954.95	22.86	6954.95	23	6954.94
23.66	6954.9	23.87	6954.89	24.11	6954.88	24.58	6954.85	24.87	6954.84
25.22	6954.82	25.5	6954.8	25.87	6954.78	26.33	6954.75	26.41	6954.75
26.88	6954.72	27.33	6954.69	27.45	6954.69	27.88	6954.66	28.24	6954.63
28.56	6954.61	28.89	6954.59	29.16	6954.57	29.67	6954.53	29.89	6954.51
30.07	6954.5	30.79	6954.45	30.9	6954.44	30.99	6954.43	31.9	6954.36
31.93	6954.36	32.82	6954.3	32.91	6954.29	33.01	6954.28	33.74	6954.23

Ex RAS Input Report.txt

33.91	6954.22	34.13	6954.2	34.65	6954.16	34.92	6954.14	35.24	6954.12
35.57	6954.09	35.92	6954.07	36.35	6954.04	36.48	6954.03	36.93	6953.99
37.4	6953.96	37.46	6953.95	37.93	6953.92	38.31	6953.89	38.58	6953.87
38.94	6953.84	39.05	6953.83	39.23	6953.82	39.69	6953.79	39.94	6953.77
40.15	6953.76	40.8	6953.71	40.95	6953.7	41.06	6953.69	41.92	6953.62
41.98	6953.62	42.26	6953.6	42.89	6953.55	42.95	6953.55	43.03	6953.54
43.81	6953.48	43.96	6953.47	44.14	6953.46	44.72	6953.42	44.96	6953.4
45.26	6953.37	45.64	6953.35	45.97	6953.32	46.37	6953.26	46.56	6953.24
46.97	6953.18	47.47	6953.11	47.48	6953.11	47.98	6953.04	48.39	6952.98
48.59	6952.95	48.98	6952.89	49.3	6952.85	49.71	6952.79	49.99	6952.75
50.22	6952.71	50.82	6952.62	50.99	6952.6	51.13	6952.58	51.93	6952.46
52	6952.45	52.05	6952.45	52.58	6952.37	52.96	6952.31	53	6952.31
53.05	6952.3	53.88	6952.18	54.01	6952.16	54.16	6952.14	54.8	6952.05
55.01	6952.02	55.27	6951.98	55.71	6951.91	56.02	6951.87	56.39	6951.82
56.63	6951.78	57.02	6951.72	57.5	6951.65	57.54	6951.65	58.03	6951.58
58.46	6951.52	58.61	6951.49	59.03	6951.43	59.37	6951.38	59.73	6951.33
60.04	6951.29	60.29	6951.25	60.84	6951.17	61.04	6951.14	61.21	6951.12
61.95	6951.01	62.04	6950.99	62.12	6950.98	62.91	6950.87	63.04	6950.85
63.06	6950.85	63.95	6950.72	64.05	6950.7	64.18	6950.69	64.87	6950.58
65.06	6950.56	65.29	6950.52	65.78	6950.45	66.06	6950.41	66.4	6950.36
66.7	6950.32	67.07	6950.27	67.52	6950.2	67.61	6950.19	68.07	6950.12
68.53	6950.05	68.63	6950.04	69.08	6949.97	69.45	6949.92	69.52	6949.91
69.74	6949.88	70.08	6949.83	70.36	6949.79	70.86	6949.73	71.09	6949.69
71.28	6949.67	71.97	6949.58	72.09	6949.56	72.19	6949.55	73.08	6949.43
73.1	6949.43	73.11	6949.42	73.23	6949.41	74.02	6949.35	74.1	6949.34
74.19	6949.34	74.94	6949.33	75.11	6949.33	75.31	6949.32	75.86	6949.31
76.11	6949.31	76.42	6949.3	76.77	6949.29	77.12	6949.29	77.53	6949.33
77.69	6949.34	78.12	6949.39	78.6	6949.5	78.65	6949.51	79.12	6949.61
79.52	6949.7	79.76	6949.75	80.13	6949.83	80.43	6949.9	80.87	6949.99
81.13	6950.05	81.35	6950.1	81.99	6950.24	82.14	6950.27	82.26	6950.3
83.1	6950.5	83.14	6950.51	83.18	6950.52	83.56	6950.61	84.1	6950.74
84.15	6950.75	84.21	6950.77	85.01	6950.96	85.15	6950.99	85.32	6951.04
85.93	6951.18	86.16	6951.24	86.44	6951.3	86.84	6951.4	87.16	6951.48
87.55	6951.57	87.76	6951.62	88.17	6951.72	88.66	6951.84	88.67	6951.84
88.89	6951.89	89.17	6951.96	89.59	6952.06	89.78	6952.11	90.18	6952.21
90.51	6952.29	90.89	6952.38	91.18	6952.45	91.42	6952.51	92	6952.65
92.19	6952.69	92.34	6952.73	93.12	6952.92	93.19	6952.93	93.25	6952.95
93.88	6953.1	94.17	6953.17	94.2	6953.18	94.23	6953.18	95.08	6953.31
95.2	6953.33	95.34	6953.34	96	6953.39	96.21	6953.41	96.46	6953.43
96.91	6953.46	97.21	6953.48	97.57	6953.51	97.83	6953.53	98.21	6953.56
98.68	6953.6	98.75	6953.6	99.22	6953.64	99.66	6953.68	99.79	6953.69
100.22	6953.72	100.58	6953.75	100.91	6953.77	101.23	6953.8	101.49	6953.82
102.02	6953.86	102.23	6953.88	102.41	6953.89	103.13	6953.95	103.24	6953.95
103.32	6953.96	104.21	6954.03	104.25	6954.03	105.16	6954.1	105.25	6954.11
105.36	6954.12	106.07	6954.17	106.25	6954.19	106.47	6954.21	106.99	6954.25
107.26	6954.27	107.59	6954.3	107.9	6954.32	108.26	6954.35	108.7	6954.4
108.82	6954.4	109.27	6954.45	109.73	6954.49	109.81	6954.5	110.27	6954.55
110.65	6954.56	110.92	6954.55	111.56	6954.55	112.04	6954.54	113.4	6954.54

Ex RAS Input Report.txt

114.26	6954.53	122.33	6954.53	122.55	6954.52	130.79	6954.52	130.96	6954.51
139.41	6954.51	139.86	6954.5	144.24	6954.5				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	45.64	.035	95.2	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	45.64	95.2		48.42 48.42	48.42	.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4550

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		491					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-48.02	6958.32	-47.84	6958.32	-47.4	6958.3	-47.13	6958.28	-46.9	6958.27
-46.32	6958.23	-45.96	6958.21	-45.24	6958.16	-45.03	6958.15	-44.17	6958.09
-44.09	6958.09	-43.57	6958.06	-43.15	6958.03	-43.09	6958.03	-42.21	6957.97
-42.01	6957.96	-41.12	6957.9	-40.34	6957.86	-40.11	6957.84	-39.86	6957.83
-39.11	6957.78	-38.47	6957.74	-38.11	6957.72	-37.7	6957.69	-37.11	6957.65
-36.59	6957.62	-35.65	6957.56	-35.55	6957.56	-35.1	6957.53	-34.72	6957.5
-34.47	6957.49	-33.78	6957.45	-33.1	6957.4	-32.84	6957.39	-32.31	6957.35
-31.91	6957.33	-31.24	6957.29	-30.97	6957.27	-30.16	6957.22	-30.03	6957.21
-29.18	6957.16	-29.08	6957.15	-28.16	6957.09	-28	6957.09	-26.93	6957.02
-26.28	6956.98	-26.08	6956.97	-25.85	6956.95	-25.35	6956.92	-24.77	6956.88
-24.08	6956.84	-23.69	6956.82	-23.47	6956.8	-23.07	6956.77	-22.62	6956.74
-22.53	6956.73	-22.07	6956.7	-21.6	6956.66	-21.54	6956.65	-21.07	6956.62
-20.66	6956.58	-20.46	6956.57	-20.07	6956.54	-19.38	6956.48	-19.06	6956.46
-18.79	6956.43	-18.06	6956.37	-17.85	6956.36	-17.23	6956.31	-16.91	6956.28
-16.15	6956.22	-15.97	6956.21	-15.07	6956.13	-14.79	6956.11	-14	6956.03
-13.16	6955.94	-12.92	6955.92	-11.84	6955.81	-11.29	6955.75	-11.04	6955.73
-10.76	6955.7	-10.04	6955.63	-9.69	6955.59	-9.04	6955.52	-8.48	6955.47
-8.04	6955.42	-7.04	6955.32	-6.6	6955.28	-6.45	6955.26	-6.03	6955.22
-5.38	6955.15	-5.03	6955.12	-4.73	6955.09	-4.3	6955.04	-4.03	6955.02
-3.79	6954.99	-3.03	6954.91	-2.85	6954.9	-2.14	6954.82	-1.92	6954.8
-1.07	6954.71	-.98	6954.71	-.4	6954.65	-.04	6954.61	.01	6954.6
.89	6954.51	1.09	6954.5	1.83	6954.42	1.99	6954.4	2.17	6954.39
2.77	6954.32	3.24	6954.28	3.99	6954.2	4.32	6954.17	4.64	6954.13
4.99	6954.1	5.4	6954.08	5.58	6954.06	6	6954.04	6.48	6954.01
6.74	6954	7.05	6953.98	7.29	6953.96	7.66	6953.94	8.01	6953.91

Ex RAS Input Report.txt

8.24	6953.9	8.73	6953.86	9.36	6953.82	10.07	6953.77	10.18	6953.76
10.63	6953.73	11.31	6953.68	11.83	6953.65	12.35	6953.61	12.82	6953.56
13.13	6953.53	13.79	6953.43	15.24	6953.23	15.42	6953.21	15.96	6953.13
16.28	6953.08	16.61	6953.04	16.78	6953.01	17.4	6952.93	17.81	6952.87
18.12	6952.83	18.61	6952.76	18.85	6952.73	19	6952.7	19.57	6952.62
19.75	6952.6	20.2	6952.54	20.29	6952.52	21.01	6952.42	21.39	6952.37
21.74	6952.32	22.26	6952.25	22.59	6952.2	23.18	6952.12	23.21	6952.12
23.78	6952.04	24.09	6951.99	24.63	6951.92	25.35	6951.82	25.91	6951.74
26.17	6951.7	26.67	6951.63	26.79	6951.61	28.24	6951.41	28.57	6951.37
28.96	6951.31	29.56	6951.23	29.68	6951.21	30.14	6951.15	30.4	6951.11
30.96	6951.03	31.13	6951.01	31.39	6950.97	32.15	6950.87	33.21	6950.72
33.6	6950.66	34.02	6950.6	34.54	6950.53	35.74	6950.36	36.86	6950.21
37.06	6950.18	38.13	6950.03	38.69	6949.95	39.07	6949.9	39.32	6949.86
39.79	6949.8	40.51	6949.7	40.53	6949.69	41.24	6949.59	41.71	6949.53
41.96	6949.49	42.34	6949.44	43.99	6949.21	44.16	6949.19	44.85	6949.09
45.3	6949.03	45.99	6948.93	46.3	6948.89	47.02	6948.78	47.45	6948.72
47.69	6948.69	48.46	6948.57	48.89	6948.54	49.18	6948.51	49.64	6948.47
50.63	6948.36	50.92	6948.34	51.28	6948.31	52.47	6948.19	52.8	6948.15
53.29	6948.1	53.52	6948.08	53.67	6948.06	54.24	6948	54.38	6947.99
54.96	6947.93	55.12	6947.92	55.69	6947.94	56.06	6948	56.94	6948.15
57.25	6948.2	57.84	6948.36	57.85	6948.36	58.77	6948.62	59.3	6948.76
59.3	6948.77	59.65	6948.86	60.01	6948.96	60.52	6949.11	60.73	6949.16
60.88	6949.21	61.45	6949.36	61.74	6949.45	62.1	6949.55	62.88	6949.76
63.33	6949.89	63.6	6949.96	63.98	6950.07	64.32	6950.16	64.56	6950.23
65.04	6950.36	65.78	6950.57	65.95	6950.62	66.17	6950.65	66.52	6950.69
66.84	6950.69	67.86	6950.72	68.72	6950.74	68.97	6950.75	69.19	6950.75
69.68	6950.77	70.23	6950.78	70.38	6950.78	70.52	6950.79	71.09	6950.8
71.74	6950.82	71.85	6950.82	72.51	6950.84	72.68	6950.84	73.25	6950.86
73.93	6950.88	74.52	6950.89	74.77	6950.9	75.34	6950.91	75.85	6950.93
76.05	6950.93	76.28	6950.94	77.18	6950.96	77.79	6950.98	78.18	6950.99
78.52	6950.99	79.31	6951.01	79.85	6951.03	80.82	6951.05	81.01	6951.06
81.18	6951.06	81.72	6951.08	82.33	6951.09	82.52	6951.1	83.14	6951.12
84.55	6951.16	85.18	6951.19	85.36	6951.19	85.97	6951.21	86.51	6951.23
86.87	6951.25	87.39	6951.26	87.85	6951.28	88.38	6951.3	88.81	6951.32
89.83	6951.35	89.9	6951.35	90.5	6951.37	90.93	6951.39	91.43	6951.4
91.82	6951.42	92.35	6951.43	92.97	6951.46	93.06	6951.46	93.77	6951.55
94.7	6951.69	95.19	6951.77	95.82	6951.88	96.6	6952.02	97.16	6952.11
97.31	6952.14	98.73	6952.38	99	6952.43	99.82	6952.56	100.15	6952.62
100.52	6952.68	100.83	6952.74	100.86	6952.74	101.12	6952.79	101.58	6952.89
102.34	6953.04	103.03	6953.08	103.5	6953.15	104.13	6953.17	104.47	6953.19
104.69	6953.19	104.75	6953.2	105.19	6953.21	105.81	6953.23	105.97	6953.24
107.25	6953.28	107.42	6953.28	108.03	6953.3	108.52	6953.32	109.28	6953.38
109.62	6953.41	109.93	6953.43	110.27	6953.47	110.73	6953.51	111.02	6953.53
111.68	6953.6	112.55	6953.68	113.33	6953.75	113.96	6953.81	114.11	6953.82
114.52	6953.86	114.89	6953.9	115.02	6953.91	115.6	6953.97	115.67	6953.97
116.42	6954.04	117.15	6954.11	117.23	6954.12	118.29	6954.21	119.2	6954.3
119.46	6954.31	119.72	6954.33	120.27	6954.35	121.09	6954.35	121.45	6954.34
122.07	6954.34	122.49	6954.33	123.23	6954.33	123.46	6954.32	123.72	6954.32

Ex RAS Input Report.txt

124.4	6954.31	124.78	6954.31	125.23	6954.3	125.57	6954.3	126.07	6954.29
126.9	6954.29	128.48	6954.27	129.12	6954.27	129.28	6954.26	130.07	6954.26
130.59	6954.25	130.9	6954.25	131.36	6954.24	132.84	6954.24	133.34	6954.25
134.2	6954.25	134.67	6954.26	135.72	6954.26	135.89	6954.27	136.95	6954.27
137.29	6954.28	138.42	6954.28	138.56	6954.29	141.98	6954.29	142.25	6954.3
144.05	6954.3	144.3	6954.31	145.19	6954.31	145.76	6954.32	146.61	6954.32
147.05	6954.33	148.32	6954.33	148.92	6954.34	150.13	6954.34	150.98	6954.35
152.11	6954.35	152.43	6954.36	154.13	6954.36	154.62	6954.37	158.59	6954.37
159.13	6954.39	159.31	6954.39	159.57	6954.4	160.03	6954.41	160.35	6954.42
160.75	6954.42	161.31	6954.44	161.57	6954.44	162.18	6954.46	162.79	6954.47
162.9	6954.48	163.05	6954.48	163.62	6954.49	164.33	6954.51	164.79	6954.52
165.05	6954.53	165.24	6954.53	165.77	6954.55	166.29	6954.56	166.53	6954.56
167.21	6954.58	167.68	6954.59	168.27	6954.61	168.64	6954.61	168.9	6954.62
169.36	6954.63	169.66	6954.64	170.12	6954.65	171.59	6954.69	172.22	6954.71
172.4	6954.71	173.42	6954.74	173.83	6954.75	174.68	6954.78	175.65	6954.81
176.57	6954.83	176.76	6954.84	176.96	6954.84	177.87	6954.87	178.32	6954.88
178.75	6954.9	178.99	6954.9	179.07	6954.91	179.26	6954.91	180.08	6954.94
180.58	6954.95	180.75	6954.95	181.18	6954.97	181.34	6954.97	182.1	6954.99
182.27	6955	182.74	6955.01	182.85	6955.02	183.37	6955.03	183.61	6955.04
184.14	6955.05	184.36	6955.06	185.12	6955.08	185.56	6955.1	185.88	6955.1
187.39	6955.15	188.15	6955.17	188.71	6955.19	188.9	6955.19	189.02	6955.2
189.94	6955.23	190.43	6955.24	190.58	6955.25	191.02	6955.27	191.2	6955.27
191.66	6955.29	191.97	6955.3	192.1	6955.31	192.74	6955.33	193.17	6955.35
194.2	6955.38	194.32	6955.39	195.04	6955.41	195.33	6955.43	195.81	6955.44
196.41	6955.47	196.58	6955.47	196.99	6955.49	197.34	6955.5	197.49	6955.51
198.12	6955.53								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-48.02	.05	10.07	.035	66.52	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	10.07	66.52		60.05 60.05	60.05		.1	.3

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 4500

INPUT
 Description: Source: Corrected Effective Topo
 Datum: NGVD29
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		268	
Sta	Elev	Sta	Elev	Sta	Elev
33.56	6954.42	34.02	6954.42	34.16	6954.41
				34.3	6954.4
				35.03	6954.35

Ex RAS Input Report.txt

35.16	6954.34	35.29	6954.33	36.05	6954.27	36.16	6954.26	36.27	6954.25
37.06	6954.2	37.16	6954.19	37.26	6954.18	38.07	6954.12	38.16	6954.11
38.25	6954.11	39.08	6954.04	39.16	6954.04	39.24	6954.03	40.09	6953.97
40.16	6953.96	40.23	6953.96	41.1	6953.89	41.16	6953.89	41.22	6953.88
42.11	6953.81	42.21	6953.81	43.12	6953.74	43.16	6953.73	43.2	6953.73
44.13	6953.66	44.19	6953.66	45.15	6953.58	45.18	6953.58	46.11	6953.51
46.17	6953.51	46.59	6953.47	47.16	6953.43	47.17	6953.43	48.14	6953.35
48.18	6953.35	49.13	6953.27	49.19	6953.27	50.12	6953.19	50.2	6953.19
51.11	6953.11	51.21	6953.11	52.1	6953.04	52.16	6953.03	52.22	6953.02
53.09	6952.89	53.16	6952.88	53.24	6952.87	54.08	6952.7	54.16	6952.68
54.25	6952.67	55.07	6952.5	55.16	6952.49	55.26	6952.47	56.06	6952.31
56.16	6952.29	56.27	6952.27	57.05	6952.11	57.16	6952.09	57.28	6952.07
58.04	6951.92	58.16	6951.89	58.29	6951.87	59.03	6951.72	59.16	6951.7
59.3	6951.67	60.02	6951.53	60.16	6951.5	60.31	6951.47	61	6951.33
61.16	6951.3	61.32	6951.27	61.99	6951.14	62.16	6951.1	62.34	6951.07
62.98	6950.94	63.16	6950.91	63.35	6950.87	63.97	6950.75	64.16	6950.71
64.36	6950.67	64.96	6950.55	65.16	6950.51	65.37	6950.46	65.95	6950.33
66.16	6950.28	66.38	6950.23	66.94	6950.09	67.16	6950.04	67.39	6949.99
67.93	6949.86	68.16	6949.8	68.4	6949.75	68.92	6949.63	69.16	6949.57
69.41	6949.51	69.91	6949.39	70.16	6949.33	70.42	6949.27	70.9	6949.16
71.16	6949.1	71.44	6949.03	71.89	6948.93	72.16	6948.86	72.45	6948.79
72.87	6948.69	73.16	6948.62	73.46	6948.55	73.86	6948.46	74.16	6948.39
74.47	6948.32	74.85	6948.23	75.16	6948.15	75.48	6948.08	75.84	6947.99
76.16	6947.92	76.34	6947.89	76.49	6947.87	76.83	6947.82	77.16	6947.77
77.5	6947.78	78.51	6947.78	78.81	6947.79	79.52	6947.79	79.8	6947.8
80.79	6947.8	81.16	6947.81	82.16	6947.81	82.56	6947.8	82.77	6947.79
83.16	6947.78	83.57	6947.78	83.76	6947.76	84.16	6947.76	84.58	6947.85
84.75	6947.89	85.16	6947.98	85.59	6948.07	85.73	6948.11	86.16	6948.2
86.6	6948.3	86.72	6948.33	87.16	6948.42	87.61	6948.52	87.71	6948.54
88.16	6948.64	88.63	6948.74	88.7	6948.76	89.16	6948.86	89.64	6948.93
89.69	6948.97	90.16	6949.04	90.65	6949.11	90.68	6949.12	91.16	6949.19
91.66	6949.26	91.67	6949.27	92.16	6949.34	92.66	6949.41	92.67	6949.41
93.16	6949.49	93.65	6949.56	93.68	6949.56	94.16	6949.64	94.64	6949.71
94.69	6949.71	95.16	6949.78	95.63	6949.85	95.7	6949.86	96.16	6949.93
96.62	6950	96.71	6950.02	97.16	6950.08	97.61	6950.15	97.73	6950.17
98.16	6950.23	98.59	6950.29	98.74	6950.32	99.16	6950.38	99.58	6950.44
99.75	6950.47	100.16	6950.53	100.57	6950.59	100.76	6950.62	101.16	6950.68
101.56	6950.74	101.77	6950.77	102.17	6950.83	102.55	6950.88	102.78	6950.92
103.17	6950.97	103.54	6951.03	103.79	6951.07	104.17	6951.12	104.53	6951.18
104.8	6951.22	105.17	6951.27	105.52	6951.32	105.81	6951.37	106.17	6951.42
106.51	6951.47	106.83	6951.52	107.17	6951.57	107.5	6951.62	107.55	6951.63
107.84	6951.67	108.17	6951.72	108.49	6951.76	108.85	6951.82	109.17	6951.87
109.48	6951.91	109.86	6951.97	110.17	6952.01	110.46	6952.06	110.87	6952.12
111.17	6952.16	111.45	6952.21	111.88	6952.27	112.17	6952.31	112.44	6952.34
112.89	6952.42	113.17	6952.45	113.43	6952.46	113.9	6952.48	114.17	6952.49
114.42	6952.5	114.92	6952.51	115.17	6952.52	115.41	6952.53	115.93	6952.55
116.17	6952.55	116.4	6952.56	116.94	6952.58	117.17	6952.59	117.39	6952.59
117.95	6952.61	118.17	6952.62	118.38	6952.63	118.96	6952.65	119.17	6952.65

Ex RAS Input Report.txt

119.37	6952.66	119.97	6952.68	120.17	6952.69	120.36	6952.69	120.98	6952.71
121.17	6952.72	121.35	6952.72	121.99	6952.74	122.17	6952.75	122.34	6952.75
123	6952.77	123.17	6952.77	123.32	6952.78	124.02	6952.8	124.31	6952.8
125.03	6952.82	125.17	6952.82	125.3	6952.83	126.04	6952.85	126.29	6952.85
126.61	6952.86	126.93	6952.87	127.51	6952.87				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
33.56	.05	52.22	.035	112.89	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	52.22	112.89		90.12 91.85	93.21	.1	.3

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 4400

INPUT

Description: Source: Corrected Effective Topo
 Datum: NGVD29
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 433							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.22	6953.61	-46.79	6953.61	-46.3	6953.6	-44.3	6953.6	-43.84	6953.59
-41.75	6953.59	-41.3	6953.58	-39.3	6953.58	-38.88	6953.57	-34.69	6953.57
-34.3	6953.58	-32.3	6953.58	-31.94	6953.59	-29.95	6953.59	-29.65	6953.6
-27.64	6953.6	-27.3	6953.61	-25.3	6953.61	-24.99	6953.62	-23.01	6953.62
-22.6	6953.63	-20.58	6953.63	-20.3	6953.64	-18.3	6953.64	-18.04	6953.65
-16.06	6953.65	-15.54	6953.66	-14.08	6953.66	-13.53	6953.67	-11.51	6953.67
-11.3	6953.68	-9.11	6953.68	-8.49	6953.69	-7.13	6953.69	-6.47	6953.7
-6.14	6953.7	-5.46	6953.69	-5.3	6953.68	-5.15	6953.68	-4.46	6953.67
-4.3	6953.66	-4.15	6953.66	-3.45	6953.64	-3.16	6953.64	-2.44	6953.62
-2.17	6953.62	-1.43	6953.6	-1.3	6953.6	-1.18	6953.59	-.42	6953.58
-.3	6953.58	-.18	6953.57	.58	6953.56	.7	6953.55	.81	6953.55
1.59	6953.53	1.76	6953.53	2.37	6953.55	2.78	6953.56	3.11	6953.57
3.68	6953.59	3.93	6953.59	4.25	6953.6	4.58	6953.61	5.08	6953.63
5.31	6953.63	5.73	6953.65	6.05	6953.65	6.22	6953.66	6.78	6953.68
6.85	6953.68	7.37	6953.69	7.51	6953.7	7.78	6953.7	8.25	6953.72
8.51	6953.73	9.45	6953.75	9.66	6953.76	9.83	6953.76	10.45	6953.78
10.81	6953.79	11.19	6953.8	11.87	6953.82	11.92	6953.82	11.95	6953.83
12.05	6953.83	12.66	6953.85	13.1	6953.86	13.39	6953.87	13.92	6953.88
14.13	6953.89	14.24	6953.89	14.65	6953.9	14.86	6953.91	15.39	6953.92
15.6	6953.93	15.97	6953.94	16.33	6953.95	16.53	6953.96	17.07	6953.97
17.25	6953.98	17.68	6953.99	17.8	6953.99	18.02	6954	18.54	6954.02
18.83	6954.02	19.27	6954.04	19.85	6954.05	19.97	6954.06	20.07	6954.06

Ex RAS Input Report.txt

20.74	6954.08	21.12	6954.09	21.48	6954.1	22.12	6954.12	22.26	6954.12
22.45	6954.13	22.95	6954.14	23.41	6954.16	23.68	6954.16	24.16	6954.18
24.41	6954.19	24.56	6954.19	25.05	6954.2	25.15	6954.21	25.7	6954.22
25.88	6954.23	26.21	6954.24	26.62	6954.25	26.85	6954.26	27.35	6954.27
27.65	6954.28	27.99	6954.29	28.09	6954.29	28.26	6954.3	28.82	6954.31
29.56	6954.31	30.25	6954.25	30.31	6954.25	30.69	6954.22	30.85	6954.2
31.51	6954.12	31.8	6954.09	32.23	6954.04	32.51	6954.01	32.75	6953.98
33.29	6953.92	33.51	6953.89	33.7	6953.87	34.35	6953.8	34.51	6953.78
34.66	6953.76	35.41	6953.68	35.61	6953.66	36.46	6953.56	36.51	6953.55
36.56	6953.55	37.41	6953.45	37.51	6953.44	37.52	6953.44	38.46	6953.35
38.52	6953.34	38.58	6953.34	39.33	6953.27	39.41	6953.26	39.52	6953.25
39.63	6953.23	40.36	6953.16	40.52	6953.15	40.69	6953.13	41.31	6953.07
41.52	6953.05	41.75	6953.03	42.26	6952.98	42.52	6952.95	42.81	6952.92
43.21	6952.88	43.52	6952.85	43.86	6952.82	44.17	6952.79	44.52	6952.76
44.92	6952.7	45.12	6952.67	45.53	6952.61	45.98	6952.51	46.07	6952.49
46.53	6952.39	47.02	6952.28	47.04	6952.27	47.53	6952.16	47.97	6952.06
48.09	6952.03	48.53	6951.94	48.92	6951.85	49.15	6951.8	49.53	6951.71
49.87	6951.64	50.21	6951.56	50.53	6951.49	50.82	6951.42	51.27	6951.32
51.53	6951.27	51.77	6951.21	52.32	6951.09	52.53	6951.04	52.73	6951
53.38	6950.85	53.54	6950.82	53.68	6950.79	54.44	6950.62	54.54	6950.6
54.63	6950.58	55.5	6950.38	55.54	6950.37	55.58	6950.37	56.32	6950.2
56.53	6950.15	56.55	6950.15	57.48	6949.94	57.54	6949.93	57.61	6949.91
58.43	6949.73	58.54	6949.71	58.67	6949.68	59.38	6949.52	59.54	6949.48
59.72	6949.44	60.33	6949.31	60.55	6949.26	60.78	6949.21	61.28	6949.1
61.55	6949.04	61.84	6948.97	62.24	6948.88	62.55	6948.82	62.9	6948.74
63.19	6948.67	63.55	6948.59	63.95	6948.5	64.14	6948.46	64.55	6948.37
65.01	6948.27	65.09	6948.25	65.55	6948.15	66.04	6948.04	66.07	6948.03
66.55	6947.92	66.99	6947.83	67.13	6947.8	67.56	6947.7	67.94	6947.62
68.18	6947.56	68.56	6947.48	68.89	6947.4	69.24	6947.33	69.56	6947.26
69.84	6947.19	70.3	6947.09	70.56	6947.03	70.8	6946.98	71.36	6946.86
71.56	6946.81	71.75	6946.77	72.41	6946.62	72.56	6946.59	72.7	6946.56
73.47	6946.39	73.56	6946.37	73.65	6946.35	74.53	6946.15	74.57	6946.14
74.6	6946.14	75.11	6946.02	75.24	6945.99	75.55	6945.92	75.59	6945.92
76.5	6945.71	76.57	6945.7	76.64	6945.68	77.45	6945.57	77.57	6945.55
77.7	6945.52	78.4	6945.41	78.57	6945.38	78.76	6945.35	79.35	6945.25
79.57	6945.21	79.82	6945.17	80.31	6945.09	80.57	6945.04	80.87	6945.06
81.26	6945.06	81.58	6945.08	81.93	6945.19	82.21	6945.27	82.58	6945.38
82.99	6945.5	83.16	6945.55	83.58	6945.67	84.04	6945.8	84.11	6945.82
84.58	6945.96	85.06	6946.1	85.1	6946.11	85.58	6946.25	86.01	6946.38
86.16	6946.42	86.58	6946.55	86.96	6946.66	87.22	6946.73	87.58	6946.84
87.91	6946.93	88.27	6947.04	88.59	6947.13	88.87	6947.21	89.33	6947.35
89.59	6947.42	89.82	6947.49	90.39	6947.66	90.59	6947.72	90.77	6947.77
91.45	6947.97	91.59	6948.01	91.72	6948.05	92.5	6948.28	92.59	6948.3
92.67	6948.32	93.56	6948.58	93.62	6948.6	94.15	6948.76	94.57	6948.88
94.59	6948.89	94.62	6948.89	95.52	6949.16	95.6	6949.18	95.68	6949.2
96.47	6949.44	96.6	6949.47	96.73	6949.51	97.42	6949.71	97.6	6949.76
97.79	6949.82	98.38	6949.99	98.6	6950.06	98.65	6950.07	98.85	6950.13
99.33	6950.27	99.6	6950.35	99.91	6950.44	100.28	6950.55	100.6	6950.65

Ex RAS Input Report.txt

100.96	6950.76	101.23	6950.86	101.6	6950.97	102.02	6951.12	102.18	6951.17
102.6	6951.31	103.08	6951.47	103.13	6951.49	103.61	6951.65	104.08	6951.77
104.13	6951.81	104.61	6951.93	105.98	6951.93	106.25	6951.94	107.61	6951.94
107.89	6951.95	109.42	6951.95	109.61	6951.96	110.74	6951.96	111.54	6951.97
112.64	6951.97	113.06	6951.98	114.54	6951.98	114.62	6951.99	115.77	6951.99
116.45	6952	117.88	6952	118.35	6952.01	119.63	6952.01	120	6952.02
121.2	6952.02	121.63	6952.03	123.1	6952.03	123.17	6952.04	124.64	6952.04
125	6952.05	125.96	6952.05	126.34	6952.06	126.91	6952.06	127.4	6952.07
127.86	6952.07	128.45	6952.08	128.81	6952.08	129.51	6952.09	129.76	6952.09
130.57	6952.1	130.71	6952.1	131.63	6952.11	131.98	6952.11	132.61	6952.12
132.68	6952.12	133.56	6952.13	133.74	6952.13	134.52	6952.14	135.47	6952.14
135.65	6952.15	136.42	6952.15	136.65	6952.16	137.37	6952.16	137.65	6952.17
138.66	6952.17	139.03	6952.18	139.66	6952.18	140.09	6952.19	140.66	6952.19
141.14	6952.2	141.66	6952.2	142.12	6952.21	142.66	6952.21	143.07	6952.22
143.66	6952.22	144.03	6952.23	144.66	6952.23	144.98	6952.24	145.93	6952.24
146.43	6952.25	146.88	6952.25	147.49	6952.26	147.83	6952.26	148.54	6952.27
148.78	6952.27	149.6	6952.28	149.99	6952.28				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.22	.05	44.52	.035	104.61	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

44.52	104.61	126.25	112.69	105.25	.1	.3
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-47.22	4.43	6945.81	T

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4300

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-124.14	6951.97	-123.19	6951.95	-123.09	6951.95	-122.22	6951.93	-122.06	6951.93
-121.25	6951.91	-121.03	6951.91	-119.99	6951.88	-119.64	6951.88	-118.64	6951.85
-118.35	6951.85	-117.64	6951.83	-117.38	6951.83	-116.9	6951.82	-116.64	6951.81
-116.41	6951.81	-115.86	6951.79	-115.44	6951.79	-114.83	6951.77	-114.64	6951.77
-114.47	6951.76	-113.64	6951.75	-113.5	6951.74	-112.76	6951.73	-112.53	6951.72
-111.73	6951.71	-111.56	6951.7	-110.7	6951.68	-110.59	6951.68	-109.66	6951.66
-108.91	6951.65	-108.63	6951.64	-106.71	6951.6	-106.56	6951.59	-105.74	6951.58

Ex RAS Input Report.txt

-105.64	6951.57	-104.77	6951.56	-104.64	6951.55	-103.8	6951.54	-102.83	6951.51
-102.43	6951.51	-101.86	6951.49	-101.64	6951.49	-101.4	6951.48	-100.89	6951.47
-100.63	6951.47	-99.92	6951.45	-99.63	6951.45	-98.63	6951.42	-98.3	6951.42
-97.27	6951.39	-97.01	6951.39	-96.23	6951.37	-96.04	6951.37	-95.2	6951.35
-95.07	6951.35	-92.63	6951.3	-92.16	6951.28	-91.19	6951.26	-91.07	6951.26
-90.22	6951.24	-90.03	6951.24	-89.25	6951.22	-89	6951.22	-87.97	6951.19
-87.63	6951.19	-86.93	6951.17	-86.63	6951.17	-85.9	6951.15	-85.63	6951.14
-85.37	6951.14	-84.87	6951.13	-84.63	6951.12	-84.4	6951.12	-83.83	6951.11
-83.63	6951.1	-83.43	6951.1	-82.8	6951.08	-82.46	6951.08	-81.77	6951.06
-81.49	6951.06	-80.73	6951.04	-80.52	6951.03	-79.62	6951.02	-79.55	6951.01
-77.62	6950.99	-77.61	6950.98	-77.27	6950.98	-76.6	6950.97	-74.62	6950.95
-74.54	6950.94	-73.73	6950.93	-73.5	6950.93	-72.76	6950.92	-72.47	6950.92
-71.62	6950.91	-71.44	6950.9	-70.82	6950.89	-70.4	6950.89	-69.85	6950.88
-69.37	6950.88	-68.88	6950.87	-68.62	6950.87	-68.34	6950.86	-67.91	6950.86
-67.62	6950.85	-67.3	6950.85	-66.94	6950.84	-66.62	6950.84	-66.27	6950.83
-65.62	6950.83	-65.24	6950.82	-65	6950.82	-64.62	6950.81	-64.2	6950.81
-64.03	6950.8	-63.62	6950.8	-63.17	6950.79	-62.62	6950.79	-61.62	6950.77
-61.1	6950.77	-60.16	6950.75	-59.61	6950.75	-58.61	6950.73	-58.22	6950.73
-58	6950.72	-57.61	6950.72	-57.25	6950.71	-56.61	6950.71	-56.28	6950.7
-55.94	6950.7	-55.61	6950.69	-55.31	6950.69	-54.91	6950.68	-54.34	6950.68
-53.87	6950.67	-53.61	6950.67	-53.37	6950.66	-52.84	6950.66	-52.61	6950.65
-52.4	6950.65	-51.81	6950.64	-51.43	6950.64	-50.77	6950.63	-49.49	6950.63
-48.71	6950.62	-47.55	6950.62	-46.64	6950.61	-45.61	6950.61	-44.64	6950.6
-43.54	6950.6	-42.7	6950.59	-41.47	6950.59	-40.76	6950.58	-38.82	6950.58
-38.6	6950.57	-36.6	6950.57	-36.31	6950.56	-34.6	6950.56	-34.24	6950.55
-32.6	6950.55	-32.18	6950.54	-30.6	6950.54	-30.11	6950.53	-28.15	6950.53
-28.04	6950.52	-26.6	6950.52	-26.21	6950.51	-24.94	6950.51	-24.6	6950.5
-23.91	6950.5	-23.6	6950.49	-22.33	6950.49	-21.84	6950.48	-21.36	6950.48
-20.81	6950.47	-19.78	6950.47	-19.59	6950.46	-18.45	6950.46	-17.71	6950.45
-17.48	6950.45	-16.68	6950.44	-15.65	6950.43	-14.57	6950.43	-13.98	6950.42
-13.58	6950.42	-11.66	6950.4	-10.59	6950.4	-10.48	6950.39	-9.45	6950.39
-8.75	6950.38	-8.41	6950.38	-7.78	6950.37	-6.81	6950.37	-6.59	6950.36
-5.59	6950.36	-5.31	6950.35	-4.88	6950.35	-4.59	6950.34	-4.28	6950.34
-3.91	6950.33	-3.25	6950.33	-2.94	6950.32	-2.59	6950.32	-2.21	6950.31
-1.97	6950.31	-1.59	6950.3	-1.18	6950.3	-1	6950.29	-.59	6950.29
.42	6950.27	.94	6950.27	2.42	6950.24	2.95	6950.24	3.85	6950.22
4.42	6950.22	4.82	6950.21	5.02	6950.21	5.42	6950.2	5.79	6950.2
6.05	6950.19	6.42	6950.19	6.76	6950.18	7.08	6950.18	7.42	6950.17
7.73	6950.17	8.12	6950.16	8.42	6950.16	8.7	6950.15	9.15	6950.15
9.42	6950.14	9.67	6950.14	10.18	6950.13	10.64	6950.13	11.22	6950.12
11.42	6950.11	11.61	6950.11	12.25	6950.1	12.58	6950.1	13.42	6950.09
13.55	6950.08	14.32	6950.07	14.52	6950.07	15.49	6950.06	16.38	6950.04
17.42	6950.03	17.66	6950.03	18.4	6950.01	20.43	6949.99	20.52	6949.98
21.31	6949.97	21.55	6949.97	22.28	6949.96	22.58	6949.95	23.25	6949.94
23.62	6949.94	24.22	6949.93	24.43	6949.93	24.65	6949.92	25.19	6949.92
25.43	6949.91	25.68	6949.91	26.16	6949.9	26.71	6949.9	27.43	6949.88
28.1	6949.88	28.43	6949.87	28.78	6949.87	29.07	6949.86	29.43	6949.86
29.81	6949.85	30.04	6949.85	30.43	6949.84	30.85	6949.84	31.01	6949.83

Ex RAS Input Report.txt

31.43	6949.83	32.43	6949.81	32.95	6949.81	34.43	6949.78	34.94	6949.78
35.44	6949.77	35.83	6949.77	36.1	6949.76	36.71	6949.76	37.11	6949.75
37.28	6949.74	37.59	6949.74	38.46	6949.72	39.36	6949.71	39.63	6949.7
40.25	6949.69	40.49	6949.69	41.13	6949.67	41.5	6949.67	42.51	6949.65
42.9	6949.64	43.16	6949.64	43.52	6949.63	43.79	6949.63	44.34	6949.62
44.67	6949.61	45.52	6949.59	46.55	6949.58	46.69	6949.57	47.33	6949.56
47.56	6949.56	48.21	6949.54	48.57	6949.54	49.58	6949.52	49.98	6949.51
50.22	6949.51	50.59	6949.5	50.87	6949.5	51.4	6949.49	52.58	6949.46
52.82	6949.45	53.62	6949.37	54.63	6949.15	55.64	6948.92	56.1	6948.82
56.17	6948.8	56.65	6948.7	57.28	6948.56	57.66	6948.47	58.83	6948.22
59.95	6947.97	60.69	6947.8	60.81	6947.78	61.7	6947.58	61.99	6947.52
62.37	6947.43	62.71	6947.36	63.16	6947.25	63.25	6947.24	63.72	6947.13
64.14	6947.04	64.34	6946.99	64.73	6946.91	65.02	6946.84	65.74	6946.68
65.91	6946.65	66.69	6946.47	67.08	6946.39	67.76	6946.24	67.87	6946.21
68.56	6946.06	69.44	6945.86	69.78	6945.79	70.22	6945.69	70.33	6945.68
70.79	6945.57	71.21	6945.49	72.1	6945.31	72.58	6945.21	72.81	6945.17
72.98	6945.13	73.75	6944.98	73.82	6944.97	74.75	6944.78	74.83	6944.77
75.84	6944.57	76.11	6944.51	76.85	6944.37	77.41	6944.25	77.86	6944.16
78.29	6944.08	78.46	6944.04	79.64	6943.81	79.88	6943.76	80.81	6943.61
80.95	6943.59	81.35	6943.61	81.99	6943.65	83.17	6943.7	83.6	6943.73
83.92	6943.74	84.48	6943.77	85.37	6943.81	85.94	6943.84	86.25	6943.86
87.14	6943.9	87.96	6943.92	88.48	6944.02	88.91	6944.11	89.79	6944.3
90.23	6944.39	91.4	6944.65	91.56	6944.68	92.45	6944.88	92.58	6944.9
93.01	6945	94.22	6945.26	94.93	6945.42	95.1	6945.45	95.61	6945.57
96.04	6945.66	96.11	6945.67	97.28	6945.93	97.75	6946.03	98.46	6946.19
98.64	6946.22	99.07	6946.32	99.52	6946.42	99.64	6946.44	100.08	6946.54
100.81	6946.7	101.29	6946.8	101.99	6946.95	102.18	6947	102.48	6947.06
103.17	6947.21	103.95	6947.38	104.34	6947.47	104.83	6947.57	105.13	6947.64
105.52	6947.72	105.72	6947.77	107.15	6948.08	107.49	6948.15	107.87	6948.24
108.37	6948.34	109.05	6948.49	109.26	6948.54	109.88	6948.67	110.23	6948.75
111.03	6948.92	111.19	6948.96	111.4	6949	111.91	6949.12	112.58	6949.26
112.79	6949.31	113.68	6949.5	114.22	6949.62	114.93	6949.77	115.45	6949.89
116.11	6950.03	116.33	6950.08	117.01	6950.19	117.29	6950.23	118.26	6950.3
118.46	6950.3	118.99	6950.31	119.64	6950.31	119.87	6950.32	121.64	6950.32
121.99	6950.33	123.41	6950.33	124.14	6950.34	125.52	6950.34	126.07	6950.35
127.35	6950.35	127.83	6950.36	129.37	6950.36	129.6	6950.37	131.41	6950.37
132.26	6950.38	132.58	6950.38	133.14	6950.39	133.76	6950.39	134.03	6950.4
134.42	6950.4	134.91	6950.41	134.93	6950.4	135.43	6950.41	136.11	6950.41
136.44	6950.42	136.68	6950.42	137.29	6950.43	137.57	6950.43	139.34	6950.45
139.64	6950.45	140.22	6950.46	140.82	6950.46	141.11	6950.47	141.49	6950.47
141.99	6950.48	142.5	6950.48	142.87	6950.49	143.51	6950.49	143.76	6950.5
144.52	6950.5	144.64	6950.51	145.52	6950.52	146.41	6950.52	146.54	6950.53
147.3	6950.53	147.55	6950.54	148.18	6950.54	148.56	6950.55	149.07	6950.55
149.57	6950.56	150.01	6950.56						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-124.14	.05	52.82	.035	118.46	.05

Ex RAS Input Report.txt

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
52.82	118.46	30.91	33.98	43.47		.1	.3
Ineffective Flow	num=	1					
Sta L	Sta R	Elev	Permanent				
-124.14	5.3	6945.81	T				

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4250

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 491

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-147.06	6951.4	-146.68	6951.4	-146.54	6951.39	-145.86	6951.38	-145.49	6951.37
-144.9	6951.36	-144.68	6951.35	-144.44	6951.35	-143.94	6951.34	-143.4	6951.32
-142.98	6951.31	-142.68	6951.31	-142.02	6951.29	-141.68	6951.29	-140.68	6951.26
-140.26	6951.26	-140.11	6951.25	-137.68	6951.2	-137.12	6951.19	-136.27	6951.17
-136.07	6951.16	-135.67	6951.16	-134.67	6951.13	-134.35	6951.13	-133.67	6951.11
-133.39	6951.11	-132.93	6951.1	-132.67	6951.09	-132.43	6951.09	-131.88	6951.07
-131.67	6951.07	-131.47	6951.06	-130.67	6951.05	-130.52	6951.04	-129.79	6951.03
-129.56	6951.02	-128.74	6951.01	-128.6	6951	-127.7	6950.98	-127	6950.97
-126.65	6950.96	-125.72	6950.94	-125.6	6950.94	-124.76	6950.92	-124.56	6950.91
-123.8	6950.9	-123.51	6950.89	-122.84	6950.88	-121.88	6950.86	-121.66	6950.85
-121.42	6950.85	-120.92	6950.84	-120.37	6950.82	-119.97	6950.81	-119.66	6950.81
-119.01	6950.79	-118.66	6950.79	-118.05	6950.77	-117.23	6950.75	-117.09	6950.75
-114.65	6950.7	-114.09	6950.69	-113.25	6950.67	-113.04	6950.66	-112.65	6950.66
-111.65	6950.63	-111.33	6950.63	-110.65	6950.61	-110.37	6950.61	-109.9	6950.6
-109.42	6950.58	-108.86	6950.57	-108.65	6950.57	-108.46	6950.56	-107.65	6950.55
-107.5	6950.54	-106.76	6950.53	-106.54	6950.52	-105.72	6950.5	-105.58	6950.5
-104.67	6950.48	-104.09	6950.47	-102.7	6950.44	-102.58	6950.44	-101.74	6950.42
-101.53	6950.41	-100.78	6950.4	-100.48	6950.39	-99.64	6950.38	-99.44	6950.37
-98.87	6950.37	-98.64	6950.36	-98.39	6950.36	-97.91	6950.35	-97.34	6950.35
-96.95	6950.34	-96.64	6950.34	-96.3	6950.33	-95.99	6950.33	-95.64	6950.32
-95.25	6950.32	-95.03	6950.31	-94.63	6950.31	-94.2	6950.3	-93.63	6950.3
-92.63	6950.28	-92.11	6950.28	-91.19	6950.26	-90.63	6950.26	-90.23	6950.25
-90.02	6950.25	-89.63	6950.24	-89.28	6950.24	-88.97	6950.23	-88.63	6950.23
-88.32	6950.22	-87.92	6950.22	-87.63	6950.21	-87.36	6950.21	-86.88	6950.2
-86.4	6950.2	-85.83	6950.19	-85.44	6950.19	-84.78	6950.18	-84.48	6950.17
-83.74	6950.16	-83.52	6950.16	-82.56	6950.15	-81.64	6950.13	-81.18	6950.13
-80.6	6950.12	-79.55	6950.11	-78.73	6950.09	-78.5	6950.09	-77.77	6950.08
-77.46	6950.08	-76.81	6950.07	-76.41	6950.06	-75.85	6950.06	-75.62	6950.05

Ex RAS Input Report.txt

-75.36	6950.05	-74.89	6950.04	-74.62	6950.04	-74.32	6950.03	-73.61	6950.03
-73.27	6950.02	-72.97	6950.02	-72.61	6950.01	-72.22	6950.01	-72.01	6950
-71.61	6950	-70.61	6949.98	-70.09	6949.98	-69.14	6949.96	-68.61	6949.96
-67.61	6949.94	-66.99	6949.94	-66.61	6949.93	-66.26	6949.93	-65.94	6949.92
-65.61	6949.92	-65.3	6949.91	-64.9	6949.91	-64.61	6949.9	-64.34	6949.9
-63.85	6949.89	-63.38	6949.89	-62.8	6949.88	-62.42	6949.87	-61.76	6949.86
-61.46	6949.86	-60.71	6949.85	-60.5	6949.85	-59.66	6949.84	-58.59	6949.83
-58.26	6949.82	-57.57	6949.81	-55.71	6949.79	-55.48	6949.79	-54.75	6949.78
-54.43	6949.78	-53.79	6949.77	-53.38	6949.77	-52.83	6949.76	-52.59	6949.76
-52.34	6949.75	-51.87	6949.75	-51.59	6949.74	-50.91	6949.74	-50.59	6949.73
-50.24	6949.73	-49.95	6949.72	-49.59	6949.72	-49	6949.71	-48.15	6949.69
-48.04	6949.69	-47.1	6949.67	-47.08	6949.66	-46.59	6949.65	-45.59	6949.61
-45.16	6949.6	-45.01	6949.59	-44.59	6949.58	-43.96	6949.55	-42.92	6949.52
-42.58	6949.5	-41.87	6949.48	-41.32	6949.46	-40.82	6949.45	-40.58	6949.44
-40.36	6949.44	-39.78	6949.41	-39.4	6949.41	-38.45	6949.38	-37.68	6949.37
-36.53	6949.36	-35.59	6949.34	-35.35	6949.34	-34.61	6949.33	-33.65	6949.32
-33.5	6949.31	-32.69	6949.3	-32.45	6949.3	-31.57	6949.29	-31.4	6949.28
-30.77	6949.27	-30.36	6949.27	-29.81	6949.26	-29.57	6949.26	-29.31	6949.25
-28.86	6949.25	-28.57	6949.24	-28.26	6949.24	-27.9	6949.23	-27.57	6949.23
-27.22	6949.22	-26.94	6949.22	-26.57	6949.21	-26.17	6949.21	-25.98	6949.2
-25.57	6949.2	-24.57	6949.18	-24.08	6949.18	-24.06	6949.17	-23.57	6949.17
-22.57	6949.15	-22.14	6949.15	-21.98	6949.14	-21.56	6949.14	-21.18	6949.13
-20.94	6949.13	-20.56	6949.12	-20.22	6949.12	-19.89	6949.11	-19.56	6949.11
-18.84	6949.09	-18.31	6949.09	-17.79	6949.08	-17.56	6949.07	-17.35	6949.07
-16.56	6949.06	-16.39	6949.05	-15.7	6949.04	-15.43	6949.04	-14.65	6949.03
-14.47	6949.02	-13.51	6949.01	-12.56	6948.99	-11.51	6948.98	-10.63	6948.96
-9.67	6948.95	-9.42	6948.95	-8.72	6948.93	-8.37	6948.93	-7.76	6948.92
-7.55	6948.92	-7.33	6948.91	-6.8	6948.9	-6.28	6948.9	-5.55	6948.88
-5.23	6948.88	-4.88	6948.87	-4.55	6948.87	-4.19	6948.86	-3.92	6948.86
-3.55	6948.85	-3.14	6948.85	-2.96	6948.84	-2.55	6948.84	-1.05	6948.81
-.54	6948.81	.88	6948.78	1.46	6948.77	1.83	6948.77	2.09	6948.76
2.46	6948.76	2.79	6948.75	3.14	6948.75	3.46	6948.74	3.75	6948.74
4.19	6948.73	4.46	6948.73	4.71	6948.72	5.23	6948.71	5.67	6948.71
6.28	6948.7	6.46	6948.69	7.33	6948.68	7.59	6948.68	8.37	6948.66
9.51	6948.65	10.47	6948.63	11.42	6948.62	11.51	6948.61	12.56	6948.6
13.34	6948.59	13.47	6948.58	14.3	6948.57	14.65	6948.57	15.26	6948.56
15.47	6948.55	15.7	6948.55	16.22	6948.54	16.47	6948.54	16.75	6948.53
17.18	6948.53	17.47	6948.52	17.79	6948.52	18.47	6948.5	19.1	6948.5
19.89	6948.48	20.48	6948.47	20.94	6948.47	21.01	6948.46	21.48	6948.46
22.92	6948.43	23.48	6948.43	23.88	6948.42	24.09	6948.42	24.83	6948.4
25.14	6948.4	25.48	6948.39	25.79	6948.39	26.2	6948.38	26.48	6948.38
26.74	6948.37	27.25	6948.37	27.48	6948.36	27.7	6948.36	28.48	6948.35
28.65	6948.34	29.35	6948.33	29.61	6948.33	30.4	6948.32	30.56	6948.31
31.49	6948.3	31.52	6948.29	32.2	6948.23	32.48	6948.21	32.5	6948.2
33.43	6948.04	34.39	6947.88	34.49	6947.86	35.34	6947.72	35.49	6947.69
36.71	6947.48	37.25	6947.39	37.49	6947.34	37.76	6947.3	38.5	6947.17
38.81	6947.12	39.86	6946.94	40.12	6946.89	40.91	6946.76	41.5	6946.65
42.5	6946.48	42.99	6946.4	43.02	6946.39	43.5	6946.31	43.94	6946.23

Ex RAS Input Report.txt

44.5	6946.14	45.5	6945.96	46.17	6945.85	46.5	6945.79	46.81	6945.74
47.76	6945.58	48.72	6945.41	49.33	6945.31	49.51	6945.27	49.67	6945.25
50.38	6945.13	50.51	6945.1	51.43	6944.94	52.48	6944.74	53.5	6944.54
53.53	6944.53	54.45	6944.35	54.58	6944.32	55.52	6944.14	55.63	6944.11
56.52	6943.94	56.69	6943.9	57.74	6943.7	58.52	6943.54	58.79	6943.49
59.52	6943.34	59.84	6943.28	60.52	6943.14	61.14	6943.02	61.52	6942.94
61.94	6942.91	62.1	6942.91	62.52	6942.87	62.99	6942.9	63.52	6942.92
64.53	6942.98	64.96	6943	65.1	6943	65.53	6943.03	65.92	6943.04
66.53	6943.07	66.87	6943.09	67.2	6943.1	67.53	6943.12	68.53	6943.16
69.3	6943.28	69.53	6943.31	70.35	6943.51	70.69	6943.6	71.41	6943.77
71.53	6943.81	71.65	6943.83	72.46	6944.03	72.61	6944.07	73.43	6944.27
73.51	6944.29	73.56	6944.31	74.09	6944.44	74.52	6944.54	75.47	6944.78
75.61	6944.81	76.43	6945.02	76.54	6945.04	77.54	6945.29	77.71	6945.33
78.54	6945.54	78.76	6945.6	79.29	6945.72	79.54	6945.79	79.82	6945.85
80.25	6945.95	81.2	6946.18	81.92	6946.35	82.16	6946.41	82.97	6946.6
83.12	6946.63	83.55	6946.74	84.55	6946.97	85.07	6947.1	85.98	6947.31
86.12	6947.35	86.94	6947.54	87.55	6947.69	88.23	6947.85	88.55	6947.92
89.28	6948.09	89.8	6948.22	90.33	6948.34	90.76	6948.45	91.56	6948.63
91.71	6948.67	92.56	6948.87	93.48	6949.05	94.54	6949.11	95.03	6949.14
95.54	6949.16	95.59	6949.17	96.49	6949.21	96.64	6949.22	97.45	6949.26
97.69	6949.28	98.4	6949.31	98.74	6949.33	99.79	6949.38	100.31	6949.37
100.57	6949.38	101.9	6949.38	102.22	6949.37	104.14	6949.37	104.57	6949.36
105.22	6949.36								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-147.06	.05	31.52	.035	93.48	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

31.52	93.48	91.84	91.84	91.84	.1	.3
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-147.06	-.5	6945.81	T

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 4150

INPUT
 Description: Source: Corrected Effective Topo
 Datum: NGVD29
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-88.61	6949.58	-88.32	6949.57	-87.48	6949.56	-87.35	6949.55	-86.58	6949.54

Ex RAS Input Report.txt

-86.38	6949.54	-85.55	6949.52	-85.41	6949.52	-84.51	6949.5	-84.44	6949.5
-82.51	6949.46	-81.54	6949.45	-81.48	6949.44	-80.47	6949.43	-80.38	6949.42
-79.6	6949.41	-79.34	6949.4	-78.63	6949.38	-78.31	6949.38	-77.66	6949.36
-77.47	6949.36	-77.27	6949.35	-76.69	6949.34	-76.47	6949.33	-76.24	6949.33
-75.72	6949.32	-75.21	6949.3	-74.75	6949.29	-74.47	6949.29	-73.47	6949.26
-73.14	6949.26	-72.1	6949.23	-71.85	6949.23	-71.07	6949.21	-70.88	6949.2
-70.47	6949.2	-70.04	6949.19	-69.91	6949.18	-69	6949.16	-67	6949.12
-66.93	6949.11	-66.03	6949.09	-65.9	6949.09	-65.06	6949.07	-64.87	6949.07
-64.09	6949.05	-63.47	6949.03	-63.12	6949.03	-62.15	6949	-61.76	6949
-61.18	6948.98	-60.73	6948.97	-60.46	6948.96	-60.21	6948.96	-59.7	6948.95
-59.46	6948.94	-59.25	6948.94	-58.66	6948.92	-58.46	6948.92	-58.28	6948.91
-57.63	6948.9	-57.46	6948.9	-57.31	6948.89	-56.59	6948.88	-56.34	6948.87
-55.56	6948.85	-55.37	6948.85	-54.53	6948.83	-54.4	6948.83	-53.49	6948.8
-51.49	6948.76	-51.42	6948.76	-50.52	6948.74	-50.39	6948.73	-49.55	6948.71
-49.36	6948.71	-48.58	6948.69	-48.32	6948.69	-47.62	6948.67	-47.46	6948.67
-47.29	6948.66	-46.65	6948.65	-46.46	6948.64	-46.25	6948.64	-45.68	6948.62
-45.46	6948.62	-45.22	6948.61	-44.71	6948.6	-44.46	6948.6	-44.19	6948.59
-43.74	6948.58	-43.46	6948.57	-43.15	6948.57	-42.77	6948.56	-41.8	6948.53
-41.45	6948.53	-40.83	6948.51	-40.05	6948.49	-39.86	6948.49	-39.02	6948.47
-38.89	6948.47	-37.98	6948.45	-37.45	6948.45	-36.95	6948.44	-36.45	6948.44
-35.45	6948.42	-34.88	6948.42	-34.45	6948.41	-33.85	6948.41	-33.45	6948.4
-33.08	6948.4	-32.45	6948.38	-32.11	6948.38	-31.45	6948.36	-31.14	6948.36
-30.75	6948.35	-30.45	6948.35	-30.17	6948.34	-29.71	6948.33	-29.45	6948.33
-29.2	6948.32	-28.68	6948.31	-28.45	6948.31	-28.23	6948.3	-27.64	6948.29
-27.45	6948.29	-27.26	6948.28	-26.61	6948.27	-26.29	6948.27	-25.58	6948.25
-25.32	6948.25	-24.54	6948.23	-24.36	6948.23	-23.51	6948.21	-23.39	6948.21
-21.57	6948.17	-21.44	6948.17	-19.51	6948.13	-19.37	6948.13	-18.54	6948.11
-18.34	6948.11	-17.57	6948.1	-17.44	6948.09	-17.3	6948.09	-16.6	6948.08
-16.44	6948.07	-16.27	6948.07	-15.63	6948.06	-15.44	6948.05	-15.24	6948.05
-14.66	6948.04	-14.44	6948.04	-14.2	6948.03	-13.69	6948.02	-13.44	6948.02
-13.17	6948.01	-12.73	6948	-12.44	6948	-11.76	6947.98	-11.44	6947.98
-11.1	6947.97	-10.79	6947.97	-10.07	6947.95	-9.82	6947.95	-9.03	6947.93
-8.85	6947.93	-8	6947.91	-7.88	6947.91	-4	6947.83	-3.86	6947.83
-3.03	6947.81	-2.83	6947.81	-2.43	6947.8	-2.06	6947.8	-1.43	6947.78
-1.1	6947.78	-.43	6947.76	-.13	6947.76	.27	6947.75	.57	6947.75
.84	6947.74	1.31	6947.73	1.57	6947.73	1.81	6947.72	2.34	6947.71
2.57	6947.71	2.78	6947.7	3.38	6947.69	3.57	6947.69	3.75	6947.68
4.41	6947.67	4.65	6947.67	4.72	6947.66	5.46	6947.65	5.67	6947.65
6.51	6947.63	6.63	6947.63	7.56	6947.61	7.8	6947.6	8.61	6947.59
9.49	6947.57	9.67	6947.57	10.45	6947.55	10.72	6947.55	11.4	6947.53
11.77	6947.53	12.36	6947.51	12.82	6947.51	13.31	6947.49	13.58	6947.49
13.87	6947.48	14.27	6947.46	15.22	6947.43	15.58	6947.41	15.98	6947.4
16.18	6947.39	16.58	6947.38	17.03	6947.36	17.13	6947.36	17.58	6947.34
18.59	6947.3	19.04	6947.28	19.14	6947.28	19.59	6947.26	20	6947.25
20.59	6947.22	21.24	6947.2	21.59	6947.18	21.91	6947.17	22.29	6947.15
22.86	6947.13	23.82	6947.09	24.4	6947.07	24.59	6947.06	24.77	6947.06
25.45	6947.03	26.5	6946.99	26.68	6946.98	27.55	6946.94	27.64	6946.94
28.46	6946.91	28.6	6946.9	29.55	6946.87	29.66	6946.86	30.5	6946.83

Ex RAS Input Report.txt

31.46	6946.79	31.6	6946.78	31.76	6946.78	32.6	6946.74	32.81	6946.74
33.37	6946.71	33.87	6946.69	34.32	6946.68	34.6	6946.66	35.28	6946.64
35.61	6946.62	36.23	6946.6	36.61	6946.58	37.02	6946.57	37.61	6946.54
38.07	6946.53	38.14	6946.52	38.61	6946.5	39.09	6946.49	39.13	6946.48
39.61	6946.46	40.05	6946.45	40.18	6946.44	40.61	6946.42	41	6946.41
41.23	6946.4	41.61	6946.39	41.96	6946.37	42.61	6946.35	42.91	6946.33
43.34	6946.32	43.87	6946.3	44.39	6946.27	44.62	6946.27	45.44	6946.23
45.62	6946.23	46.62	6946.16	46.73	6946.14	47.54	6946.01	47.69	6945.99
48.6	6945.85	48.64	6945.84	49.11	6945.76	49.6	6945.68	49.65	6945.68
50.55	6945.53	51.51	6945.41	51.62	6945.39	51.75	6945.38	52.46	6945.29
52.8	6945.25	53.42	6945.17	53.86	6945.11	54.63	6945.02	54.88	6944.98
54.91	6944.98	55.33	6944.93	55.63	6944.89	56.28	6944.81	56.63	6944.76
57.01	6944.72	57.63	6944.64	58.07	6944.58	58.19	6944.57	58.63	6944.51
59.12	6944.45	59.15	6944.45	59.63	6944.39	60.64	6944.26	61.22	6944.19
61.64	6944.13	62.01	6944.09	62.27	6944.05	62.64	6944.01	62.97	6943.97
63.64	6943.88	63.92	6943.85	64.38	6943.79	64.64	6943.76	65.43	6943.66
65.64	6943.63	65.83	6943.61	66.64	6943.5	66.79	6943.49	67.54	6943.39
67.74	6943.36	68.59	6943.26	68.7	6943.24	69.64	6943.13	69.77	6943.11
70.61	6943	71.56	6942.88	71.74	6942.86	72.52	6942.76	72.65	6942.75
73.47	6942.64	73.85	6942.6	74.65	6942.49	75.38	6942.4	75.95	6942.34
76.34	6942.28	76.65	6942.25	77	6942.24	77.29	6942.22	78.06	6942.2
78.25	6942.2	79.11	6942.18	79.2	6942.18	80.66	6942.15	81.21	6942.14
82.06	6942.12	82.27	6942.11	82.66	6942.11	83.32	6942.09	83.66	6942.09
84.37	6942.07	84.66	6942.07	84.93	6942.06	85.42	6942.05	85.66	6942.05
85.88	6942.04	86.47	6942.03	86.67	6942.02	86.84	6942.02	87.53	6942.01
87.79	6942	88.58	6941.99	88.75	6941.98	89.63	6941.94	90.42	6941.92
90.68	6941.91	91.61	6942.1	91.74	6942.12	92.67	6942.31	92.79	6942.33
93.67	6942.51	93.84	6942.54	94.48	6942.67	94.89	6942.75	95.68	6942.91
95.94	6942.96	96.68	6943.11	97	6943.17	97.68	6943.31	97.76	6943.33
98.05	6943.38	98.68	6943.51	99.25	6943.62	99.68	6943.7	100.15	6943.8
100.68	6943.9	101.16	6944	101.2	6944	101.68	6944.1	102.12	6944.18
102.68	6944.3	103.07	6944.37	103.31	6944.42	103.69	6944.49	104.03	6944.56
104.36	6944.62	104.98	6944.75	105.41	6944.83	105.69	6944.89	105.94	6944.93
106.47	6945.04	107.52	6945.24	107.69	6945.28	108.57	6945.45	108.8	6945.49
109.62	6945.65	109.76	6945.68	110.67	6945.86	110.71	6945.86	111.08	6945.94
111.73	6946.06	112.62	6946.24	112.78	6946.26	113.58	6946.41	113.83	6946.43
114.53	6946.45	114.7	6946.46	114.88	6946.46	115.49	6946.49	115.7	6946.49
116.44	6946.52	116.7	6946.54	117.4	6946.56	117.7	6946.58	118.35	6946.6
118.7	6946.62	119.09	6946.63	119.7	6946.66	120.14	6946.67	120.26	6946.68
120.71	6946.7	121.71	6946.74	122.17	6946.76	122.25	6946.76	122.71	6946.78
123.13	6946.79	123.71	6946.82	124.35	6946.84	124.71	6946.86	125.03	6946.87
125.4	6946.89	125.99	6946.91	126.94	6946.95	127.51	6946.97	127.9	6946.99
128.56	6947.01	128.85	6947.03	129.61	6947.06	129.81	6947.07	130.67	6947.1
130.76	6947.1	132.67	6947.18	132.77	6947.18	133.82	6947.23	134.87	6947.27
135.54	6947.3	135.72	6947.3	136.49	6947.34	136.72	6947.34	137.45	6947.37
137.73	6947.39	138.4	6947.41	138.73	6947.43	139.36	6947.45	139.73	6947.47
140.14	6947.48	140.73	6947.51	141.27	6947.52	141.73	6947.54	142.73	6947.54
143.18	6947.55	144.13	6947.55	144.34	6947.56	145.09	6947.56	145.4	6947.57

Ex RAS Input Report.txt

146.45 6947.57 146.74 6947.58 147.74 6947.58 147.95 6947.59 148.91 6947.59
149.6 6947.6 150 6947.6

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
-88.61 .05 46.62 .035 113.58 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
46.62 113.58 164.63 164.63 164.63 .3 .5

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4000

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 491							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6944.95	.14	6944.95	.56	6944.92	1.02	6944.9	1.18	6944.9
2.1	6944.85	2.36	6944.84	2.79	6944.82	3.11	6944.8	3.54	6944.78
3.67	6944.78	4.12	6944.76	4.55	6944.74	4.72	6944.73	5.13	6944.71
5.44	6944.69	6.14	6944.66	6.32	6944.65	7.09	6944.61	7.2	6944.61
7.54	6944.59	8.08	6944.57	8.16	6944.56	8.27	6944.56	8.97	6944.53
9.17	6944.52	9.45	6944.5	9.85	6944.48	10.18	6944.47	10.63	6944.45
10.73	6944.44	11.19	6944.42	11.61	6944.4	12.2	6944.37	12.5	6944.36
13	6944.33	13.22	6944.32	13.38	6944.32	14.18	6944.28	14.26	6944.27
14.51	6944.26	15.14	6944.23	15.24	6944.23	15.36	6944.22	16.25	6944.18
16.54	6944.16	16.91	6944.15	17.26	6944.13	17.72	6944.11	17.79	6944.11
18.27	6944.08	18.67	6944.06	18.9	6944.05	19.28	6944.03	20.09	6944
20.29	6943.99	20.44	6943.98	21.27	6943.94	21.32	6943.94	21.48	6943.93
22.2	6943.9	22.45	6943.88	23.09	6943.84	23.32	6943.82	23.63	6943.79
23.97	6943.76	24.33	6943.73	24.81	6943.68	24.85	6943.69	25.34	6943.64
25.99	6943.59	26.35	6943.56	26.62	6943.53	27.18	6943.49	27.36	6943.47
27.5	6943.46	28.36	6943.39	28.45	6943.38	29.26	6943.32	29.38	6943.31
29.54	6943.29	30.39	6943.22	30.72	6943.2	31.03	6943.17	31.9	6943.1
31.91	6943.1	32.79	6943.03	33.08	6943	33.42	6942.97	33.68	6942.95
34.27	6942.91	34.43	6942.89	35.37	6942.81	35.45	6942.81	36.46	6942.73
36.63	6942.71	37.21	6942.66	37.47	6942.64	37.81	6942.61	38.09	6942.59
38.48	6942.56	38.97	6942.52	38.99	6942.52	39.86	6942.45	40.17	6942.42
40.5	6942.39	40.74	6942.37	41.36	6942.32	41.51	6942.31	41.62	6942.3
42.4	6942.24	42.5	6942.23	42.54	6942.23	43.39	6942.16	43.53	6942.14
43.72	6942.13	44.27	6942.08	44.54	6942.06	45.15	6942.01	45.55	6941.98
46.03	6941.94	46.08	6941.93	46.56	6941.89	46.92	6941.87	47.26	6941.84

Ex RAS Input Report.txt

47.57	6941.81	47.8	6941.79	48.58	6941.73	48.68	6941.72	49.37	6941.66
49.56	6941.65	49.63	6941.64	50.45	6941.58	50.6	6941.56	50.81	6941.55
51.33	6941.5	51.61	6941.48	51.99	6941.45	52.21	6941.43	52.62	6941.4
53.09	6941.36	53.17	6941.35	53.63	6941.31	53.98	6941.29	54.35	6941.25
54.64	6941.23	54.86	6941.21	55.54	6941.16	55.74	6941.14	56.34	6941.09
56.62	6941.07	56.72	6941.06	57.51	6941	57.67	6940.98	57.9	6940.96
58.39	6940.92	58.69	6940.9	59.08	6940.87	59.27	6940.85	59.7	6940.82
60.71	6940.73	61.04	6940.71	61.45	6940.67	61.72	6940.65	61.92	6940.63
62.63	6940.58	62.8	6940.56	63.32	6940.52	63.68	6940.49	63.74	6940.48
63.81	6940.48	64.57	6940.42	64.75	6940.4	64.99	6940.38	65.45	6940.34
65.76	6940.32	66.17	6940.28	66.33	6940.27	66.77	6940.23	67.35	6940.19
67.78	6940.15	68.1	6940.13	68.54	6940.09	68.79	6940.07	68.98	6940.05
69.72	6939.99	69.8	6939.99	69.86	6939.98	70.29	6939.95	70.74	6939.91
70.81	6939.9	70.9	6939.9	71.63	6939.84	71.82	6939.82	72.08	6939.8
72.62	6939.75	72.83	6939.74	73.26	6939.7	73.39	6939.69	73.84	6939.65
74.27	6939.62	74.44	6939.6	74.85	6939.57	75.16	6939.55	75.86	6939.49
76.04	6939.47	76.81	6939.41	76.87	6939.4	76.92	6939.4	77.26	6939.37
77.8	6939.33	77.99	6939.31	78.69	6939.26	78.89	6939.24	79.17	6939.22
79.57	6939.18	79.9	6939.16	80.35	6939.12	80.45	6939.11	80.91	6939.07
81.34	6939.04	81.53	6939.02	81.93	6938.99	82.22	6938.97	82.72	6938.92
82.94	6938.91	83.1	6938.89	83.9	6938.83	83.98	6938.82	84.24	6938.8
84.87	6938.75	85.08	6938.73	85.75	6938.68	85.97	6938.66	86.26	6938.63
86.63	6938.6	86.98	6938.57	87.44	6938.54	87.51	6938.53	87.99	6938.49
88.4	6938.46	88.62	6938.44	89	6938.41	89.28	6938.4	89.81	6938.39
90.01	6938.38	90.16	6938.38	90.99	6938.36	91.21	6938.36	91.93	6938.35
92.03	6938.34	92.17	6938.34	92.81	6938.33	93.35	6938.33	93.69	6938.32
94.05	6938.32	94.53	6938.45	94.57	6938.43	95.06	6938.56	95.46	6938.67
96.07	6938.84	96.34	6938.92	96.9	6939.07	97.22	6939.16	98.08	6939.4
98.1	6939.4	98.18	6939.42	98.99	6939.65	99.1	6939.68	99.26	6939.72
99.87	6939.89	100.11	6939.96	100.44	6940.05	100.75	6940.14	101.12	6940.24
101.62	6940.38	101.63	6940.38	102.13	6940.52	102.52	6940.62	102.8	6940.7
103.14	6940.8	103.99	6941.03	104.15	6941.08	104.28	6941.11	105.15	6941.34
105.16	6941.34	106.05	6941.57	106.18	6941.6	106.35	6941.65	106.93	6941.8
107.53	6941.96	107.81	6942.03	108.2	6942.13	108.69	6942.26	108.71	6942.26
109.21	6942.39	109.58	6942.49	109.89	6942.57	110.22	6942.65	110.46	6942.72
110.82	6942.81	111.08	6942.87	111.23	6942.91	111.34	6942.92	112.13	6942.91
113.99	6942.91	114.26	6942.9	116.28	6942.9	116.64	6942.89	118.4	6942.89
119.1	6942.88	121.33	6942.88	121.71	6942.87	123.35	6942.87	123.7	6942.86
125.46	6942.86	125.91	6942.85	127.05	6942.85	127.47	6942.84	127.83	6942.84
128.34	6942.83	129.4	6942.83	129.58	6942.82	130.19	6942.82	130.64	6942.81
130.97	6942.81	131.59	6942.8	132.76	6942.8	133.21	6942.79	133.82	6942.79
134.11	6942.78	134.96	6942.78	135.68	6942.77	135.94	6942.77	136.46	6942.76
137.26	6942.76	138	6942.75	138.09	6942.75	138.83	6942.74	139.61	6942.74
139.71	6942.73	140.4	6942.73	141.03	6942.72	141.34	6942.72	141.97	6942.71
142.97	6942.71	143.35	6942.7	144.07	6942.7	144.32	6942.69	145.11	6942.69
145.47	6942.68	146.53	6942.68	146.68	6942.67	147.59	6942.67	147.84	6942.66
148.65	6942.66	149.03	6942.65	149.82	6942.65	150.15	6942.64	151.09	6942.64
151.39	6942.63	152.18	6942.63	152.72	6942.62	153.19	6942.62	153.75	6942.61

Ex RAS Input Report.txt

154.53	6942.61	155	6942.6	155.32	6942.6	155.97	6942.59	156.89	6942.59
157.12	6942.58	157.67	6942.58	158.18	6942.57	159.24	6942.57	159.27	6942.56
160.03	6942.48	160.29	6942.42	160.81	6942.29	160.84	6942.29	161.35	6942.16
162.31	6941.93	162.39	6941.91	162.41	6941.91	162.47	6941.89	163.17	6941.73
163.47	6941.65	163.96	6941.54	164.1	6941.5	164.53	6941.4	164.74	6941.35
165.35	6941.2	165.53	6941.16	165.59	6941.14	165.72	6941.11	166.65	6940.89
167.1	6940.78	167.35	6940.72	167.71	6940.63	167.88	6940.59	168.67	6940.4
168.97	6940.34	169.45	6940.24	169.83	6940.15	170.24	6940.06	170.6	6939.98
171.02	6939.89	171.42	6939.8	171.94	6939.68	172.59	6939.54	173	6939.45
173.85	6939.27	174.06	6939.22	174.16	6939.2	174.46	6939.13	174.95	6939.02
175.12	6938.99	175.47	6938.91	175.74	6938.85	176.18	6938.76	176.52	6938.73
177.1	6938.72	177.24	6938.71	177.31	6938.71	177.5	6938.7	178.09	6938.69
178.3	6938.69	178.72	6938.68	178.88	6938.67	179.36	6938.66	179.66	6938.66
180.35	6938.64	180.54	6938.64	181.23	6938.62	181.47	6938.62	181.97	6938.6
182.02	6938.6	182.53	6938.59	182.8	6938.59	183.58	6938.66	183.6	6938.66
184.37	6938.83	184.65	6938.89	185.16	6939.02	185.23	6939.03	185.71	6939.15
185.94	6939.21	186.62	6939.38	186.85	6939.44	187.52	6939.6	187.83	6939.68
188.3	6939.8	188.48	6939.85	188.89	6939.95	189.09	6940	189.66	6940.14
189.87	6940.2	189.95	6940.21	190.1	6940.25	190.66	6940.39	191.44	6940.59
191.73	6940.66	192.06	6940.75	192.7	6940.9	193.01	6940.98	193.35	6941.07
193.8	6941.18	194.18	6941.28	194.98	6941.48	195.37	6941.57	195.73	6941.67
196.15	6941.77	196.3	6941.81	196.6	6941.88	196.94	6941.97	197.36	6942.07
197.72	6942.17	198.23	6942.29	198.42	6942.34	198.51	6942.36	198.77	6942.43
199.29	6942.56	199.48	6942.59	199.85	6942.6	200.08	6942.62	200.54	6942.63
200.87	6942.64	201.48	6942.65	201.65	6942.65	201.81	6942.66	202.44	6942.67
202.62	6942.67								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	35.37	.035	110.82	.05

Bank	Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
	35.37	110.82	93.31	85.66	98.56		.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
111.09	202.62	6942.98	F

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 3900

INPUT

Description: Source: Corrected Effective Topo
 Datum: NGVD29
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Ex RAS Input Report.txt

Station Elevation Data		num=		459					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6943.24	1.31	6943.24	1.92	6943.25	2.94	6943.25	3.08	6943.26
4.12	6943.26	4.57	6943.27	5.39	6943.27	6.17	6943.28	7.02	6943.28
7.23	6943.29	7.58	6943.27	7.84	6943.28	8.26	6943.26	8.65	6943.21
8.99	6943.18	9.3	6943.14	9.47	6943.12	10.12	6943.05	10.29	6943.04
10.33	6943.03	10.41	6943.02	11.1	6942.95	11.37	6942.92	11.82	6942.87
11.92	6942.86	12.4	6942.81	12.74	6942.77	13.24	6942.72	13.44	6942.69
13.55	6942.68	13.98	6942.63	14.37	6942.59	14.47	6942.58	14.65	6942.56
15.19	6942.5	15.51	6942.47	16	6942.42	16.07	6942.41	16.54	6942.36
16.82	6942.33	17.48	6942.26	17.58	6942.25	17.64	6942.24	17.85	6942.22
18.45	6942.15	18.61	6942.13	18.89	6942.1	19.65	6942.02	20.08	6941.97
20.31	6941.95	20.68	6941.91	20.9	6941.88	21.71	6941.8	21.72	6941.8
22.53	6941.71	22.75	6941.68	23.14	6941.64	23.35	6941.62	23.79	6941.57
24.17	6941.53	24.55	6941.49	24.83	6941.46	24.98	6941.44	25.57	6941.38
25.8	6941.35	25.86	6941.35	25.97	6941.34	26.62	6941.27	26.9	6941.23
27.38	6941.18	27.43	6941.18	27.93	6941.12	28.25	6941.09	28.79	6941.03
28.97	6941.01	29.07	6941	29.44	6940.96	29.88	6940.91	30	6940.9
30.21	6940.88	30.7	6940.83	31.04	6940.8	31.52	6940.75	31.62	6940.74
32.07	6940.7	32.33	6940.67	33.04	6940.6	33.11	6940.6	33.15	6940.59
33.3	6940.58	33.96	6940.52	34.14	6940.5	34.45	6940.47	34.78	6940.44
35.18	6940.4	35.6	6940.36	35.87	6940.33	36.21	6940.3	36.41	6940.28
37.16	6940.18	37.23	6940.18	37.25	6940.17	37.28	6940.17	38.05	6940.07
38.28	6940.04	38.69	6939.99	38.86	6939.97	39.32	6939.91	39.68	6939.87
40.11	6939.84	40.35	6939.81	40.5	6939.8	41.03	6939.76	41.31	6939.75
41.39	6939.74	41.52	6939.73	42.13	6939.7	42.43	6939.68	42.94	6939.65
42.95	6939.65	43.46	6939.62	43.76	6939.6	44.35	6939.56	44.5	6939.55
44.58	6939.55	44.89	6939.53	45.4	6939.5	45.53	6939.49	45.77	6939.47
46.21	6939.45	46.57	6939.42	47.03	6939.4	47.18	6939.39	47.6	6939.36
47.85	6939.35	48.59	6939.3	48.64	6939.3	48.66	6939.29	48.75	6939.29
49.48	6939.24	49.67	6939.23	50.01	6939.21	50.29	6939.2	50.71	6939.17
51.11	6939.16	51.42	6939.14	51.74	6939.13	51.93	6939.12	52.62	6939.1
52.74	6939.09	52.98	6939.09	53.56	6939.07	53.81	6939.06	54.25	6939.05
54.38	6939.04	54.85	6939.03	55.19	6939.02	55.67	6939	55.88	6938.99
56.01	6938.99	56.48	6938.98	56.83	6938.96	57.08	6938.96	57.64	6938.94
57.95	6938.93	58.46	6938.91	58.49	6938.91	58.99	6938.9	59.28	6938.89
59.91	6938.87	60.03	6938.86	60.09	6938.86	60.34	6938.85	60.91	6938.83
61.06	6938.83	61.32	6938.82	61.73	6938.81	62.1	6938.8	62.54	6938.78
62.74	6938.78	63.13	6938.76	63.36	6938.76	64.15	6938.73	64.21	6938.73
64.99	6938.7	65.2	6938.7	65.57	6938.69	65.81	6938.68	66.24	6938.67
66.62	6938.65	66.98	6938.64	67.27	6938.63	67.44	6938.63	68.07	6938.61
68.26	6938.6	68.39	6938.6	69.07	6938.58	69.34	6938.57	69.81	6938.55
69.89	6938.55	70.38	6938.54	70.71	6938.53	71.22	6938.51	71.41	6938.5
71.52	6938.5	71.93	6938.49	72.34	6938.48	72.45	6938.47	72.64	6938.47
73.16	6938.46	73.48	6938.45	73.97	6938.43	74.05	6938.43	74.52	6938.41
74.79	6938.41	75.47	6938.39	75.61	6938.39	75.8	6938.38	76.42	6938.36
76.59	6938.36	76.88	6938.35	77.24	6938.34	77.62	6938.33	78.06	6938.32
78.29	6938.31	78.66	6938.3	78.87	6938.3	79.66	6938.28	79.69	6938.27

Ex RAS Input Report.txt

79.71	6938.27	80.5	6938.25	80.73	6938.25	81.12	6938.24	81.32	6938.23
81.77	6938.22	82.14	6938.21	82.54	6938.2	82.8	6938.19	82.95	6938.19
83.52	6938.17	83.77	6938.16	83.95	6938.16	84.59	6938.14	84.87	6938.13
85.22	6938.12	85.4	6938.12	85.91	6938.11	86.22	6938.1	86.78	6938.08
86.94	6938.08	87.04	6938.07	87.39	6938.07	87.85	6938.05	87.98	6938.05
88.19	6938.04	88.67	6938.03	89.01	6938.02	89.49	6938.01	89.61	6938.01
90.05	6937.99	90.3	6937.99	91.02	6937.97	91.08	6937.96	91.25	6937.96
91.94	6937.94	92.12	6937.93	92.44	6937.92	92.75	6937.9	93.15	6937.88
93.57	6937.86	93.85	6937.85	94.19	6937.83	94.38	6937.82	95.11	6937.78
95.22	6937.78	95.27	6937.77	96.02	6937.73	96.26	6937.72	96.68	6937.7
96.83	6937.69	97.3	6937.67	97.65	6937.65	98.09	6937.63	98.33	6937.61
98.47	6937.61	98.98	6937.6	100.92	6937.6	101.44	6937.61	105.58	6937.61
105.82	6937.62	107.45	6937.62	107.65	6937.63	108.26	6937.63	108.68	6937.64
109.08	6937.65	109.41	6937.65	109.72	6937.66	109.9	6937.66	110.57	6937.67
110.71	6937.68	110.82	6937.68	111.53	6937.69	111.79	6937.7	112.24	6937.7
112.35	6937.71	112.82	6937.71	113.16	6937.72	113.65	6937.73	113.98	6937.73
114.43	6937.74	114.8	6937.75	115.06	6937.75	115.61	6937.76	115.93	6937.77
116.43	6937.78	116.48	6937.77	116.97	6937.78	118.88	6937.78	119.04	6937.77
121.33	6937.77	122.14	6937.76	123.78	6937.76	124.21	6937.75	126.38	6937.75
127.04	6937.74	129.39	6937.74	129.49	6937.73	131.94	6937.73	132.04	6937.72
134.57	6937.72	134.86	6937.71	136.84	6937.71	137.61	6937.7	139.74	6937.7
140.11	6937.69	141.94	6937.69	142.56	6937.68	144.92	6937.68	145.01	6937.67
146.99	6937.67	147.46	6937.66	148.27	6937.66	149.01	6937.65	150.42	6937.65
150.72	6937.64	152.35	6937.64	153.06	6937.63	154.24	6937.63	154.66	6937.62
155.27	6937.62	155.62	6937.59	156.08	6937.57	156.31	6937.56	156.44	6937.54
156.56	6937.53	156.93	6937.5	157.25	6937.47	157.34	6937.46	157.49	6937.45
158.07	6937.39	158.38	6937.36	158.89	6937.32	158.91	6937.31	159.41	6937.27
159.7	6937.33	160.32	6937.47	160.45	6937.49	160.52	6937.51	160.79	6937.59
161.34	6937.74	161.48	6937.78	161.74	6937.85	162.15	6937.96	162.52	6938.06
162.97	6938.18	163.15	6938.23	163.55	6938.35	163.79	6938.41	164.56	6938.62
164.59	6938.63	164.6	6938.63	164.65	6938.65	165.42	6938.86	165.62	6938.91
165.98	6939.01	166.24	6939.08	166.66	6939.2	167.05	6939.31	167.39	6939.4
167.69	6939.48	167.87	6939.53	168.52	6939.71	168.68	6939.76	168.73	6939.77
168.81	6939.79	169.5	6939.98	169.76	6940.05	170.22	6940.18	170.32	6940.2
170.8	6940.34	171.13	6940.43	171.64	6940.57	171.84	6940.62	171.95	6940.65
172.38	6940.77	172.77	6940.88	172.87	6940.91	173.05	6940.96	173.58	6941.1
173.91	6941.19	174.4	6941.33	174.46	6941.35	174.94	6941.48	175.22	6941.55
175.88	6941.73	175.98	6941.76	176.03	6941.78	176.24	6941.83	176.85	6942
177.01	6942.03	177.29	6942.05	177.67	6942.07	178.05	6942.09	178.48	6942.11
178.71	6942.11	179.08	6942.12	179.3	6942.13	180.11	6942.15	180.12	6942.15
180.93	6942.18	181.15	6942.18	181.54	6942.19	181.75	6942.2	182.19	6942.21
182.56	6942.22	182.95	6942.23	183.22	6942.24	183.38	6942.24	183.97	6942.26
184.2	6942.27	184.36	6942.27	185.01	6942.29	185.29	6942.3	185.78	6942.31
185.83	6942.31	186.33	6942.33	186.65	6942.34	187.19	6942.35	187.36	6942.36
187.46	6942.36	187.83	6942.37	188.28	6942.38	188.4	6942.39	188.61	6942.39
189.1	6942.41	189.44	6942.42	189.91	6942.43	190.37	6942.43		

Manning's n Values

num=

3

Ex RAS Input Report.txt

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	8.26	.035	177.67	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	8.26	177.67		26.02	48.36	73.69	.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3850

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 461

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6942.72	.83	6942.72	.98	6942.7	1.68	6942.64	1.83	6942.62
2	6942.61	2.66	6942.53	2.83	6942.51	3.02	6942.49	3.64	6942.42
3.83	6942.4	4.04	6942.38	4.62	6942.31	4.83	6942.29	5.05	6942.26
5.6	6942.2	5.83	6942.18	6.07	6942.15	6.59	6942.09	6.83	6942.06
7.09	6942.04	7.57	6941.98	7.83	6941.95	8.11	6941.92	8.55	6941.87
8.83	6941.84	9.13	6941.81	9.53	6941.76	9.84	6941.73	10.15	6941.69
10.51	6941.66	10.84	6941.62	11.17	6941.6	11.5	6941.59	11.84	6941.57
12.19	6941.55	12.48	6941.54	12.84	6941.52	13.21	6941.51	13.46	6941.49
13.84	6941.48	14.23	6941.46	14.44	6941.45	14.84	6941.43	15.25	6941.41
15.42	6941.41	15.84	6941.39	16.27	6941.37	16.4	6941.36	16.84	6941.34
17.28	6941.32	17.39	6941.32	17.84	6941.29	18.3	6941.27	18.37	6941.27
18.84	6941.25	19.32	6941.23	19.35	6941.23	19.84	6941.2	20.33	6941.18
20.34	6941.18	20.84	6941.16	21.31	6941.14	21.36	6941.13	21.84	6941.11
22.3	6941.09	22.38	6941.09	22.84	6941.07	23.28	6941.05	23.4	6941.04
23.84	6941.02	24.26	6941	24.42	6940.99	24.84	6940.97	25.24	6940.96
25.44	6940.95	25.84	6940.93	26.22	6940.9	26.46	6940.9	26.84	6940.88
27.21	6940.86	27.48	6940.85	27.84	6940.82	28.19	6940.8	28.5	6940.78
28.84	6940.76	29.17	6940.74	29.51	6940.72	29.84	6940.7	30.15	6940.69
30.53	6940.66	30.84	6940.64	31.13	6940.63	31.55	6940.6	31.84	6940.58
32.11	6940.57	32.57	6940.54	32.84	6940.53	33.1	6940.51	33.59	6940.48
33.84	6940.47	34.08	6940.45	34.61	6940.42	34.84	6940.41	35.06	6940.39
35.63	6940.36	35.84	6940.35	36.04	6940.33	36.65	6940.3	36.84	6940.29
37.02	6940.28	37.67	6940.24	37.84	6940.23	38.01	6940.22	38.69	6940.18
38.84	6940.17	38.99	6940.16	39.71	6940.11	39.84	6940.11	39.97	6940.1
40.73	6940.05	40.84	6940.05	40.95	6940.04	41.74	6939.99	41.84	6939.99
41.93	6939.98	42.76	6939.93	42.84	6939.93	42.92	6939.92	43.78	6939.87
43.84	6939.87	43.9	6939.86	44.8	6939.81	44.84	6939.81	44.88	6939.8
45.82	6939.75	45.86	6939.75	46.84	6939.69	46.9	6939.68	47.82	6939.63
47.86	6939.63	48.21	6939.61	48.81	6939.57	48.88	6939.57	49.79	6939.51

Ex RAS Input Report.txt

49.9	6939.51	50.77	6939.46	50.84	6939.45	50.92	6939.45	51.75	6939.4
51.84	6939.4	51.94	6939.39	52.73	6939.35	52.84	6939.34	52.96	6939.33
53.72	6939.29	53.84	6939.28	53.97	6939.28	54.7	6939.23	54.84	6939.23
54.99	6939.22	55.68	6939.18	55.84	6939.17	56.01	6939.16	56.66	6939.12
56.84	6939.11	57.03	6939.1	57.64	6939.07	57.84	6939.06	58.05	6939.05
58.63	6939.01	58.84	6939	59.07	6938.99	59.61	6938.96	59.84	6938.95
60.09	6938.93	60.59	6938.9	60.84	6938.89	61.11	6938.88	61.57	6938.85
61.84	6938.83	62.13	6938.82	62.55	6938.79	62.84	6938.78	63.15	6938.76
63.53	6938.74	63.84	6938.72	64.17	6938.7	64.52	6938.68	64.84	6938.67
65.19	6938.65	65.5	6938.63	65.84	6938.61	66.2	6938.59	66.48	6938.57
66.84	6938.55	67.22	6938.53	67.46	6938.52	67.85	6938.5	68.24	6938.48
68.44	6938.46	68.85	6938.44	69.26	6938.42	69.43	6938.41	69.85	6938.39
70.28	6938.36	70.41	6938.35	70.85	6938.33	71.3	6938.3	71.39	6938.3
71.85	6938.27	72.32	6938.25	72.37	6938.24	72.85	6938.22	73.34	6938.19
73.35	6938.19	73.85	6938.16	74.34	6938.13	74.36	6938.13	74.85	6938.1
75.32	6938.08	75.38	6938.08	75.85	6938.05	76.3	6938.02	76.4	6938.02
76.85	6937.99	77.28	6937.97	77.42	6937.96	77.85	6937.94	78.26	6937.91
78.43	6937.9	78.85	6937.88	79.24	6937.86	79.45	6937.85	79.85	6937.82
80.23	6937.8	80.47	6937.79	80.85	6937.77	81.21	6937.75	81.49	6937.73
81.85	6937.71	82.19	6937.69	82.33	6937.69	82.51	6937.67	82.85	6937.66
83.17	6937.63	83.53	6937.62	83.85	6937.6	84.15	6937.58	84.55	6937.56
84.85	6937.54	85.14	6937.52	85.57	6937.49	85.85	6937.47	86.12	6937.45
86.59	6937.42	86.85	6937.4	87.1	6937.39	87.61	6937.35	87.85	6937.34
88.08	6937.32	88.63	6937.28	88.85	6937.27	89.06	6937.25	89.65	6937.21
89.85	6937.2	90.05	6937.18	90.66	6937.14	90.85	6937.13	91.03	6937.12
91.68	6937.07	91.85	6937.06	92.01	6937.05	92.7	6937	92.85	6936.99
92.99	6936.98	93.72	6936.93	93.85	6936.92	93.97	6936.91	94.74	6936.86
94.85	6936.85	94.95	6936.85	95.76	6936.88	95.94	6936.88	96.78	6936.92
96.85	6936.93	96.92	6936.93	97.8	6936.97	97.9	6936.97	98.82	6937.01
98.85	6937.02	98.88	6937.02	99.84	6937.06	99.86	6937.06	100.57	6937.09
100.85	6937.11	100.86	6937.11	101.83	6937.15	101.88	6937.15	102.81	6937.19
102.89	6937.19	103.79	6937.24	103.85	6937.24	103.91	6937.23	104.77	6937.26
104.93	6937.26	105.76	6937.25	105.85	6937.24	105.95	6937.24	106.74	6937.23
106.97	6937.23	107.72	6937.22	107.99	6937.22	108.7	6937.21	109.01	6937.21
109.68	6937.2	109.85	6937.2	110.03	6937.19	110.66	6937.19	110.85	6937.18
111.05	6937.18	111.65	6937.17	112.07	6937.17	112.63	6937.16	113.09	6937.16
113.61	6937.15	113.85	6937.15	114.11	6937.14	114.59	6937.14	114.85	6937.13
115.12	6937.13	115.57	6937.12	116.14	6937.12	116.56	6937.11	116.85	6937.11
117.16	6937.1	117.85	6937.1	118.18	6937.09	118.52	6937.09	118.85	6937.08
119.5	6937.08	119.85	6937.07	120.22	6937.07	120.48	6937.06	120.85	6937.06
121.24	6937.05	121.85	6937.05	122.26	6937.04	122.45	6937.04	122.85	6937.03
123.43	6937.03	123.85	6937.02	124.41	6937.02	124.85	6937.01	125.32	6937
125.86	6937	126.34	6936.99	126.86	6936.99	127.35	6936.98	127.86	6936.97
128.37	6936.97	128.86	6936.96	129.32	6936.96	129.39	6936.95	129.86	6936.95
130.3	6936.94	130.86	6936.94	131.28	6936.89	131.43	6936.93	131.86	6936.88
132.27	6936.81	132.45	6936.79	132.86	6936.72	133.25	6936.64	133.47	6936.6
133.86	6936.53	134.23	6936.46	134.49	6936.41	134.86	6936.34	135.21	6936.27
135.51	6936.21	135.86	6936.15	136.19	6936.08	136.53	6936.02	136.86	6935.96

Ex RAS Input Report.txt

137.18	6935.9	137.55	6935.83	137.86	6935.77	138.16	6935.71	138.57	6935.63
138.86	6935.58	139.14	6935.52	139.58	6935.44	139.86	6935.39	140.12	6935.44
140.6	6935.5	140.86	6935.55	141.1	6935.61	141.62	6935.75	141.86	6935.81
142.08	6935.87	142.64	6936.01	142.86	6936.07	143.07	6936.12	143.66	6936.28
143.86	6936.33	144.05	6936.38	144.68	6936.54	144.86	6936.59	145.03	6936.63
145.7	6936.81	145.86	6936.85	146.01	6936.89	146.72	6937.07	146.86	6937.11
146.99	6937.14	147.74	6937.34	147.86	6937.37	147.98	6937.4	148.76	6937.6
148.86	6937.63	148.96	6937.65	149.05	6937.67	149.78	6937.87	149.86	6937.89
149.94	6937.91	150.8	6938.13	150.86	6938.15	150.92	6938.16	151.81	6938.4
151.86	6938.41	151.9	6938.42	152.83	6938.66	152.86	6938.67	152.89	6938.67
153.85	6938.92	153.87	6938.92	154.24	6939.02	154.85	6939.17	154.86	6939.17
154.87	6939.18	155.83	6939.42	155.86	6939.43	155.89	6939.43	156.81	6939.67
156.86	6939.68	156.91	6939.69	157.79	6939.92	157.86	6939.93	157.93	6939.95
158.78	6940.16	158.86	6940.19	158.95	6940.21	159.76	6940.41	159.86	6940.44
159.97	6940.47	160.74	6940.66	160.86	6940.69	160.99	6940.72	161.72	6940.91
161.79	6940.91								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	48.21	.035	160.74	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	48.21	160.74		46.06	51.61		.1	.3

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 3800

INPUT

Description: Source: Corrected Effective Topo
 Datum: NGVD29
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 436		Sta		Elev		Sta		Elev	
0	6940.48	.2	6940.48	.53	6940.46	.96	6940.44	1.22	6940.43		
1.39	6940.42	2.21	6940.38	2.25	6940.38	2.34	6940.37	3.11	6940.32		
3.25	6940.31	3.45	6940.3	3.97	6940.27	4.27	6940.25	4.7	6940.22		
4.83	6940.21	5.28	6940.19	5.69	6940.16	5.94	6940.14	6.3	6940.12		
6.55	6940.11	7.19	6940.07	7.32	6940.06	7.4	6940.05	7.89	6940.02		
8.26	6940	8.33	6939.99	8.43	6939.99	9.12	6939.95	9.35	6939.93		
9.68	6939.91	9.98	6939.89	10.37	6939.87	10.84	6939.84	10.92	6939.83		
11.38	6939.8	11.7	6939.78	12.17	6939.75	12.4	6939.74	12.56	6939.73		
13.41	6939.68	13.42	6939.68	13.44	6939.67	14.28	6939.62	14.43	6939.61		
14.65	6939.6	15.14	6939.57	15.45	6939.55	15.9	6939.52	16	6939.51		
16.47	6939.48	16.86	6939.46	17.14	6939.44	17.48	6939.42	17.71	6939.41		

Ex RAS Input Report.txt

18.39	6939.36	18.5	6939.36	18.57	6939.35	18.99	6939.33	19.43	6939.3
19.52	6939.29	19.63	6939.29	20.29	6939.24	20.53	6939.23	20.88	6939.21
21.15	6939.19	21.55	6939.17	22.01	6939.14	22.12	6939.13	22.57	6939.1
22.87	6939.08	23.37	6939.05	23.58	6939.04	23.73	6939.03	23.83	6939.02
24.53	6938.98	24.59	6938.97	24.61	6938.97	25.45	6938.92	25.61	6938.91
25.86	6938.89	26.31	6938.87	26.63	6938.85	27.1	6938.82	27.17	6938.81
27.65	6938.78	28.03	6938.76	28.35	6938.74	28.66	6938.72	28.88	6938.7
29.59	6938.66	29.68	6938.65	29.74	6938.65	30.08	6938.61	30.6	6938.56
30.7	6938.54	30.84	6938.52	31.46	6938.45	31.71	6938.4	32.08	6938.36
32.32	6938.35	32.73	6938.29	33.18	6938.25	33.33	6938.23	33.75	6938.19
34.04	6938.16	34.57	6938.11	34.76	6938.09	34.9	6938.08	35.63	6938.01
35.76	6937.99	35.82	6937.99	36.62	6937.91	36.8	6937.89	37.06	6937.86
37.48	6937.82	37.81	6937.79	38.3	6937.74	38.34	6937.74	38.83	6937.69
39.2	6937.65	39.55	6937.62	39.85	6937.59	40.05	6937.57	40.79	6937.49
40.86	6937.49	40.91	6937.48	41.18	6937.46	41.77	6937.4	41.88	6937.39
42.04	6937.37	42.63	6937.31	42.9	6937.29	43.28	6937.25	43.49	6937.23
43.91	6937.19	44.35	6937.14	44.53	6937.13	44.93	6937.09	45.21	6937.06
45.77	6937	45.95	6936.98	46.07	6936.97	46.73	6936.91	46.93	6936.89
46.96	6936.88	47.02	6936.88	47.79	6936.8	47.98	6936.78	48.26	6936.76
48.65	6936.72	49	6936.68	49.51	6936.63	50.01	6936.58	50.36	6936.55
50.75	6936.51	51.03	6936.48	51.22	6936.46	52	6936.39	52.05	6936.38
52.08	6936.38	52.28	6936.36	52.94	6936.29	53.06	6936.28	53.24	6936.26
53.8	6936.21	54.08	6936.18	54.49	6936.14	54.66	6936.12	55.1	6936.08
55.52	6936.04	55.73	6936.02	56.11	6935.98	56.38	6935.95	56.98	6935.89
57.13	6935.88	57.24	6935.87	57.82	6935.81	58.1	6935.78	58.15	6935.78
58.22	6935.77	58.96	6935.7	59.16	6935.68	59.46	6935.65	59.82	6935.61
60.18	6935.58	60.68	6935.53	60.71	6935.52	61.2	6935.48	61.53	6935.44
61.95	6935.4	62.21	6935.38	62.39	6935.36	63.01	6935.3	63.2	6935.28
63.23	6935.27	63.25	6935.27	63.37	6935.26	64.11	6935.19	64.25	6935.17
64.44	6935.15	64.97	6935.1	65.26	6935.07	65.69	6935.03	65.83	6935.02
66.28	6934.97	66.69	6934.93	66.93	6934.91	67.3	6934.87	67.55	6934.85
68.18	6934.78	68.31	6934.77	68.41	6934.76	68.92	6934.71	69.27	6934.68
69.33	6934.67	69.42	6934.66	70.13	6934.59	70.35	6934.57	70.67	6934.55
70.99	6934.51	71.36	6934.48	71.85	6934.46	71.91	6934.57	72.38	6934.57
72.7	6934.64	73.16	6934.73	73.4	6934.78	73.56	6934.82	74.4	6934.99
74.41	6934.99	74.42	6935	74.47	6935	75.28	6935.17	75.43	6935.2
75.65	6935.25	76.14	6935.36	76.45	6935.42	76.89	6935.52	77	6935.57
77.46	6935.67	77.86	6935.77	78.14	6935.84	78.48	6935.93	78.72	6935.99
79.38	6936.16	79.5	6936.19	79.58	6936.21	80.02	6936.33	80.44	6936.43
80.51	6936.45	80.62	6936.48	81.3	6936.66	81.53	6936.72	81.87	6936.81
82.16	6936.88	82.55	6936.98	83.01	6937.1	83.11	6937.13	83.56	6937.24
83.87	6937.32	84.36	6937.45	84.58	6937.51	84.73	6937.54	85.57	6937.66
85.59	6937.67	85.6	6937.67	86.45	6937.79	86.61	6937.81	86.85	6937.84
87.31	6937.9	87.63	6937.95	88.09	6938.01	88.17	6938.02	88.65	6938.09
89.03	6938.14	89.34	6938.18	89.66	6938.23	89.89	6938.26	90.58	6938.36
90.68	6938.37	90.75	6938.38	91.12	6938.43	91.61	6938.5	91.7	6938.51
91.83	6938.53	92.47	6938.62	92.71	6938.65	93.07	6938.68	93.33	6938.7
93.73	6938.73	94.18	6938.7	94.32	6938.65	94.75	6938.61	95.04	6938.54

Ex RAS Input Report.txt

95.56	6938.41	95.76	6938.36	95.9	6938.32	96.66	6938.14	96.76	6938.11
96.78	6938.11	96.81	6938.1	97.62	6937.92	97.8	6937.89	98.05	6937.84
98.48	6937.75	98.81	6937.68	99.3	6937.59	99.34	6937.58	99.83	6937.48
100.2	6937.4	100.54	6937.34	100.85	6937.27	101.06	6937.23	101.79	6937.08
101.86	6937.07	101.92	6937.06	102.21	6937	102.78	6936.88	102.88	6936.86
103.03	6936.83	103.64	6936.71	103.9	6936.66	104.27	6936.58	104.5	6936.54
104.91	6936.45	105.35	6936.36	105.52	6936.33	105.93	6936.25	106.21	6936.19
106.76	6936.08	106.95	6936.04	107.07	6936.02	107.76	6935.88	107.93	6935.84
107.96	6935.84	108.01	6935.83	108.79	6935.67	108.98	6935.63	109.25	6935.58
109.65	6935.5	110	6935.43	110.5	6935.33	110.51	6935.33	111.01	6935.22
111.37	6935.15	111.74	6935.08	112.03	6935.02	112.23	6934.98	112.99	6934.83
113.05	6934.81	113.09	6934.81	113.31	6934.78	113.95	6934.71	114.06	6934.71
114.23	6934.74	114.81	6934.86	115.08	6934.92	115.48	6935	115.66	6935.04
116.1	6935.13	116.52	6935.22	116.72	6935.26	117.11	6935.34	117.38	6935.4
117.97	6935.52	118.13	6935.55	118.24	6935.58	118.86	6935.7	119.1	6935.75
119.15	6935.76	119.21	6935.78	119.96	6935.93	120.16	6935.98	120.46	6936.04
120.82	6936.11	121.18	6936.19	121.68	6936.29	121.7	6936.3	122.2	6936.4
122.54	6936.47	122.95	6936.55	123.21	6936.61	123.4	6936.65	124.19	6936.81
124.23	6936.82	124.26	6936.83	124.41	6936.86	125.12	6937.01	125.25	6937.03
125.43	6937.07	125.98	6937.19	126.26	6937.24	126.68	6937.33	126.83	6937.36
127.28	6937.46	127.69	6937.54	127.92	6937.59	128.3	6937.67	128.55	6937.72
129.17	6937.85	129.31	6937.88	129.41	6937.9	129.95	6938.01	130.27	6938.08
130.33	6938.09	130.41	6938.11	131.13	6938.26	131.35	6938.3	131.66	6938.37
131.99	6938.44	132.36	6938.51	132.8	6938.61	132.85	6938.62	132.9	6938.63
133.38	6938.73	133.71	6938.79	134.15	6938.89	134.4	6938.94	134.57	6938.97
135.39	6939.15	135.43	6939.15	135.5	6939.17	136.29	6939.33	136.43	6939.36
136.64	6939.4	137.15	6939.5	137.45	6939.56	137.88	6939.64	138	6939.67
138.46	6939.76	138.86	6939.81	139.13	6939.83	139.48	6939.87	139.72	6939.88
140	6939.88								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	29.74	.035	93.73	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	29.74	93.73		106.47	105.93	111.29	.1 .3

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 3694

INPUT

Description: Source: Corrected Effective Topo
 Datum: NGVD29
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Ex RAS Input Report.txt

Station Elevation Data		num=		490					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6941.33	.76	6941.33	1.68	6941.31	2.22	6941.31	3.22	6941.29
4.44	6941.28	6.19	6941.26	6.24	6941.25	9.25	6941.22	10.87	6941.19
12.26	6941.18	13.27	6941.16	16.28	6941.13	16.39	6941.12	17.57	6941.11
20.06	6941.08	20.3	6941.07	22.3	6941.05	23.31	6941.03	23.89	6941.03
25	6941.01	25.58	6941.01	26.5	6940.99	27.21	6940.99	27.32	6940.98
30.53	6940.95	32.01	6940.93	32.75	6940.93	33.85	6940.91	36.61	6940.88
37.37	6940.88	37.53	6940.87	38.28	6940.87	38.37	6940.86	39.29	6940.86
39.38	6940.85	43.05	6940.81	43.81	6940.81	43.97	6940.8	46.72	6940.77
47.41	6940.77	47.64	6940.76	48.41	6940.76	48.56	6940.75	49.34	6940.75
49.42	6940.74	50.15	6940.74	50.4	6940.73	52.66	6940.71	54.08	6940.69
54.88	6940.69	55.92	6940.67	57.45	6940.66	57.75	6940.65	58.46	6940.65
58.67	6940.64	59.46	6940.64	59.59	6940.63	60.41	6940.63	60.47	6940.62
62.62	6940.6	65.11	6940.57	65.94	6940.57	66.95	6940.55	68.79	6940.53
69.5	6940.53	69.71	6940.52	70.51	6940.52	70.62	6940.51	71.88	6940.5
75.22	6940.46	75.9	6940.46	77.01	6940.44	78.54	6940.43	79.82	6940.41
80.55	6940.41	80.74	6940.4	81.56	6940.4	81.66	6940.39	85.33	6940.35
85.86	6940.35	86.97	6940.33	88.59	6940.32	89.59	6940.3	90.29	6940.3
91.39	6940.28	92.5	6940.27	93.6	6940.27	94.53	6940.26	97.28	6940.26
97.62	6940.25	100.25	6940.25	100.64	6940.24	103.72	6940.24	104.47	6940.23
107.4	6940.23	107.67	6940.22	110.68	6940.22	111.07	6940.21	113.83	6940.21
114.63	6940.2	117.51	6940.2	117.71	6940.19	120.72	6940.19	121.18	6940.18
123.94	6940.18	124.59	6940.17	127.75	6940.17	127.91	6940.16	131.23	6940.16
131.3	6940.15	134.55	6940.15	134.78	6940.14	137.87	6940.14	138.65	6940.13
141.19	6940.13	141.41	6940.12	142.82	6940.12	143.25	6940.11	144.17	6940.11
145.62	6940.09	146.83	6940.09	146.92	6940.08	147.91	6940.08	150.6	6940.05
151.85	6940.05	152.25	6940.04	153.36	6940.03	154.28	6940.03	154.47	6940.02
155.57	6940.02	155.87	6940.01	156.68	6940.01	156.87	6940	157.96	6940
160.71	6939.97	161.63	6939.97	161.9	6939.96	162.9	6939.96	164.39	6939.94
165.53	6939.94	165.91	6939.93	166.64	6939.93	166.92	6939.92	167.92	6939.92
168.07	6939.91	168.99	6939.91	171.94	6939.88	172.17	6939.87	172.94	6939.87
176.96	6939.83	177.26	6939.82	177.96	6939.82	178.18	6939.81	179.1	6939.81
180.5	6939.79	181.86	6939.78	182.13	6939.77	182.99	6939.77	183.24	6939.76
183.99	6939.76	186	6939.74	187.37	6939.72	188.29	6939.72	189.88	6939.7
191.97	6939.68	193.03	6939.68	193.2	6939.67	194.3	6939.67	194.73	6939.66
195.65	6939.65	196.56	6939.65	197.05	6939.64	198.05	6939.64	199.05	6939.63
199.32	6939.62	200.24	6939.62	203	6939.59	204.08	6939.59	204.26	6939.58
205.08	6939.58	205.37	6939.57	206.48	6939.57	206.68	6939.56	207.6	6939.56
209.1	6939.54	210.1	6939.54	210.35	6939.53	211.27	6939.53	214.03	6939.5
214.95	6939.5	215.12	6939.49	216.13	6939.49	216.44	6939.48	217.13	6939.48
217.54	6939.47	218.63	6939.47	218.65	6939.46	219.76	6939.46	220.14	6939.45
220.86	6939.45	221.15	6939.44	221.97	6939.44	222.15	6939.43	223.22	6939.43
225.06	6939.41	227.5	6939.41	227.82	6939.4	231.19	6939.4	231.5	6939.39
231.93	6939.4	232.42	6939.39	233.34	6939.39	234.81	6939.37	237.93	6939.3
238.85	6939.29	241.61	6939.23	242.24	6939.22	243.45	6939.19	244.37	6939.18
246.31	6939.14	247.42	6939.11	248.26	6939.1	249.88	6939.06	250.27	6939.06
253.28	6939	255.4	6938.95	256.27	6938.94	257.3	6938.92	257.38	6938.91

Ex RAS Input Report.txt

259.31	6938.88	260.91	6938.84	261.32	6938.84	263.33	6938.8	264.02	6938.78
265.34	6938.76	266.43	6938.73	267.35	6938.72	267.4	6938.71	268.27	6938.7
269.35	6938.67	270.66	6938.65	271.36	6938.63	273.37	6938.59	273.78	6938.59
276.38	6938.53	277.3	6938.52	278.4	6938.49	279.3	6938.48	281.72	6938.43
282.41	6938.41	284.42	6938.37	284.81	6938.37	286.42	6938.33	287.26	6938.32
288.36	6938.29	289.47	6938.27	290.44	6938.19	292.45	6937.91	293.09	6937.83
293.45	6937.77	294.46	6937.64	295.85	6937.44	296.77	6937.32	299.52	6936.93
300.44	6936.81	303.85	6936.33	306.07	6936.03	306.51	6935.96	307.51	6935.82
307.8	6935.79	309.39	6935.56	310.85	6935.36	311.47	6935.28	313.54	6934.99
314.23	6934.89	315.15	6934.77	319.35	6934.18	322.5	6933.75	325.26	6933.36
326.18	6933.24	328.94	6932.85	329.86	6932.73	332.57	6932.35	332.63	6932.35
333.73	6932.19	335.37	6931.97	335.63	6931.93	336.64	6931.87	337.21	6931.93
338.65	6932.1	339.65	6932.21	342.73	6932.58	343.69	6932.69	344.8	6932.83
347.68	6933.17	348.69	6933.3	350.08	6933.46	351.44	6933.63	352.54	6933.75
352.84	6933.77	354.3	6933.9	354.76	6933.93	355.6	6934.01	356.72	6934.1
357.73	6934.09	358.36	6934.07	360.74	6934.02	361.11	6934.02	362.03	6934
363.87	6933.98	364.72	6933.96	365.16	6933.96	366.63	6933.94	367.55	6933.92
368.04	6933.92	370.31	6933.88	370.78	6933.88	372.46	6933.85	373.06	6933.85
373.98	6933.83	375.82	6933.81	376.02	6933.8	378	6933.78	379.5	6933.75
380.21	6933.75	381.83	6933.72	382.42	6933.72	383.84	6933.7	384.08	6933.69
386.11	6933.67	386.96	6933.65	388.1	6933.64	389.25	6933.62	389.88	6933.62
392.18	6933.58	392.9	6933.58	393.08	6933.57	394.6	6933.55	395.78	6933.54
395.92	6933.53	397.25	6933.52	398.94	6933.49	399.38	6933.49	401.82	6933.43
402.08	6933.43	403.88	6933.39	404.99	6933.37	405.99	6933.34	408.67	6933.29
410.19	6933.25	411.09	6933.24	412.04	6933.21	412.89	6933.36	413.24	6933.41
414.38	6933.62	415.53	6933.82	415.59	6933.84	417.07	6934.1	417.81	6934.24
418.08	6934.28	420.1	6934.65	421.24	6934.85	422.38	6935.06	423.69	6935.29
424.67	6935.47	425.49	6935.61	426.39	6935.78	427.29	6935.92	430.38	6936.41
430.89	6936.5	431.52	6936.59	431.79	6936.64	433.59	6936.92	434.49	6937.07
436.29	6937.35	440.23	6937.98	441.24	6938.13	441.69	6938.21	442.25	6938.29
442.95	6938.41	443.25	6938.45	444.09	6938.59	445.27	6938.73	445.53	6938.73
448.29	6938.8	448.66	6938.8	449.3	6938.82	450.3	6938.84	450.95	6938.86
451.31	6938.86	453.23	6938.91	454.01	6938.92	456.1	6938.97	458.8	6939.03
459.37	6939.05	460.6	6939.07	461.5	6939.1	463.3	6939.14	463.51	6939.14
466	6939.2	468.08	6939.24	470.37	6939.3	471.51	6939.32	473.46	6939.37
476.8	6939.44	478.37	6939.48	478.6	6939.48	480.4	6939.52	481.3	6939.55
482.53	6939.57	483.1	6939.59	485.22	6939.63	485.8	6939.65	486.55	6939.66
487.51	6939.69	488.65	6939.71	490.58	6939.76	490.93	6939.76	491.59	6939.78
493.6	6939.82	495.51	6939.87	496.65	6939.89	497.79	6939.92	498.41	6939.93
498.93	6939.95	499.31	6939.95	500.21	6939.98	502.01	6940.02	502.36	6940.02
502.91	6940.04	503.67	6940.05	504.65	6940.08	504.94	6940.08	507.7	6940.15
508.07	6940.15	508.71	6940.17	509.72	6940.19	510.72	6940.22	511.01	6940.22
512.81	6940.26	513.71	6940.29	514.93	6940.31	516.77	6940.36	518.36	6940.39
521.78	6940.47	523.81	6940.52	524.51	6940.53	525.41	6940.53	525.83	6940.54
528.11	6940.54	528.64	6940.55	530.92	6940.55	531.72	6940.56	533.88	6940.56
534.35	6940.57	537.12	6940.57	537.78	6940.58	540.06	6940.58	540.72	6940.59
542.95	6940.59	543.42	6940.6	546.12	6940.6	546.92	6940.61	549.21	6940.61
549.72	6940.62	552.63	6940.62	553.02	6940.63	555.87	6940.63	556.02	6940.64

Ex RAS Input Report.txt

559.06	6940.64	559.49	6940.65	562.32	6940.65	562.92	6940.66	565.2	6940.66
565.92	6940.67	568.63	6940.67	569.13	6940.68	571.32	6940.68	572.06	6940.69
573.2	6940.69	574.03	6940.7	574.93	6940.7	576.18	6940.72	577.77	6940.73
578.19	6940.74	578.91	6940.74	579.2	6940.75	580.05	6940.75	580.54	6940.76

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	289.47	.035	445.27	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	289.47	445.27		95.37	93.53		.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3600

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 492							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6937.68	7.19	6937.68	8.11	6937.66	8.2	6937.66	9.11	6937.63
9.2	6937.63	10.1	6937.61	10.21	6937.61	11.1	6937.58	11.21	6937.58
12.09	6937.56	12.16	6937.56	12.22	6937.55	12.79	6937.54	13.09	6937.53
13.23	6937.53	14.08	6937.51	14.16	6937.5	14.23	6937.5	15.08	6937.48
15.24	6937.48	16.07	6937.45	16.24	6937.45	17.07	6937.43	17.16	6937.43
17.25	6937.42	18.06	6937.4	18.25	6937.4	19.06	6937.38	19.16	6937.37
19.26	6937.37	20.05	6937.35	20.16	6937.35	20.26	6937.34	21.04	6937.3
21.16	6937.3	21.27	6937.29	22.04	6937.25	22.16	6937.25	22.27	6937.24
23.03	6937.2	23.16	6937.2	23.28	6937.19	24.03	6937.15	24.16	6937.14
24.28	6937.14	25.02	6937.1	25.16	6937.09	25.29	6937.09	26.02	6937.05
26.3	6937.03	27.01	6937	27.3	6936.98	28.01	6936.95	28.31	6936.93
29	6936.9	29.31	6936.88	30	6936.85	30.32	6936.83	30.99	6936.8
31.32	6936.78	31.99	6936.74	32.16	6936.74	32.33	6936.73	32.98	6936.69
33.16	6936.68	33.33	6936.68	33.98	6936.64	34.34	6936.62	34.97	6936.59
35.34	6936.57	35.97	6936.54	36.35	6936.52	36.96	6936.46	37.16	6936.45
37.35	6936.42	37.95	6936.34	38.16	6936.31	38.36	6936.28	38.95	6936.2
39.16	6936.17	39.37	6936.15	39.94	6936.07	40.16	6936.04	40.37	6936.01
40.94	6935.93	41.38	6935.87	41.93	6935.8	42.16	6935.77	42.38	6935.74
42.93	6935.66	43.39	6935.6	43.92	6935.53	44.16	6935.5	44.39	6935.46
44.92	6935.39	45.4	6935.33	45.91	6935.26	46.16	6935.23	46.4	6935.19
46.91	6935.12	47.41	6935.06	47.9	6934.99	48.16	6934.95	48.41	6934.92
48.9	6934.85	49.16	6934.82	49.42	6934.78	49.89	6934.72	50.16	6934.68
50.42	6934.64	50.89	6934.58	51.16	6934.54	51.43	6934.51	51.88	6934.44

Ex RAS Input Report.txt

52.44	6934.36	53.16	6934.26	53.44	6934.22	53.87	6934.16	54.16	6934.12
54.45	6934.07	54.86	6934.01	55.16	6933.97	55.45	6933.93	55.86	6933.87
56.46	6933.79	56.85	6933.73	57.16	6933.69	57.46	6933.64	57.85	6933.59
58.16	6933.54	58.47	6933.5	58.84	6933.44	59.16	6933.4	59.47	6933.35
59.84	6933.3	60.16	6933.26	60.48	6933.21	60.83	6933.16	61.16	6933.11
61.48	6933.07	61.83	6933.02	62.82	6932.87	63.16	6932.83	63.82	6932.73
64.5	6932.63	64.81	6932.59	65.51	6932.49	65.81	6932.45	66.51	6932.35
66.8	6932.3	67.52	6932.2	67.8	6932.16	68.52	6932.06	68.79	6932.02
69.16	6931.97	69.53	6931.91	69.78	6931.88	70.16	6931.82	70.53	6931.77
70.78	6931.73	71.54	6931.63	71.77	6931.59	72.16	6931.54	72.54	6931.48
72.77	6931.45	73.15	6931.39	73.55	6931.34	73.76	6931.31	74.16	6931.25
74.55	6931.19	74.76	6931.16	75.16	6931.11	75.56	6931.05	75.75	6931.02
76.16	6930.96	76.57	6930.91	76.75	6930.88	77.57	6930.76	77.74	6930.74
78.16	6930.68	78.58	6930.66	78.74	6930.65	79.16	6930.63	79.58	6930.66
80.16	6930.7	80.59	6930.74	80.73	6930.75	81.59	6930.81	81.72	6930.82
82.16	6930.86	82.6	6930.89	82.72	6930.9	83.16	6930.93	83.6	6930.97
83.71	6930.97	84.16	6931.01	84.61	6931.04	84.7	6931.05	85.16	6931.08
85.61	6931.12	85.7	6931.13	86.16	6931.16	86.62	6931.2	86.69	6931.2
87.16	6931.24	87.62	6931.27	87.69	6931.28	88.16	6931.31	88.63	6931.35
88.68	6931.35	89.64	6931.43	89.68	6931.43	90.16	6931.47	90.64	6931.5
90.67	6931.5	91.65	6931.58	91.67	6931.58	92.65	6931.66	92.66	6931.66
93.16	6931.69	94.16	6931.77	94.65	6931.8	94.66	6931.8	95.16	6931.84
95.65	6931.87	95.67	6931.87	96.16	6931.9	96.64	6931.93	96.67	6931.93
97.16	6931.96	97.64	6931.99	97.68	6931.99	98.16	6932.02	98.63	6932.04
98.68	6932.05	99.16	6932.08	99.62	6932.1	99.69	6932.11	100.16	6932.14
100.62	6932.16	100.69	6932.17	101.16	6932.2	101.61	6932.22	101.7	6932.23
102.16	6932.26	102.61	6932.28	102.71	6932.29	103.16	6932.32	103.6	6932.34
103.71	6932.35	104.16	6932.38	104.6	6932.42	104.72	6932.42	105.16	6932.46
105.59	6932.51	105.72	6932.52	106.16	6932.56	106.59	6932.6	106.73	6932.62
107.16	6932.66	107.58	6932.7	107.73	6932.71	108.16	6932.75	108.58	6932.8
108.74	6932.81	109.16	6932.85	109.57	6932.89	109.74	6932.91	110.16	6932.95
110.57	6932.98	110.75	6933	111.16	6933.04	111.56	6933.07	111.75	6933.1
112.16	6933.13	112.56	6933.16	112.76	6933.17	113.16	6933.2	113.55	6933.23
113.76	6933.25	114.16	6933.28	114.55	6933.31	114.77	6933.32	115.16	6933.35
115.54	6933.38	115.78	6933.4	116.16	6933.43	116.53	6933.46	116.78	6933.47
117.16	6933.5	117.53	6933.53	117.79	6933.55	118.16	6933.58	118.52	6933.61
118.79	6933.63	119.16	6933.65	119.52	6933.68	119.8	6933.7	120.16	6933.73
120.51	6933.76	120.8	6933.78	121.16	6933.81	121.51	6933.83	121.81	6933.85
122.16	6933.88	122.5	6933.91	122.81	6933.93	123.16	6933.96	123.5	6933.98
123.82	6934.01	124.16	6934.03	124.49	6934.06	124.82	6934.08	125.16	6934.11
125.49	6934.13	125.83	6934.16	126.16	6934.18	126.48	6934.21	126.84	6934.23
127.16	6934.26	127.48	6934.28	127.84	6934.31	128.16	6934.33	128.47	6934.36
128.85	6934.39	129.47	6934.43	129.85	6934.46	130.16	6934.49	130.46	6934.51
130.86	6934.54	131.16	6934.56	131.45	6934.52	131.86	6934.47	132.16	6934.44
132.45	6934.4	132.87	6934.34	133.16	6934.3	133.44	6934.27	133.87	6934.21
134.16	6934.17	134.44	6934.13	134.88	6934.08	135.16	6934.04	135.43	6934
135.88	6933.94	136.16	6933.91	136.43	6933.87	136.89	6933.81	137.16	6933.77
137.42	6933.74	137.89	6933.68	138.16	6933.64	138.42	6933.61	138.9	6933.54

Ex RAS Input Report.txt

139.16	6933.51	139.41	6933.47	140.16	6933.38	140.41	6933.34	140.91	6933.27
141.16	6933.24	141.4	6933.21	141.92	6933.14	142.4	6933.08	142.92	6933.01
143.16	6932.98	143.39	6932.95	143.93	6932.87	145.16	6932.71	145.38	6932.68
145.94	6932.61	146.16	6932.58	146.37	6932.55	146.94	6932.47	147.16	6932.45
147.37	6932.42	147.95	6932.34	148.16	6932.31	148.36	6932.29	148.95	6932.21
149.16	6932.19	149.36	6932.16	149.96	6932.09	150.16	6932.07	150.35	6932.04
150.96	6931.97	151.35	6931.93	151.97	6931.85	152.34	6931.81	152.98	6931.73
153.34	6931.69	153.98	6931.61	154.16	6931.59	154.33	6931.57	154.99	6931.49
155.33	6931.45	155.99	6931.37	156.16	6931.35	156.32	6931.33	157	6931.25
157.32	6931.21	158	6931.13	158.31	6931.09	159.01	6931.01	159.16	6930.99
159.31	6930.98	160.01	6930.94	160.16	6930.93	160.3	6930.96	161.02	6931.13
161.16	6931.16	161.3	6931.2	162.02	6931.37	162.16	6931.4	163.16	6931.63
163.28	6931.66	164.03	6931.84	164.16	6931.87	164.28	6931.89	165.04	6932.07
165.16	6932.1	165.27	6932.13	166.05	6932.31	166.16	6932.33	166.27	6932.36
167.05	6932.54	167.16	6932.57	167.26	6932.59	168.06	6932.78	168.26	6932.82
169.06	6933.01	169.16	6933.03	169.25	6933.06	170.07	6933.25	170.25	6933.29
171.07	6933.48	171.16	6933.5	171.24	6933.52	172.08	6933.72	172.16	6933.74
172.24	6933.75	173.08	6933.95	173.16	6933.97	173.23	6933.99	174.09	6934.19
174.16	6934.2	174.23	6934.22	175.09	6934.42	175.16	6934.44	175.22	6934.45
176.1	6934.66	176.22	6934.68	177.11	6934.89	177.21	6934.91	178.2	6935.13
179.12	6935.33	179.2	6935.35	180.12	6935.56	180.16	6935.56	180.19	6935.57
181.06	6935.76	181.13	6935.78	181.16	6935.78	181.19	6935.79	182.13	6936
182.16	6936.01	182.18	6936.01	183.14	6936.22	183.16	6936.23	183.18	6936.23
184.14	6936.44	184.17	6936.45	185.15	6936.66	185.17	6936.67	186.15	6936.89
186.16	6936.89	186.96	6937.06	187.16	6937.11	188.15	6937.18	188.16	6937.18
189.15	6937.22	189.17	6937.22	190.14	6937.26	190.18	6937.26	191.14	6937.3
191.18	6937.3	192.13	6937.34	192.19	6937.34	193.13	6937.37	193.19	6937.37
194.12	6937.39	194.98	6937.39						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	36.35	.035	130.86	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	36.35	130.86		108.43 100.15	91.04	.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3500

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 430

Ex RAS Input Report.txt

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6935.12	.58	6935.12	1.24	6935.13	1.56	6935.13	2.43	6935.14
2.66	6935.14	3.35	6935.15	3.76	6935.15	4.27	6935.16	4.54	6935.16
4.86	6935.17	5.54	6935.17	5.96	6935.18	6.55	6935.18	7.04	6935.19
7.55	6935.19	7.96	6935.2	8.56	6935.2	8.88	6935.21	9.56	6935.21
9.81	6935.22	10.56	6935.22	10.73	6935.23	11.65	6935.23	12.57	6935.24
12.61	6935.24	13.5	6935.25	13.58	6935.25	13.67	6935.26	14.58	6935.26
14.77	6935.27	15.01	6935.27	15.58	6935.27	15.87	6935.28	16.59	6935.28
16.97	6935.29	17.19	6935.29	17.59	6935.3	18.11	6935.3	18.6	6935.31
19.18	6935.31	19.6	6935.32	20.6	6935.32	20.88	6935.3	21.38	6935.26
21.61	6935.25	21.8	6935.23	22.48	6935.18	22.61	6935.16	22.72	6935.16
23.58	6935.09	23.61	6935.08	23.64	6935.08	23.97	6935.06	24.57	6935.01
24.62	6935	24.68	6935	25.49	6934.93	25.62	6934.92	25.78	6934.91
26.41	6934.86	26.63	6934.84	26.88	6934.82	27.33	6934.78	27.63	6934.76
27.98	6934.73	28.26	6934.71	28.63	6934.68	29.09	6934.64	29.18	6934.64
29.64	6934.6	30.1	6934.56	30.19	6934.55	30.64	6934.52	31.02	6934.49
31.29	6934.47	31.65	6934.44	31.94	6934.41	32.39	6934.38	32.65	6934.36
32.87	6934.35	33.49	6934.3	33.65	6934.29	33.79	6934.28	34.59	6934.23
34.66	6934.23	34.71	6934.22	35.33	6934.18	35.63	6934.16	35.69	6934.16
36.56	6934.1	36.67	6934.09	36.79	6934.08	37.48	6934.04	37.67	6934.02
37.9	6934.01	38.4	6933.97	38.67	6933.96	39	6933.93	39.32	6933.91
39.68	6933.89	40.1	6933.86	40.25	6933.85	40.68	6933.82	41.17	6933.79
41.2	6933.79	41.68	6933.75	42.09	6933.7	42.3	6933.67	42.69	6933.62
43.01	6933.57	43.4	6933.52	43.69	6933.48	43.94	6933.44	44.5	6933.36
44.7	6933.34	44.86	6933.32	45.6	6933.21	45.7	6933.2	45.78	6933.19
46.7	6933.06	47.63	6932.93	47.71	6932.92	47.81	6932.9	48.55	6932.8
48.71	6932.78	48.91	6932.75	49.47	6932.67	49.72	6932.64	50.01	6932.6
50.39	6932.54	50.72	6932.5	51.11	6932.44	51.32	6932.41	51.72	6932.36
52.21	6932.29	52.24	6932.29	52.73	6932.22	53.16	6932.16	53.31	6932.14
53.73	6932.08	54.08	6932.03	54.41	6931.98	54.74	6931.94	55	6931.9
55.51	6931.83	55.74	6931.8	55.93	6931.77	56.62	6931.67	56.74	6931.66
56.85	6931.64	57.72	6931.52	57.75	6931.52	57.77	6931.51	58.06	6931.47
58.69	6931.38	58.75	6931.38	58.82	6931.37	59.62	6931.26	59.75	6931.24
59.92	6931.21	60.54	6931.13	60.76	6931.1	61.02	6931.06	61.46	6931.02
61.76	6930.98	62.12	6930.93	62.38	6930.91	62.77	6930.85	63.22	6930.8
63.31	6930.79	63.77	6930.74	64.23	6930.69	64.32	6930.67	64.77	6930.62
65.15	6930.58	65.42	6930.55	65.78	6930.51	66.07	6930.47	66.53	6930.42
66.78	6930.39	67	6930.37	67.63	6930.29	67.79	6930.27	67.92	6930.26
68.73	6930.17	68.79	6930.16	68.84	6930.15	69.42	6930.09	69.76	6930.05
69.79	6930.04	69.83	6930.04	70.69	6929.94	70.8	6929.93	70.93	6929.91
71.61	6929.83	71.8	6929.81	72.03	6929.78	72.53	6929.73	72.81	6929.69
73.13	6929.66	73.45	6929.62	73.81	6929.58	74.23	6929.53	74.38	6929.51
74.81	6929.46	75.3	6929.41	75.34	6929.4	75.82	6929.35	76.14	6929.31
76.22	6929.3	76.44	6929.27	76.82	6929.23	77.14	6929.19	77.54	6929.15
77.82	6929.11	78.06	6929.09	78.64	6929.02	78.83	6929	78.99	6928.98
79.74	6928.89	79.83	6928.88	79.91	6928.88	80.78	6928.82	80.83	6928.81
80.84	6928.81	81.75	6928.9	81.84	6928.91	81.94	6928.92	82.68	6928.99
82.84	6929.01	83.04	6929.03	83.6	6929.08	83.85	6929.1	84.15	6929.13

Ex RAS Input Report.txt

84.52	6929.17	84.85	6929.2	85.25	6929.24	85.44	6929.26	85.86	6929.3
86.35	6929.34	86.37	6929.34	86.86	6929.39	87.29	6929.43	87.45	6929.45
87.86	6929.49	88.21	6929.52	88.55	6929.55	88.87	6929.58	89.13	6929.61
89.65	6929.66	89.87	6929.68	90.06	6929.7	90.75	6929.77	90.88	6929.78
90.98	6929.79	91.85	6929.87	91.88	6929.87	91.9	6929.88	92.15	6929.9
92.82	6929.96	92.88	6929.97	92.95	6929.98	93.75	6930.05	93.89	6930.07
94.06	6930.08	94.67	6930.14	94.89	6930.16	95.16	6930.19	95.59	6930.23
95.89	6930.26	96.26	6930.29	96.51	6930.32	96.9	6930.36	97.36	6930.39
97.44	6930.37	97.9	6930.41	98.36	6930.39	98.46	6930.39	98.91	6930.37
99.28	6930.35	99.56	6930.36	99.91	6930.34	100.2	6930.33	100.66	6930.32
100.91	6930.31	101.12	6930.31	101.76	6930.29	102.05	6930.29	102.87	6930.27
102.97	6930.27	103.51	6930.25	103.93	6930.25	103.97	6930.24	104.81	6930.23
104.93	6930.22	105.07	6930.22	105.74	6930.2	106.17	6930.2	106.66	6930.18
106.94	6930.18	107.27	6930.17	107.58	6930.16	107.94	6930.16	108.37	6930.15
108.5	6930.14	108.95	6930.13	109.43	6930.12	109.47	6930.12	109.95	6930.11
110.35	6930.1	110.57	6930.1	110.95	6930.09	111.27	6930.08	111.67	6930.07
111.96	6930.07	112.19	6930.06	112.78	6930.05	112.96	6930.04	113.12	6930.04
113.88	6930.02	114.04	6930.02	114.87	6930	114.98	6930	115.88	6929.98
115.97	6929.98	116.08	6929.97	116.81	6929.96	116.98	6929.95	117.18	6929.94
117.73	6929.9	117.98	6929.87	118.28	6929.85	118.65	6929.81	118.98	6929.78
119.38	6929.75	119.57	6929.73	119.99	6929.69	120.48	6929.65	120.5	6929.65
120.99	6929.6	121.42	6929.56	121.59	6929.55	122	6929.51	122.34	6929.48
122.69	6929.45	123	6929.42	123.26	6929.4	123.79	6929.35	124	6929.33
124.18	6929.31	124.89	6929.25	125.01	6929.24	125.11	6929.23	125.99	6929.15
126.03	6929.15	126.24	6929.13	126.95	6929.06	127.02	6929.06	127.09	6929.05
127.87	6928.99	128.02	6928.98	128.19	6928.99	128.8	6929.15	129.02	6929.16
129.29	6929.21	129.72	6929.3	130.03	6929.37	130.39	6929.44	130.64	6929.49
131.03	6929.57	131.5	6929.67	131.56	6929.68	132.03	6929.78	132.49	6929.88
132.6	6929.9	133.04	6929.99	133.41	6930.07	133.7	6930.13	134.04	6930.2
134.33	6930.26	134.8	6930.35	135.05	6930.41	135.25	6930.45	135.9	6930.58
136.05	6930.61	136.18	6930.64	137	6930.81	137.05	6930.82	137.1	6930.83
137.6	6930.93	138.02	6931.02	138.06	6931.03	138.1	6931.04	138.94	6931.21
139.06	6931.24	139.2	6931.27	139.87	6931.4	140.07	6931.45	140.31	6931.5
140.79	6931.6	141.07	6931.67	141.41	6931.76	141.71	6931.84	142.07	6931.94
142.51	6932.06	142.63	6932.1	143.08	6932.22	143.56	6932.36	143.61	6932.37
144.08	6932.51	144.48	6932.62	144.71	6932.68	145.09	6932.79	145.4	6932.88
145.81	6932.99	146.09	6933.07	146.26	6933.11	146.32	6933.13	146.91	6933.3
147.09	6933.35	147.24	6933.39	148.01	6933.61	148.1	6933.63	148.17	6933.65
148.96	6933.87	149.09	6933.91	149.1	6933.91	149.11	6933.92	150	6933.92

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	42.09	.035	149.09	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	42.09	149.09		40.72 50.26	59.45		.1	.3

CROSS SECTION

Ex RAS Input Report.txt

RIVER: UT_BSC2
REACH: NCONFL-BGM

RS: 3450

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 419

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6934.24	.15	6934.24	.26	6934.25	.71	6934.24	1.19	6934.24
1.23	6934.23	2.12	6934.23	2.32	6934.22	2.71	6934.22	3.05	6934.21
3.41	6934.21	3.72	6934.2	3.98	6934.2	4.49	6934.19	4.72	6934.18
4.91	6934.18	5.58	6934.16	5.84	6934.16	6.67	6934.14	6.77	6934.14
7.41	6934.13	7.7	6934.12	7.75	6934.12	8.64	6934.1	8.84	6934.1
9.57	6934.08	9.93	6934.08	10.5	6934.07	10.74	6934.06	11.01	6934.06
11.43	6934.05	11.74	6934.04	12.09	6934.03	12.36	6934.03	12.74	6934.02
13.19	6934.01	13.29	6934.01	13.75	6934	14.22	6933.99	14.27	6933.99
14.75	6933.98	15.15	6933.97	15.36	6933.97	15.75	6933.96	16.08	6933.95
16.45	6933.95	16.75	6933.94	17.02	6933.93	17.54	6933.92	17.95	6933.92
18.62	6933.9	18.76	6933.9	18.88	6933.88	19.71	6933.76	19.76	6933.75
19.81	6933.74	20.41	6933.63	20.74	6933.57	20.77	6933.56	20.8	6933.56
21.67	6933.39	21.77	6933.38	21.88	6933.35	22.6	6933.22	22.77	6933.19
22.97	6933.16	23.53	6933.05	23.77	6933.02	24.06	6932.99	24.46	6932.95
24.78	6932.92	25.14	6932.89	25.4	6932.86	25.78	6932.83	26.23	6932.78
26.33	6932.78	26.78	6932.73	27.26	6932.69	27.32	6932.68	27.79	6932.64
28.19	6932.6	28.4	6932.58	28.79	6932.54	29.12	6932.51	29.49	6932.48
29.79	6932.45	30.05	6932.42	30.58	6932.37	30.8	6932.35	30.98	6932.34
31.66	6932.27	31.8	6932.26	31.91	6932.25	32.75	6932.17	32.8	6932.16
32.84	6932.16	33.41	6932.11	33.78	6932.07	33.84	6932.07	34.71	6931.98
34.81	6931.97	34.92	6931.96	35.64	6931.89	35.81	6931.88	36.01	6931.86
36.57	6931.81	36.81	6931.78	37.1	6931.76	37.5	6931.72	37.82	6931.69
38.19	6931.65	38.43	6931.64	38.82	6931.6	39.27	6931.56	39.36	6931.55
39.82	6931.51	40.29	6931.47	40.36	6931.47	40.83	6931.43	41.22	6931.39
41.45	6931.38	41.83	6931.34	42.16	6931.32	42.53	6931.28	42.83	6931.26
43.09	6931.24	43.62	6931.19	43.83	6931.17	44.02	6931.16	44.71	6931.1
44.84	6931.09	44.95	6931.08	45.79	6931.01	45.84	6931	45.88	6931
46.4	6930.96	46.81	6930.92	46.88	6930.92	47.74	6930.84	47.85	6930.84
47.97	6930.83	48.67	6930.77	48.85	6930.75	49.05	6930.73	49.6	6930.69
49.85	6930.67	50.14	6930.64	50.54	6930.61	50.85	6930.58	51.23	6930.55
51.47	6930.53	51.86	6930.5	52.31	6930.46	52.4	6930.45	52.86	6930.41
53.33	6930.37	53.4	6930.37	53.86	6930.33	54.26	6930.29	54.49	6930.27
54.87	6930.24	55.19	6930.22	55.57	6930.18	55.87	6930.16	56.12	6930.14
56.66	6930.09	56.87	6930.07	57.05	6930.06	57.75	6930	57.88	6929.99
57.98	6929.98	58.84	6929.91	58.88	6929.9	58.92	6929.9	59.4	6929.86
59.85	6929.82	59.92	6929.82	60.78	6929.74	60.88	6929.73	61.01	6929.72

Ex RAS Input Report.txt

61.71	6929.67	61.89	6929.65	62.1	6929.63	62.64	6929.59	62.89	6929.57
63.18	6929.54	63.57	6929.51	63.89	6929.48	64.27	6929.45	64.5	6929.43
64.9	6929.4	65.36	6929.36	65.43	6929.35	65.9	6929.31	66.37	6929.27
66.44	6929.27	66.9	6929.23	67.3	6929.19	67.53	6929.17	67.91	6929.14
68.23	6929.11	68.62	6929.08	68.91	6929.06	69.16	6929.04	69.7	6928.99
69.91	6928.97	70.09	6928.96	70.79	6928.9	70.91	6928.89	71.02	6928.88
71.88	6928.81	71.95	6928.81	72.4	6928.79	72.88	6928.78	72.96	6928.78
73.81	6928.76	73.92	6928.75	74.05	6928.75	74.75	6928.73	74.93	6928.73
75.14	6928.72	75.68	6928.71	75.93	6928.7	76.11	6928.69	76.22	6928.69
76.61	6928.68	76.93	6928.67	77.31	6928.66	77.54	6928.66	77.94	6928.64
78.4	6928.63	78.47	6928.63	78.94	6928.62	79.4	6928.6	79.49	6928.6
79.94	6928.59	80.33	6928.58	80.57	6928.57	80.94	6928.56	81.26	6928.55
81.66	6928.54	81.95	6928.53	82.19	6928.52	82.75	6928.51	82.95	6928.5
83.13	6928.5	83.83	6928.47	83.95	6928.47	84.06	6928.46	84.92	6928.43
84.96	6928.43	84.99	6928.42	85.4	6928.41	85.92	6928.39	85.96	6928.39
86.01	6928.38	86.85	6928.35	86.96	6928.35	87.09	6928.34	87.78	6928.31
87.96	6928.31	88.18	6928.3	88.71	6928.28	88.97	6928.27	89.27	6928.26
89.64	6928.24	89.97	6928.23	90.35	6928.21	90.57	6928.2	90.97	6928.19
91.44	6928.17	91.51	6928.17	91.98	6928.15	92.44	6928.13	92.53	6928.13
92.98	6928.11	93.37	6928.1	93.61	6928.09	93.98	6928.07	94.3	6928.06
94.7	6928.04	94.99	6928.03	95.23	6928.02	95.79	6928.09	95.99	6928.08
96.16	6928.12	96.87	6928.32	96.99	6928.35	97.09	6928.38	97.96	6928.62
97.99	6928.63	98.02	6928.64	98.39	6928.74	98.95	6928.9	99	6928.91
99.05	6928.93	99.89	6929.16	100	6929.19	100.13	6929.23	100.82	6929.42
101	6929.47	101.22	6929.53	101.75	6929.68	102.01	6929.75	102.31	6929.83
102.68	6929.94	103.01	6930.03	103.4	6930.14	103.61	6930.2	104.01	6930.31
104.48	6930.44	104.54	6930.46	105.02	6930.59	105.47	6930.71	105.57	6930.74
106.02	6930.87	106.4	6930.97	106.66	6931.04	107.02	6931.15	107.33	6931.23
107.74	6931.35	108.02	6931.43	108.27	6931.49	108.83	6931.63	109.03	6931.69
109.2	6931.73	109.55	6931.81	109.92	6931.9	110.03	6931.93	110.13	6931.96
111	6932.17	111.03	6932.18	111.06	6932.18	111.39	6932.26	111.99	6932.4
112.04	6932.42	112.09	6932.43	112.92	6932.63	113.04	6932.66	113.18	6932.68
113.85	6932.85	114.04	6932.88	114.26	6932.89	114.78	6932.93	115.05	6932.94
115.35	6932.95	115.71	6932.97	116.05	6932.99	116.44	6933	116.65	6933.01
117.05	6933.03	117.52	6933.06	117.58	6933.06	118.05	6933.08	118.51	6933.09
118.61	6933.11	119.06	6933.11	119.44	6933.12	119.7	6933.12	120.06	6933.13
120.78	6933.13	121.06	6933.14	121.3	6933.14	121.87	6933.15	122.23	6933.15
122.96	6933.16	123.16	6933.16	124.05	6933.17	124.39	6933.17	125.03	6933.18
125.13	6933.18	125.96	6933.19	126.22	6933.19	126.89	6933.2	127.31	6933.2
127.82	6933.21	128.39	6933.21	128.75	6933.22	129.68	6933.22	130.09	6933.23
130.61	6933.23	131.09	6933.24	131.65	6933.24	132.1	6933.25	132.47	6933.25
132.74	6933.26	133.41	6933.26	133.83	6933.27	134.34	6933.27	134.91	6933.28
135.27	6933.28	136	6933.29	136.2	6933.29	137.09	6933.3	137.39	6933.3
138.06	6933.31	138.17	6933.31	138.99	6933.32	139.26	6933.32	139.92	6933.33
140.35	6933.33	140.85	6933.34	141.43	6933.34	141.79	6933.35	142.13	6933.35
142.52	6933.36	143.13	6933.36	143.61	6933.37	144.13	6933.37	144.58	6933.38
145.13	6933.38	145.51	6933.39	146.14	6933.39	146.44	6933.4	147.37	6933.4
147.96	6933.41	148.3	6933.41	149.04	6933.42	150	6933.42		

Ex RAS Input Report.txt

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 0 .05 18.88 .035 114.78 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 18.88 114.78 75.69 100.23 119 .1 .3

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 3350

INPUT

Description: Source: Corrected Effective Topo
 Datum: NGVD29
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		492					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6932.84	.31	6932.84	.72	6932.83	1.27	6932.83	1.42	6932.82
1.58	6932.82	2.22	6932.81	2.53	6932.81	2.97	6932.8	3.4	6932.8
3.64	6932.79	3.89	6932.79	4.47	6932.78	4.75	6932.78	5.22	6932.77
5.85	6932.77	5.97	6932.76	6.72	6932.76	6.96	6932.75	7.47	6932.75
7.67	6932.74	8.22	6932.74	8.51	6932.73	8.96	6932.73	9.18	6932.72
9.8	6932.72	10.29	6932.71	10.46	6932.71	10.83	6932.7	11.21	6932.7
11.4	6932.69	11.93	6932.69	11.96	6932.68	12.51	6932.68	12.71	6932.67
13.14	6932.64	13.46	6932.63	13.62	6932.62	14.06	6932.59	14.21	6932.59
14.73	6932.56	14.96	6932.55	15.45	6932.52	15.71	6932.51	15.84	6932.5
16.19	6932.49	16.46	6932.48	16.94	6932.45	17.21	6932.44	17.76	6932.41
17.96	6932.4	18.05	6932.4	18.32	6932.39	18.71	6932.37	19.16	6932.35
19.46	6932.33	20.08	6932.3	20.27	6932.3	20.45	6932.29	20.96	6932.26
21.38	6932.24	21.71	6932.23	22.39	6932.2	22.46	6932.19	22.58	6932.19
23.21	6932.16	23.6	6932.14	23.96	6932.12	24.7	6932.09	24.72	6932.09
25.46	6932.06	25.82	6932.04	26.2	6932.02	26.85	6931.99	26.95	6931.99
27.01	6931.98	27.7	6931.95	28.04	6931.94	28.45	6931.92	28.98	6931.89
29.14	6931.88	29.33	6931.88	29.95	6931.85	30.25	6931.83	30.7	6931.81
31.11	6931.79	31.36	6931.78	31.45	6931.78	31.64	6931.77	32.2	6931.74
32.47	6931.73	32.95	6931.71	33.24	6931.69	33.58	6931.68	33.7	6931.67
33.95	6931.66	34.45	6931.64	34.69	6931.63	35.04	6931.61	35.2	6931.6
35.37	6931.59	35.8	6931.57	35.95	6931.57	36.26	6931.55	36.7	6931.53
36.91	6931.52	37.45	6931.5	37.5	6931.5	38.02	6931.47	38.2	6931.46
38.58	6931.45	38.95	6931.43	39.13	6931.42	39.63	6931.4	39.7	6931.39
40.24	6931.37	40.45	6931.36	40.89	6931.34	41.2	6931.32	41.34	6931.32
41.76	6931.26	41.95	6931.24	42.45	6931.18	43.2	6931.06	43.44	6931.02
43.56	6931	43.9	6930.95	44.19	6930.9	44.67	6930.82	44.94	6930.78
45.51	6930.69	45.69	6930.66	45.78	6930.65	46.03	6930.61	46.44	6930.54

Ex RAS Input Report.txt

46.89	6930.47	47.19	6930.42	47.83	6930.32	47.94	6930.31	48	6930.3
48.16	6930.27	48.69	6930.19	49.11	6930.12	49.44	6930.07	50.14	6929.96
50.19	6929.95	50.22	6929.95	50.29	6929.93	50.94	6929.83	51.33	6929.77
51.69	6929.71	52.42	6929.6	52.43	6929.59	52.45	6929.59	53.19	6929.48
53.54	6929.42	53.94	6929.36	54.55	6929.26	54.65	6929.24	54.69	6929.24
54.76	6929.23	55.44	6929.12	55.76	6929.07	56.19	6929	56.68	6928.92
56.87	6928.89	57.08	6928.86	57.69	6928.76	57.98	6928.72	58.44	6928.64
58.81	6928.58	59.09	6928.54	59.19	6928.53	59.39	6928.49	59.94	6928.41
60.2	6928.37	60.69	6928.29	60.94	6928.25	61.31	6928.19	61.43	6928.17
61.7	6928.13	62.18	6928.05	62.42	6928.01	62.93	6927.93	63.08	6927.91
63.53	6927.84	63.68	6927.82	64.01	6927.76	64.43	6927.69	64.63	6927.66
65.18	6927.59	65.21	6927.57	65.74	6927.49	65.93	6927.47	66.33	6927.41
66.68	6927.36	66.85	6927.33	67.34	6927.26	67.43	6927.26	67.96	6927.18
68.18	6927.15	68.64	6927.09	68.93	6927.06	69.07	6927.04	69.47	6926.99
69.68	6926.96	70.18	6926.89	70.43	6926.86	70.95	6926.79	71.18	6926.76
71.29	6926.75	71.6	6926.71	71.93	6926.67	72.4	6926.6	72.68	6926.57
73.16	6926.51	73.26	6926.49	73.43	6926.47	73.51	6926.46	73.73	6926.45
74.18	6926.41	75.72	6926.41	75.86	6926.42	76.43	6926.43	76.83	6926.44
77.18	6926.45	77.89	6926.47	77.99	6926.47	78.67	6926.5	79.05	6926.51
79.42	6926.52	80.12	6926.54	80.2	6926.54	80.92	6926.56	81.27	6926.57
81.67	6926.59	82.26	6926.6	82.38	6926.61	82.51	6926.61	83.17	6926.63
83.49	6926.64	83.92	6926.65	84.39	6926.67	84.6	6926.68	84.83	6926.68
85.42	6926.7	85.71	6926.71	86.17	6926.72	86.52	6926.73	86.82	6926.74
86.92	6926.75	87.14	6926.75	87.67	6926.77	87.92	6926.78	88.42	6926.81
88.65	6926.83	89.03	6926.86	89.17	6926.87	89.45	6926.89	89.92	6926.92
90.14	6926.94	90.67	6926.98	90.78	6926.98	91.25	6927.02	91.42	6927.03
91.76	6927.06	92.17	6927.09	92.36	6927.1	92.91	6927.14	93.47	6927.18
93.67	6927.2	94.08	6927.23	94.42	6927.25	94.58	6927.26	95.04	6927.3
95.17	6927.31	95.69	6927.35	95.91	6927.36	96.39	6927.4	96.66	6927.42
96.8	6927.43	97.17	6927.45	97.41	6927.47	97.91	6927.51	98.16	6927.53
98.7	6927.57	98.91	6927.58	99.01	6927.59	99.3	6927.61	99.66	6927.64
100.12	6927.67	100.41	6927.69	101.01	6927.74	101.16	6927.75	101.23	6927.75
101.43	6927.77	101.91	6927.8	102.34	6927.83	102.66	6927.86	103.33	6927.91
103.41	6927.91	103.45	6927.92	103.57	6927.92	104.16	6927.97	104.56	6928
104.91	6928.02	105.64	6928.08	105.7	6928.08	106.41	6928.13	106.78	6928.16
107.16	6928.19	107.83	6928.24	107.91	6928.24	107.95	6928.25	108.66	6928.3
109	6928.32	109.41	6928.35	109.96	6928.39	110.11	6928.4	110.16	6928.41
110.26	6928.42	110.91	6928.46	111.21	6928.49	111.66	6928.52	112.09	6928.55
112.32	6928.57	112.41	6928.57	112.58	6928.59	113.16	6928.63	113.43	6928.65
113.9	6928.68	114.22	6928.71	114.54	6928.73	114.65	6928.74	114.89	6928.76
115.4	6928.79	115.65	6928.81	116.15	6928.85	116.35	6928.86	116.76	6928.89
116.9	6928.9	117.2	6928.93	117.65	6928.96	117.87	6928.97	118.4	6929.01
118.48	6929.02	118.98	6929.06	119.15	6929.07	119.51	6929.09	119.9	6929.12
120.09	6929.14	120.61	6929.18	120.65	6929.18	121.2	6929.22	121.4	6929.23
121.83	6929.26	122.15	6929.29	122.3	6929.3	122.75	6929.33	122.9	6929.34
123.41	6929.38	123.65	6929.4	124.14	6929.43	124.4	6929.45	124.52	6929.46
124.88	6929.49	125.15	6929.51	125.63	6929.54	125.9	6929.55	126.45	6929.57
126.65	6929.58	126.74	6929.58	127.01	6929.59	127.4	6929.6	127.85	6929.61

Ex RAS Input Report.txt

128.15	6929.62	128.76	6929.64	128.96	6929.64	129.14	6929.65	129.65	6929.66
130.07	6929.67	130.4	6929.68	131.08	6929.7	131.14	6929.7	131.18	6929.71
131.27	6929.71	131.89	6929.73	132.29	6929.74	132.64	6929.75	133.39	6929.77
133.4	6929.77	134.14	6929.79	134.5	6929.8	134.89	6929.81	135.53	6929.83
135.7	6929.83	136.39	6929.85	136.72	6929.86	137.14	6929.87	137.66	6929.89
137.89	6929.89	138.01	6929.9	138.64	6929.92	138.94	6929.92	139.39	6929.94
139.79	6929.95	140.05	6929.95	140.14	6929.96	140.33	6929.96	140.89	6929.98
141.16	6929.99	141.64	6930	141.93	6930.01	142.27	6930.02	142.39	6930.02
142.64	6930.03	143.14	6930.04	143.38	6930.05	143.89	6930.06	144.06	6930.07
144.49	6930.08	144.64	6930.08	144.95	6930.09	145.39	6930.1	145.6	6930.11
146.14	6930.13	146.19	6930.13	146.7	6930.14	146.89	6930.15	147.26	6930.16
147.64	6930.17	147.81	6930.17	148.32	6930.19	148.38	6930.19	148.92	6930.2
149.13	6930.21	149.58	6930.22	149.88	6930.23	150.03	6930.24	150.45	6930.25
150.63	6930.25	151.14	6930.26	151.38	6930.27	151.89	6930.28	152.13	6930.29
152.25	6930.29	152.58	6930.3	152.88	6930.31	153.36	6930.32	153.63	6930.33
154.2	6930.34	154.38	6930.34	154.47	6930.35	154.71	6930.35	155.13	6930.36
155.58	6930.37	155.88	6930.38	156.51	6930.39	156.63	6930.4	156.84	6930.4
157.38	6930.41	157.79	6930.42	158.13	6930.43	158.83	6930.45	158.97	6930.45
159.63	6930.46	160.01	6930.47	160.38	6930.48	161.11	6930.5	161.14	6930.5
161.88	6930.52	162.23	6930.53	162.24	6930.53	162.63	6930.53	163.24	6930.55
163.45	6930.55	164.13	6930.57	164.45	6930.58	164.88	6930.59	165.37	6930.6
165.62	6930.6	165.76	6930.61	166.37	6930.62	166.67	6930.63	167.12	6930.64
167.5	6930.65	167.78	6930.65	167.87	6930.66	168.08	6930.66	168.62	6930.67
168.89	6930.68	169.23	6930.68						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	41.34	.035	125.63	.05

Bank	Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
	41.34	125.63	63.32	50.1	22.83		.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3300

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		491					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6931.23	1.4	6931.23	1.67	6931.22	4.09	6931.22	4.39	6931.21
6.77	6931.21	7.09	6931.2	8.56	6931.2	9.39	6931.19	10.44	6931.19
10.55	6931.18	11.25	6931.17	11.45	6931.16	11.7	6931.16	12.15	6931.15

Ex RAS Input Report.txt

12.45	6931.14	12.85	6931.13	13.04	6931.13	13.46	6931.12	13.94	6931.11
14	6931.11	14.47	6931.1	14.83	6931.09	15.48	6931.07	15.73	6931.07
16.31	6931.05	16.62	6931.05	17.46	6931.03	17.52	6931.03	17.71	6931.02
18.41	6931.01	18.5	6931	18.61	6931	19.31	6930.99	19.51	6930.98
19.77	6930.98	20.2	6930.97	20.52	6930.96	20.92	6930.95	21.1	6930.95
21.52	6930.94	21.99	6930.93	22.07	6930.92	22.53	6930.91	22.89	6930.91
23.54	6930.89	23.78	6930.89	24.38	6930.87	24.68	6930.87	25.53	6930.85
25.58	6930.84	25.73	6930.84	26.47	6930.82	26.68	6930.82	27.37	6930.8
27.57	6930.8	27.84	6930.79	28.26	6930.78	28.58	6930.78	28.99	6930.77
29.16	6930.76	30.05	6930.74	30.14	6930.74	30.6	6930.73	30.95	6930.72
31.29	6930.72	31.6	6930.71	31.84	6930.7	32.45	6930.69	32.61	6930.69
32.74	6930.68	33.6	6930.66	33.75	6930.66	34.53	6930.64	34.75	6930.64
35.42	6930.62	35.63	6930.62	35.91	6930.61	36.32	6930.6	36.64	6930.59
37.06	6930.59	37.21	6930.58	38.11	6930.56	38.21	6930.56	38.66	6930.55
39.36	6930.53	39.67	6930.53	39.9	6930.52	40.52	6930.51	40.67	6930.5
40.8	6930.5	41.67	6930.48	41.77	6930.48	42.59	6930.46	42.69	6930.46
42.82	6930.45	43.48	6930.44	43.7	6930.43	43.98	6930.43	44.38	6930.42
44.71	6930.41	44.98	6930.4	45.27	6930.4	46.17	6930.38	46.28	6930.38
46.72	6930.37	47.43	6930.35	47.73	6930.34	47.96	6930.34	48.59	6930.32
48.85	6930.32	49.74	6930.3	49.79	6930.3	50.64	6930.27	50.75	6930.27
50.89	6930.26	51.54	6930.19	51.76	6930.17	52.04	6930.14	52.44	6930.1
53.2	6930.03	53.33	6930.01	53.78	6929.97	54.23	6929.92	54.35	6929.91
54.78	6929.87	55.12	6929.8	55.5	6929.71	55.79	6929.65	56.02	6929.59
56.66	6929.42	56.91	6929.35	57.8	6929.11	58.7	6928.88	58.82	6928.85
58.96	6928.81	59.6	6928.64	60.11	6928.5	60.83	6928.31	61.39	6928.17
61.84	6928.05	62.28	6927.93	62.42	6927.89	62.85	6927.78	63.18	6927.69
63.57	6927.59	63.85	6927.51	64.07	6927.46	64.72	6927.28	64.86	6927.25
65.82	6926.99	65.88	6926.98	66.76	6926.75	67.03	6926.68	67.66	6926.51
67.89	6926.45	68.18	6926.37	68.55	6926.28	68.89	6926.19	69.34	6926.09
69.45	6926.09	69.9	6925.99	70.34	6925.9	70.49	6925.88	70.91	6925.8
71.24	6925.73	71.64	6925.66	71.92	6925.61	72.13	6925.57	72.79	6925.44
72.93	6925.42	73.14	6925.38	73.84	6925.24	73.92	6925.23	73.95	6925.22
74.82	6925.06	74.94	6925.04	75.1	6925.02	75.71	6924.9	75.95	6924.89
76.25	6924.9	76.96	6924.94	77.4	6924.96	77.5	6924.97	77.96	6924.99
78.4	6925.02	78.56	6925.03	78.97	6925.05	79.3	6925.07	79.71	6925.09
79.98	6925.1	80.19	6925.11	80.86	6925.15	80.99	6925.16	81.09	6925.16
82.02	6925.22	83	6925.3	83.17	6925.31	84.01	6925.38	84.32	6925.4
85.02	6925.46	85.47	6925.49	85.56	6925.5	86.03	6925.53	86.46	6925.57
86.63	6925.58	87.04	6925.61	87.35	6925.64	87.78	6925.67	88.04	6925.69
88.25	6925.71	88.93	6925.76	89.14	6925.78	89.88	6925.84	90.08	6925.85
90.93	6925.92	91.24	6925.94	92.07	6926.01	92.73	6926.05	93.08	6926.08
93.54	6926.11	93.62	6926.11	94.09	6926.15	94.52	6926.18	94.7	6926.19
95.1	6926.22	95.41	6926.24	95.85	6926.27	96.11	6926.29	96.31	6926.31
97	6926.35	97.2	6926.37	97.9	6926.42	98.1	6926.43	98.15	6926.44
99.13	6926.51	99.31	6926.52	99.89	6926.56	100.14	6926.58	100.78	6926.62
101.15	6926.65	101.61	6926.68	101.68	6926.69	102.15	6926.72	102.57	6926.75
102.76	6926.76	103.16	6926.79	103.92	6926.84	104.17	6926.86	104.36	6926.88
105.07	6926.93	105.18	6926.93	105.26	6926.94	105.92	6926.99	106.16	6927

Ex RAS Input Report.txt

106.22	6927.01	107.19	6927.08	107.38	6927.09	107.95	6927.13	108.2	6927.15
108.84	6927.19	109.21	6927.22	109.68	6927.25	109.74	6927.26	110.22	6927.29
110.63	6927.32	110.83	6927.33	111.22	6927.36	111.53	6927.38	111.99	6927.42
112.23	6927.43	112.42	6927.45	113.14	6927.5	113.24	6927.51	113.32	6927.51
113.94	6927.56	114.21	6927.58	114.25	6927.58	114.29	6927.59	115.11	6927.65
115.26	6927.67	115.45	6927.68	116	6927.73	116.26	6927.75	116.6	6927.78
116.9	6927.8	117.27	6927.83	117.75	6927.87	117.79	6927.88	118.28	6927.92
118.69	6927.95	118.9	6927.97	119.29	6928	119.59	6928.03	120.3	6928.09
120.48	6928.1	121.21	6928.16	121.38	6928.18	121.96	6928.23	122.27	6928.25
122.31	6928.26	122.36	6928.26	123.17	6928.33	123.32	6928.34	123.51	6928.36
124.33	6928.42	124.67	6928.45	124.96	6928.48	125.82	6928.55	125.85	6928.55
126.34	6928.59	126.75	6928.63	126.97	6928.65	127.35	6928.68	127.64	6928.7
128.13	6928.74	128.36	6928.76	128.54	6928.78	128.8	6928.8	129.28	6928.84
129.37	6928.85	129.43	6928.85	129.98	6928.9	130.33	6928.93	130.43	6928.93
131.22	6929	131.38	6929.01	131.58	6929.03	132.12	6929.08	132.39	6929.1
132.74	6929.13	133.02	6929.15	133.4	6929.18	133.89	6929.22	133.91	6929.23
134.41	6929.27	134.81	6929.29	135.04	6929.3	135.41	6929.33	135.7	6929.34
136.19	6929.34	136.42	6929.35	136.6	6929.35	137.35	6929.37	137.49	6929.37
138	6929.38	138.39	6929.39	138.5	6929.39	139.28	6929.4	139.44	6929.41
139.65	6929.41	140.18	6929.42	140.45	6929.42	140.81	6929.43	141.07	6929.44
141.46	6929.44	142.47	6929.46	142.86	6929.47	143.11	6929.47	143.48	6929.48
143.76	6929.49	144.26	6929.5	144.65	6929.5	145.42	6929.52	145.55	6929.52
146.02	6929.53	146.45	6929.54	146.57	6929.54	147.34	6929.57	147.51	6929.57
147.72	6929.58	148.24	6929.6	148.52	6929.61	148.87	6929.62	149.13	6929.63
149.52	6929.64	150.53	6929.68	150.92	6929.69	151.18	6929.7	151.54	6929.71
151.82	6929.72	152.33	6929.74	152.55	6929.75	152.71	6929.75	153.49	6929.78
153.61	6929.78	154.04	6929.8	154.5	6929.82	154.64	6929.82	155.4	6929.85
155.57	6929.85	155.79	6929.86	156.29	6929.88	156.58	6929.89	156.94	6929.9
157.19	6929.91	157.59	6929.92	158.1	6929.94	158.59	6929.96	158.98	6929.97
159.25	6929.98	159.6	6930	159.88	6930	160.4	6930.02	160.61	6930.03
160.77	6930.04	161.55	6930.06	161.62	6930.07	161.67	6930.07	162.05	6930.08
162.56	6930.1	162.71	6930.1	163.46	6930.13	163.63	6930.14	163.86	6930.14
164.35	6930.16	164.64	6930.17	165.01	6930.18	165.25	6930.19	165.65	6930.21
166.17	6930.22	166.66	6930.24	167.04	6930.26	167.32	6930.27	167.66	6930.28
168.47	6930.31	168.67	6930.31	168.83	6930.32	169.62	6930.35	169.72	6930.35
170.07	6930.36	170.62	6930.38	170.69	6930.38	170.78	6930.39	171.52	6930.41
171.7	6930.42	171.93	6930.43	172.41	6930.44	172.7	6930.45	173.08	6930.47
173.31	6930.48	173.71	6930.49	174.2	6930.51	174.24	6930.51	174.72	6930.52
175.1	6930.54	175.39	6930.55	175.73	6930.56	176.54	6930.59	176.74	6930.6
176.89	6930.6	177.69	6930.63	177.78	6930.63	178.68	6930.66	178.75	6930.67
178.85	6930.67	179.57	6930.69	179.76	6930.7	180.47	6930.73	180.77	6930.74
181.15	6930.75	181.36	6930.76	181.77	6930.77	182.26	6930.79	182.3	6930.79
182.78	6930.81	183.15	6930.82	183.79	6930.84	184.05	6930.85	184.61	6930.87
184.8	6930.88	184.95	6930.88	185.76	6930.91	185.84	6930.91	186.11	6930.92
186.74	6930.95	186.92	6930.95	187.63	6930.98	187.82	6930.98	188.07	6930.99
188.53	6931	188.83	6931.01	189.22	6931.03	189.42	6931.03	189.84	6931.05
190.32	6931.06	190.37	6931.06	190.85	6931.08	191.21	6931.09	191.85	6931.11
192	6931.11								

Ex RAS Input Report.txt

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 0 .05 53.78 .035 135.41 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 53.78 135.41 64.11 49.63 23.06 .1 .3

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 3250

INPUT

Description: Source: Corrected Effective Topo
 Datum: NGVD29
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		492					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6929.69	.07	6929.69	.5	6929.68	.68	6929.68	1.36	6929.67
1.59	6929.66	1.92	6929.66	2.22	6929.65	2.6	6929.65	3.09	6929.64
3.15	6929.64	3.62	6929.63	3.95	6929.63	4.38	6929.62	4.81	6929.62
5.62	6929.61	7.4	6929.61	7.68	6929.6	8.09	6929.59	8.26	6929.59
9.13	6929.57	9.32	6929.56	9.71	6929.55	9.99	6929.54	10.56	6929.53
10.73	6929.52	10.85	6929.52	11.54	6929.5	11.71	6929.49	11.79	6929.49
12.58	6929.47	12.76	6929.46	13.02	6929.46	13.44	6929.45	13.78	6929.44
14.26	6929.42	14.3	6929.42	14.79	6929.41	15.16	6929.4	15.81	6929.38
16.03	6929.38	16.73	6929.36	16.89	6929.36	17.27	6929.35	17.75	6929.34
17.84	6929.34	17.96	6929.33	18.61	6929.32	18.85	6929.31	19.2	6929.31
19.48	6929.3	19.87	6929.29	20.34	6929.28	20.43	6929.28	20.89	6929.27
21.2	6929.27	21.66	6929.26	21.9	6929.25	22.07	6929.25	22.9	6929.23
23	6929.23	23.79	6929.21	24.13	6929.21	24.65	6929.19	24.95	6929.19
25.37	6929.18	25.52	6929.18	26.38	6929.16	26.6	6929.15	26.98	6929.15
27.24	6929.14	27.84	6929.13	27.99	6929.13	28.1	6929.12	28.73	6929.11
28.97	6929.11	29.01	6929.1	29.07	6929.1	29.83	6929.09	30.03	6929.08
30.3	6929.08	30.69	6929.07	31.04	6929.06	32.06	6929.04	32.42	6929.03
32.77	6929.03	33.07	6929.02	33.28	6929.02	34.01	6929	34.14	6929
34.46	6928.99	35.01	6928.98	35.24	6928.98	35.87	6928.96	36.12	6928.96
36.48	6928.95	36.73	6928.95	37.13	6928.94	37.59	6928.93	37.71	6928.93
38.15	6928.92	38.46	6928.91	38.95	6928.9	39.17	6928.9	39.32	6928.89
40.18	6928.87	41.04	6928.86	41.2	6928.85	41.41	6928.85	41.91	6928.84
42.21	6928.83	42.65	6928.82	42.77	6928.82	43.23	6928.81	43.63	6928.8
43.88	6928.8	44.24	6928.79	44.5	6928.79	45.12	6928.77	45.36	6928.77
45.92	6928.76	46.22	6928.75	46.35	6928.75	47.08	6928.73	47.29	6928.73
47.59	6928.72	47.95	6928.71	48.31	6928.71	49.32	6928.69	49.67	6928.68
50.05	6928.67	50.34	6928.67	50.53	6928.66	50.59	6928.66	51.29	6928.65

Ex RAS Input Report.txt

51.35	6928.64	51.65	6928.64	52.26	6928.63	52.37	6928.62	52.52	6928.62
53.12	6928.61	53.38	6928.6	53.76	6928.59	53.99	6928.59	54.4	6928.58
54.85	6928.57	54.99	6928.57	55.41	6928.56	55.71	6928.54	56.23	6928.48
56.43	6928.46	56.57	6928.43	57.38	6928.21	57.44	6928.19	57.46	6928.19
58.3	6927.96	58.46	6927.92	58.69	6927.86	59.16	6927.73	59.48	6927.65
59.93	6927.52	60.02	6927.5	60.49	6927.37	60.89	6927.27	61.16	6927.19
61.51	6927.1	61.75	6927.04	62.4	6926.86	62.52	6926.83	62.61	6926.81
63.11	6926.68	63.48	6926.59	63.54	6926.57	63.63	6926.55	64.34	6926.39
64.87	6926.27	65.2	6926.2	65.57	6926.11	66.06	6926	66.1	6925.99
66.59	6925.88	66.93	6925.81	67.33	6925.71	67.6	6925.65	67.79	6925.61
68.57	6925.43	68.65	6925.41	68.84	6925.37	69.51	6925.22	69.63	6925.19
69.8	6925.15	70.38	6925.02	70.65	6924.96	71.04	6924.87	71.24	6924.83
71.66	6924.73	72.1	6924.63	72.27	6924.59	72.68	6924.5	72.96	6924.44
73.51	6924.31	73.7	6924.27	74.57	6924.07	74.69	6924.04	74.74	6924.04
75.39	6923.91	75.55	6923.88	75.73	6923.87	75.97	6923.89	76.42	6923.92
76.74	6923.95	77.21	6923.99	77.28	6924	77.76	6924.04	78.14	6924.07
78.44	6924.09	78.77	6924.12	79	6924.14	79.68	6924.19	79.79	6924.2
79.87	6924.21	80.3	6924.25	80.73	6924.28	80.8	6924.29	80.91	6924.3
81.59	6924.35	81.82	6924.37	82.15	6924.4	82.45	6924.42	82.84	6924.45
83.32	6924.49	83.38	6924.5	83.85	6924.54	84.18	6924.57	84.62	6924.6
84.87	6924.62	85.04	6924.64	85.85	6924.71	85.91	6924.71	86.03	6924.72
86.77	6924.8	86.9	6924.81	87.08	6924.83	87.63	6924.9	87.91	6924.93
88.32	6924.98	88.49	6925	88.93	6925.05	89.36	6925.11	89.55	6925.12
89.94	6925.17	90.22	6925.2	90.79	6925.26	90.96	6925.28	91.08	6925.29
91.76	6925.36	91.94	6925.38	92.02	6925.38	92.81	6925.46	93.26	6925.51
93.67	6925.55	94.01	6925.59	94.49	6925.64	94.53	6925.64	95.02	6925.69
95.39	6925.73	95.72	6925.76	96.04	6925.79	96.26	6925.82	96.96	6925.89
97.05	6925.9	97.12	6925.9	97.98	6925.99	98.07	6926	98.19	6926.01
98.85	6926.08	99.08	6926.11	99.43	6926.14	99.71	6926.17	100.1	6926.21
100.66	6926.27	101.12	6926.31	101.43	6926.35	101.9	6926.39	102.13	6926.42
102.3	6926.43	103.13	6926.52	103.16	6926.52	103.23	6926.53	104.02	6926.61
104.16	6926.62	104.36	6926.65	104.88	6926.7	105.18	6926.73	105.6	6926.77
105.75	6926.79	106.19	6926.83	106.61	6926.88	106.83	6926.9	107.21	6926.94
107.47	6926.97	108.07	6927.03	108.22	6927.04	108.34	6927.05	108.96	6927.12
109.2	6927.14	109.24	6927.15	109.3	6927.15	110.06	6927.23	110.26	6927.25
110.92	6927.32	111.27	6927.36	111.77	6927.41	111.79	6927.41	112.29	6927.46
112.65	6927.5	113	6927.54	113.3	6927.57	114.24	6927.66	114.32	6927.67
114.37	6927.68	114.69	6927.71	115.33	6927.78	115.47	6927.79	116.1	6927.86
116.35	6927.88	116.71	6927.92	116.96	6927.94	117.37	6927.99	117.82	6928.03
117.94	6928.04	118.38	6928.09	118.69	6928.12	119.18	6928.17	119.4	6928.19
119.55	6928.21	120.41	6928.3	120.42	6928.3	121.28	6928.39	121.43	6928.4
121.65	6928.43	122.14	6928.48	122.44	6928.51	122.82	6928.54	122.88	6928.55
123	6928.57	123.46	6928.61	123.86	6928.66	124.11	6928.68	124.47	6928.71
124.73	6928.74	125.35	6928.79	125.49	6928.8	125.59	6928.81	126.15	6928.86
126.45	6928.88	126.51	6928.88	126.58	6928.89	127.31	6928.95	127.52	6928.97
127.82	6928.99	128.54	6929.05	129.04	6929.08	129.05	6929.09	129.55	6929.12
129.9	6929.13	130.29	6929.14	130.57	6929.14	130.77	6929.15	131.52	6929.16
131.58	6929.16	131.63	6929.17	131.88	6929.17	132.49	6929.18	132.6	6929.18

Ex RAS Input Report.txt

132.75	6929.19	133.35	6929.2	133.61	6929.2	133.99	6929.21	134.22	6929.22
134.63	6929.22	135.08	6929.23	135.22	6929.24	135.65	6929.24	135.94	6929.25
136.46	6929.26	136.66	6929.26	136.8	6929.27	137.61	6929.28	137.69	6929.28
138.53	6929.3	138.69	6929.3	138.93	6929.31	139.39	6929.32	139.71	6929.32
140.16	6929.33	140.25	6929.34	140.72	6929.34	141.12	6929.35	141.39	6929.36
141.74	6929.36	141.98	6929.37	142.63	6929.38	142.75	6929.38	142.84	6929.39
143.34	6929.4	143.77	6929.4	143.86	6929.41	144.57	6929.42	144.79	6929.42
145.43	6929.44	145.8	6929.44	146.29	6929.45	146.33	6929.45	146.82	6929.46
147.16	6929.47	147.57	6929.48	147.83	6929.48	148.02	6929.49	148.8	6929.5
148.88	6929.5	149.07	6929.51	149.74	6929.52	149.86	6929.52	150.03	6929.53
150.61	6929.54	150.88	6929.54	151.27	6929.55	151.47	6929.56	151.89	6929.56
152.33	6929.57	152.5	6929.58	152.91	6929.58	153.2	6929.59	153.74	6929.6
153.93	6929.6	154.06	6929.61	154.8	6929.62	154.97	6929.62	155.78	6929.64
155.96	6929.64	156.21	6929.65	156.65	6929.66	156.97	6929.66	157.44	6929.67
157.51	6929.67	157.99	6929.68	158.37	6929.69	158.67	6929.7	159	6929.7
159.23	6929.71	159.91	6929.73	160.02	6929.73	160.1	6929.74	160.53	6929.75
160.96	6929.77	161.04	6929.77	161.14	6929.78	161.82	6929.8	162.05	6929.81
162.38	6929.83	162.68	6929.84	163.07	6929.85	163.55	6929.87	163.61	6929.87
164.08	6929.89	164.41	6929.9	164.85	6929.92	165.1	6929.93	165.27	6929.94
166.08	6929.97	166.14	6929.97	166.26	6929.98	167	6930	167.13	6930.01
167.32	6930.02	168.14	6930.05	168.55	6930.06	168.72	6930.07	169.16	6930.09
169.59	6930.1	170.18	6930.13	170.45	6930.14	171.02	6930.16	171.19	6930.17
171.31	6930.17	171.99	6930.2	172.17	6930.2	172.21	6930.21	172.25	6930.21
173.04	6930.24	173.05	6930.24						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	55.71	.035	128.54	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	55.71	128.54		50.23 50.23	50.23		.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3200

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		405					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6928.77	1.46	6928.77	1.7	6928.76	3.48	6928.76	3.97	6928.75
5.49	6928.75	5.8	6928.74	7.61	6928.74	8.5	6928.73	9.51	6928.73
9.64	6928.72	11.53	6928.72	11.91	6928.71	13.54	6928.71	13.94	6928.7

Ex RAS Input Report.txt

15.55	6928.7	15.75	6928.69	17.58	6928.69	18.46	6928.68	19.58	6928.68
19.85	6928.67	21.59	6928.67	22.08	6928.66	23.6	6928.66	23.88	6928.65
24.61	6928.65	24.79	6928.64	25.61	6928.64	25.69	6928.63	26.39	6928.61
26.6	6928.6	26.65	6928.6	27.5	6928.58	27.63	6928.57	27.78	6928.57
28.41	6928.55	28.63	6928.54	28.92	6928.53	29.31	6928.52	29.64	6928.51
30.05	6928.5	30.22	6928.49	30.65	6928.48	31.12	6928.47	31.19	6928.46
31.65	6928.45	32.02	6928.44	32.32	6928.43	32.66	6928.42	32.93	6928.41
33.46	6928.39	33.67	6928.39	33.83	6928.38	34.59	6928.36	34.67	6928.36
34.74	6928.35	35.32	6928.34	35.64	6928.33	35.68	6928.33	35.72	6928.32
36.55	6928.3	36.68	6928.29	36.86	6928.29	37.45	6928.27	37.69	6928.26
37.99	6928.25	38.36	6928.24	38.7	6928.23	39.13	6928.22	39.26	6928.22
39.7	6928.2	40.16	6928.19	40.26	6928.18	40.71	6928.17	41.07	6928.16
41.39	6928.14	41.72	6928.13	41.97	6928.12	42.53	6928.09	42.72	6928.08
42.88	6928.07	43.66	6928.04	43.73	6928.03	43.78	6928.03	44.25	6928.01
44.69	6927.99	44.74	6927.98	44.8	6927.98	45.59	6927.94	45.74	6927.93
45.93	6927.92	46.5	6927.9	46.75	6927.88	47.06	6927.87	47.4	6927.85
47.75	6927.83	47.88	6927.82	48.2	6927.81	48.3	6927.81	48.76	6927.78
49.21	6927.76	49.33	6927.76	49.77	6927.74	50.11	6927.72	50.47	6927.7
50.77	6927.69	51.02	6927.67	51.6	6927.65	51.78	6927.64	51.92	6927.63
52.74	6927.59	52.79	6927.59	52.83	6927.58	53.18	6927.55	53.73	6927.5
53.79	6927.5	53.87	6927.49	54.63	6927.36	54.8	6927.33	55	6927.3
55.54	6927.21	55.8	6927.17	56.14	6927.11	56.44	6927.06	56.81	6927
57.27	6926.92	57.35	6926.91	57.82	6926.83	58.25	6926.76	58.41	6926.74
58.82	6926.67	59.16	6926.61	59.54	6926.55	59.83	6926.5	60.06	6926.46
60.67	6926.36	60.84	6926.34	60.97	6926.31	61.81	6926.18	61.84	6926.17
61.87	6926.17	62.11	6926.13	62.77	6926.02	62.85	6926	62.94	6925.99
63.68	6925.87	63.86	6925.83	64.08	6925.79	64.58	6925.71	64.86	6925.65
65.21	6925.58	65.49	6925.53	65.87	6925.46	66.34	6925.36	66.39	6925.35
66.87	6925.26	67.3	6925.18	67.48	6925.14	67.88	6925.07	68.2	6925
68.61	6924.92	68.89	6924.87	69.11	6924.83	69.75	6924.7	69.89	6924.68
70.01	6924.65	70.88	6924.48	70.91	6924.48	71.04	6924.45	71.82	6924.3
71.91	6924.29	72.02	6924.26	72.72	6924.13	72.91	6924.09	73.15	6924.04
73.63	6923.95	73.92	6923.9	74.28	6923.82	74.53	6923.78	74.92	6923.7
75.42	6923.6	75.44	6923.6	75.93	6923.51	76.22	6923.48	76.34	6923.46
76.55	6923.46	76.94	6923.42	77.25	6923.41	77.69	6923.39	77.94	6923.39
78.15	6923.38	78.82	6923.35	79.05	6923.35	79.95	6923.32	79.97	6923.31
80.86	6923.28	81.09	6923.28	81.77	6923.25	81.97	6923.25	82.22	6923.24
82.67	6923.24	82.98	6923.23	83.36	6923.25	83.58	6923.23	83.98	6923.26
84.48	6923.32	84.49	6923.34	84.99	6923.4	85.38	6923.46	85.62	6923.5
85.99	6923.55	86.29	6923.6	86.76	6923.67	87	6923.71	87.19	6923.74
87.89	6923.84	88.01	6923.86	88.1	6923.88	88.91	6924	89	6924.01
89.01	6924.02	89.03	6924.02	89.91	6924.15	90.02	6924.17	90.16	6924.19
90.81	6924.29	91.03	6924.32	91.3	6924.36	91.72	6924.43	92.03	6924.47
92.43	6924.54	92.62	6924.56	93.04	6924.63	93.52	6924.7	93.56	6924.71
94.05	6924.78	94.43	6924.84	94.7	6924.88	95.05	6924.93	95.33	6924.98
95.83	6925.05	96.06	6925.09	96.24	6925.12	96.97	6925.23	97.06	6925.24
97.14	6925.25	97.84	6925.36	98.05	6925.39	98.07	6925.39	98.1	6925.4
98.95	6925.53	99.08	6925.55	99.23	6925.57	99.86	6925.66	100.08	6925.7

Ex RAS Input Report.txt

100.37	6925.74	100.76	6925.8	101.09	6925.85	101.5	6925.91	101.66	6925.93
102.1	6926	102.57	6926.07	102.64	6926.08	103.1	6926.15	103.47	6926.2
103.77	6926.25	104.11	6926.3	104.38	6926.34	104.91	6926.42	105.11	6926.45
105.28	6926.47	106.04	6926.59	106.12	6926.6	106.19	6926.61	106.77	6926.7
107.09	6926.74	107.13	6926.75	107.17	6926.76	108	6926.88	108.13	6926.9
108.31	6926.93	108.9	6927.02	109.14	6927.05	109.33	6927.08	109.44	6927.1
109.8	6927.15	110.15	6927.2	110.58	6927.27	110.71	6927.29	111.15	6927.35
111.61	6927.42	111.71	6927.44	112.16	6927.5	112.52	6927.56	112.84	6927.61
113.17	6927.65	113.42	6927.69	113.98	6927.78	114.17	6927.8	114.33	6927.83
115.11	6927.95	115.18	6927.96	115.23	6927.96	115.7	6927.98	116.13	6928
116.18	6928.01	116.25	6928.01	117.04	6928.04	117.19	6928.04	117.38	6928.05
117.94	6928.07	118.2	6928.08	118.51	6928.09	118.85	6928.1	119.2	6928.12
119.65	6928.13	119.75	6928.14	120.21	6928.15	120.66	6928.17	120.78	6928.18
121.22	6928.19	121.56	6928.2	121.92	6928.22	122.22	6928.23	122.47	6928.24
123.05	6928.26	123.23	6928.26	123.37	6928.27	124.19	6928.3	124.27	6928.3
124.63	6928.32	125.18	6928.34	125.32	6928.34	126.08	6928.37	126.25	6928.37
126.45	6928.38	126.99	6928.4	127.25	6928.41	127.59	6928.42	127.89	6928.43
128.26	6928.45	128.72	6928.46	128.8	6928.47	129.27	6928.49	129.7	6928.5
129.86	6928.51	130.27	6928.52	130.61	6928.53	130.99	6928.55	131.28	6928.56
131.51	6928.57	132.12	6928.59	132.29	6928.6	132.41	6928.6	133.26	6928.63
133.32	6928.63	133.56	6928.64	134.22	6928.67	134.39	6928.67	135.13	6928.7
135.3	6928.71	135.53	6928.71	136.03	6928.73	136.31	6928.74	136.66	6928.75
136.94	6928.76	137.32	6928.78	137.79	6928.8	137.84	6928.8	138.32	6928.82
138.75	6928.83	138.93	6928.84	139.33	6928.85	139.65	6928.86	140.06	6928.88
140.34	6928.89	140.55	6928.9	141.2	6928.92	141.34	6928.93	141.46	6928.93
142.33	6928.96	142.36	6928.96	142.49	6928.97	143.27	6928.99	143.36	6929
143.47	6929	144.17	6929.02	144.36	6929.02	144.6	6929.03	145.08	6929.04
145.37	6929.05	145.73	6929.06	145.98	6929.07	146.37	6929.08	146.87	6929.09
146.88	6929.09	147.38	6929.11	147.79	6929.12	148	6929.12	148.39	6929.13
148.69	6929.14	149.14	6929.15	149.39	6929.16	149.6	6929.17	150	6929.17

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	51.92	.035	115.18	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	51.92	115.18		50.08	50.08		.1	.3

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 3150

INPUT
 Description: Source: Corrected Effective Topo
 Datum: NGVD29
 Coordinate

Ex RAS Input Report.txt

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 431

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6927.71	.14	6927.71	.51	6927.7	.85	6927.69	1.28	6927.68
1.42	6927.68	1.86	6927.66	2.32	6927.65	2.41	6927.65	2.86	6927.64
3.23	6927.63	3.54	6927.62	3.87	6927.61	4.13	6927.6	4.68	6927.59
4.88	6927.58	5.03	6927.58	5.81	6927.56	5.88	6927.55	5.94	6927.55
6.44	6927.54	6.84	6927.53	6.95	6927.53	7.75	6927.5	7.9	6927.5
8.08	6927.49	8.65	6927.48	8.9	6927.47	9.21	6927.46	9.56	6927.45
9.91	6927.44	10.35	6927.43	10.46	6927.43	10.91	6927.42	11.37	6927.4
11.48	6927.4	11.92	6927.39	12.27	6927.38	12.62	6927.37	12.93	6927.36
13.17	6927.36	13.75	6927.34	13.93	6927.33	14.08	6927.33	14.89	6927.31
14.98	6927.31	15.37	6927.3	15.89	6927.28	16.02	6927.28	16.79	6927.26
16.95	6927.25	17.15	6927.25	17.7	6927.23	17.96	6927.22	18.29	6927.22
18.6	6927.21	18.97	6927.2	19.42	6927.18	19.51	6927.18	19.97	6927.17
20.41	6927.16	20.56	6927.15	20.98	6927.14	21.31	6927.13	21.69	6927.12
21.98	6927.11	22.22	6927.11	22.82	6927.09	22.99	6927.09	23.12	6927.08
23.96	6927.06	24.03	6927.06	24.3	6927.05	24.93	6927.03	25.09	6927.03
25.84	6927.01	26.01	6927	26.23	6927	26.74	6926.98	27.02	6926.98
27.36	6926.97	27.65	6926.96	28.02	6926.95	28.49	6926.94	28.55	6926.94
29.03	6926.92	29.45	6926.91	29.63	6926.91	30.03	6926.89	30.36	6926.89
30.76	6926.87	31.04	6926.87	31.26	6926.86	31.9	6926.84	32.17	6926.84
33.03	6926.81	33.23	6926.81	33.98	6926.79	34.06	6926.79	34.17	6926.78
34.88	6926.76	35.07	6926.76	35.3	6926.75	35.78	6926.74	36.07	6926.73
36.43	6926.72	36.69	6926.71	37.08	6926.7	37.57	6926.69	37.59	6926.68
38.09	6926.67	38.5	6926.66	38.7	6926.65	39.09	6926.64	39.4	6926.63
39.84	6926.62	40.1	6926.61	40.31	6926.61	40.97	6926.59	41.1	6926.58
41.21	6926.58	42.1	6926.55	42.16	6926.55	43.02	6926.53	43.12	6926.52
43.24	6926.52	43.92	6926.5	44.12	6926.49	44.37	6926.49	44.83	6926.47
45.13	6926.46	45.51	6926.45	45.77	6926.45	46.14	6926.43	46.64	6926.42
47.14	6926.4	47.54	6926.39	47.78	6926.39	48.15	6926.38	48.45	6926.37
48.91	6926.35	49.16	6926.35	49.35	6926.34	50.04	6926.32	50.16	6926.32
50.26	6926.31	51.09	6926.29	51.18	6926.29	52.06	6926.2	52.17	6926.19
52.31	6926.17	52.97	6926.05	53.18	6926.02	53.45	6925.97	53.87	6925.89
54.19	6925.84	54.58	6925.77	54.78	6925.73	55.19	6925.66	55.68	6925.57
55.71	6925.57	56.2	6925.48	56.59	6925.41	56.85	6925.36	57.21	6925.3
57.49	6925.25	57.98	6925.16	58.21	6925.12	58.4	6925.08	59.12	6924.95
59.22	6924.93	59.3	6924.92	60.02	6924.78	60.2	6924.75	60.22	6924.75
60.25	6924.74	61.11	6924.59	61.23	6924.56	61.38	6924.53	62.01	6924.42
62.24	6924.38	62.52	6924.33	62.92	6924.25	63.24	6924.19	63.65	6924.12
63.82	6924.09	64.25	6924.01	64.73	6923.92	64.79	6923.91	65.26	6923.83
65.63	6923.76	65.92	6923.7	66.26	6923.64	66.53	6923.59	67.06	6923.5
67.27	6923.46	67.44	6923.43	68.19	6923.29	68.28	6923.27	68.34	6923.27
68.95	6923.2	69.25	6923.17	69.32	6923.17	70.15	6923.18	70.29	6923.19
70.46	6923.19	71.06	6923.2	71.29	6923.2	71.59	6923.21	71.96	6923.22
72.3	6923.22	72.73	6923.23	72.87	6923.23	73.31	6923.24	73.77	6923.25
73.86	6923.25	74.31	6923.26	74.67	6923.27	74.99	6923.27	75.32	6923.28
75.58	6923.29	76.13	6923.3	76.48	6923.3	77.26	6923.32	77.39	6923.32

Ex RAS Input Report.txt

77.88	6923.33	78.29	6923.34	78.4	6923.34	79.2	6923.35	79.34	6923.36
79.53	6923.36	80.1	6923.37	80.35	6923.38	80.66	6923.38	81.01	6923.39
81.36	6923.39	81.8	6923.4	81.91	6923.4	82.36	6923.41	82.81	6923.42
82.93	6923.42	83.37	6923.43	83.72	6923.44	84.07	6923.45	84.38	6923.45
84.62	6923.46	85.2	6923.47	85.53	6923.47	86.34	6923.49	86.43	6923.49
86.81	6923.5	87.34	6923.51	87.47	6923.51	88.24	6923.52	88.4	6923.53
88.6	6923.53	89.15	6923.54	89.41	6923.55	89.74	6923.55	90.05	6923.56
90.41	6923.56	90.87	6923.57	90.95	6923.57	91.42	6923.58	91.86	6923.59
92.01	6923.59	92.43	6923.6	92.76	6923.61	93.14	6923.62	93.67	6923.62
94.27	6923.64	94.57	6923.64	95.41	6923.65	95.74	6923.65	96.38	6923.66
97.28	6923.66	97.46	6923.67	98.47	6923.67	98.81	6923.7	99.09	6923.69
99.47	6923.72	99.94	6923.82	100	6923.83	100.48	6923.93	100.9	6924.02
101.08	6924.05	101.48	6924.13	101.81	6924.2	102.21	6924.28	102.49	6924.34
102.71	6924.39	103.35	6924.52	103.5	6924.55	103.62	6924.57	104.48	6924.76
104.52	6924.76	104.67	6924.8	105.42	6924.95	105.51	6924.97	105.62	6924.99
106.33	6925.14	106.52	6925.18	106.55	6925.19	106.75	6925.23	107.23	6925.33
107.52	6925.39	107.88	6925.47	108.14	6925.52	108.53	6925.6	109.02	6925.71
109.04	6925.71	109.53	6925.81	109.95	6925.9	110.15	6925.94	110.54	6926.02
110.85	6926.09	111.29	6926.18	111.55	6926.24	111.76	6926.27	112.42	6926.38
112.55	6926.4	112.66	6926.41	113.55	6926.47	113.56	6926.47	113.6	6926.48
114.47	6926.54	114.57	6926.54	114.69	6926.55	115.37	6926.6	115.57	6926.61
115.82	6926.63	116.28	6926.66	116.58	6926.68	116.96	6926.71	117.18	6926.73
117.59	6926.76	118.09	6926.79	118.59	6926.83	118.99	6926.85	119.23	6926.87
119.6	6926.9	119.9	6926.92	120.36	6926.95	120.6	6926.97	120.8	6926.98
121.49	6927.03	121.61	6927.04	121.7	6927.05	122.53	6927.1	122.61	6927.11
122.63	6927.11	123.51	6927.17	123.62	6927.18	123.76	6927.19	124.42	6927.24
124.63	6927.25	124.9	6927.27	125.32	6927.3	125.64	6927.32	126.03	6927.35
126.23	6927.36	126.64	6927.39	127.13	6927.43	127.16	6927.43	127.65	6927.46
128.04	6927.49	128.3	6927.51	128.65	6927.53	128.94	6927.55	129.43	6927.59
129.66	6927.61	129.84	6927.62	130.57	6927.67	130.67	6927.68	130.75	6927.68
131.46	6927.73	131.65	6927.75	131.7	6927.75	132.56	6927.81	132.68	6927.82
132.83	6927.83	133.46	6927.87	133.69	6927.89	133.97	6927.91	134.37	6927.94
134.69	6927.96	135.1	6927.98	135.27	6928	135.7	6928.02	136.17	6928.05
136.24	6928.04	136.71	6928.07	137.08	6928.09	137.37	6928.1	137.71	6928.11
137.98	6928.12	138.51	6928.14	138.72	6928.15	138.89	6928.15	139.64	6928.18
139.72	6928.18	139.79	6928.19	140.4	6928.21	140.7	6928.22	140.77	6928.22
141.6	6928.25	141.74	6928.26	141.91	6928.27	142.51	6928.29	142.74	6928.3
143.04	6928.31	143.41	6928.32	143.75	6928.33	144.18	6928.35	144.31	6928.36
144.76	6928.37	145.22	6928.39	145.31	6928.39	145.76	6928.41	146.12	6928.42
146.44	6928.44	146.77	6928.45	147.03	6928.46	147.58	6928.48	147.78	6928.48
147.93	6928.49	148.71	6928.52	148.84	6928.52	149.33	6928.54	149.74	6928.56
150	6928.56								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	51.18	.035	111.76	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Ex RAS Input Report.txt

51.18 111.76

39.96 50.14 58.01

.1

.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3100

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6928.19	.15	6928.19	.58	6928.18	.85	6928.18	1.08	6928.17
1.67	6928.16	2.01	6928.16	2.76	6928.15	2.86	6928.14	2.93	6928.14
3.9	6928.13	4.79	6928.11	4.95	6928.11	5.72	6928.1	5.87	6928.1
6.04	6928.09	6.65	6928.08	6.87	6928.08	7.13	6928.07	7.57	6928.07
7.87	6928.06	8.22	6928.06	8.5	6928.05	8.88	6928.05	9.32	6928.04
9.43	6928.04	10.36	6928.02	10.88	6928.01	11.28	6928.01	11.5	6928
11.89	6928	12.21	6927.99	12.59	6927.98	13.14	6927.98	13.68	6927.97
13.89	6927.96	14.07	6927.96	14.78	6927.95	14.89	6927.95	15	6927.94
15.92	6927.93	16.24	6927.92	16.85	6927.91	16.96	6927.91	17.78	6927.9
17.9	6927.9	18.05	6927.89	18.71	6927.88	19.14	6927.88	19.64	6927.87
19.91	6927.86	20.24	6927.86	20.56	6927.85	20.91	6927.85	21.33	6927.84
21.49	6927.84	21.92	6927.83	22.92	6927.81	23.35	6927.81	23.51	6927.8
23.92	6927.8	24.27	6927.79	24.6	6927.79	24.93	6927.78	25.2	6927.78
25.7	6927.77	25.93	6927.76	26.13	6927.76	26.79	6927.75	27.06	6927.75
27.88	6927.73	27.99	6927.73	28.58	6927.72	28.91	6927.72	28.97	6927.71
29.84	6927.7	30.07	6927.7	30.77	6927.68	31.16	6927.68	31.7	6927.67
31.95	6927.66	32.25	6927.66	32.63	6927.65	32.95	6927.65	33.34	6927.64
33.55	6927.64	33.96	6927.63	34.43	6927.62	34.96	6927.62	35.41	6927.61
35.53	6927.61	36.34	6927.59	36.62	6927.59	36.97	6927.58	37.26	6927.58
37.71	6927.57	37.97	6927.57	38.19	6927.56	38.8	6927.55	39.12	6927.55
39.89	6927.53	40.05	6927.53	40.92	6927.52	40.99	6927.52	41.9	6927.5
42.08	6927.5	42.83	6927.49	42.99	6927.48	43.17	6927.48	43.76	6927.47
44.26	6927.45	44.69	6927.43	44.99	6927.41	45.35	6927.4	45.62	6927.38
46	6927.36	46.45	6927.34	46.54	6927.34	47	6927.31	47.47	6927.29
47.54	6927.29	48	6927.26	48.4	6927.25	48.63	6927.23	49.01	6927.21
49.33	6927.2	49.72	6927.18	50.25	6927.16	50.82	6927.14	51.01	6927.14
51.18	6927.13	51.91	6927.11	52.02	6927.1	52.11	6927.1	53	6927.07
53.26	6927.06	53.97	6927.04	54.09	6927.03	54.89	6927.01	55.03	6927
55.18	6927	55.82	6926.97	56.03	6926.97	56.75	6926.94	57.03	6926.93
57.68	6926.91	58.04	6926.9	58.46	6926.89	58.61	6926.88	59.04	6926.87
60.04	6926.83	60.46	6926.82	60.64	6926.81	61.05	6926.8	61.74	6926.78
62.05	6926.76	62.32	6926.76	62.83	6926.74	63.24	6926.72	63.92	6926.7
64.06	6926.7	64.17	6926.69	65.01	6926.66	65.1	6926.66	65.6	6926.64

Ex RAS Input Report.txt

66.03	6926.63	66.1	6926.63	66.96	6926.6	67.07	6926.59	67.2	6926.59
67.88	6926.57	68.29	6926.55	68.81	6926.54	69.38	6926.52	69.74	6926.5
70.47	6926.48	70.67	6926.47	71.08	6926.46	71.56	6926.44	72.08	6926.43
72.52	6926.41	72.66	6926.41	73.09	6926.39	73.45	6926.38	74.38	6926.35
75.09	6926.32	75.31	6926.32	75.93	6926.3	76.23	6926.28	77.03	6926.26
77.1	6926.26	77.16	6926.25	77.94	6926.23	78.12	6926.22	79.02	6926.19
79.11	6926.19	79.21	6926.18	79.95	6926.16	80.11	6926.15	80.3	6926.15
80.87	6926.13	81.39	6926.11	81.8	6926.1	82.12	6926.09	82.49	6926.07
82.73	6926.07	83.12	6926.05	83.58	6926.04	83.66	6926.03	84.12	6926.02
84.59	6926	84.67	6926	85.13	6925.98	85.51	6925.97	85.76	6925.96
86.13	6925.95	86.44	6925.94	86.85	6925.93	87.37	6925.91	87.95	6925.89
88.14	6925.88	88.3	6925.88	89.04	6925.85	89.22	6925.85	90.13	6925.82
90.15	6925.81	90.28	6925.81	91.08	6925.78	91.22	6925.78	92.01	6925.75
92.15	6925.75	92.31	6925.74	92.94	6925.72	93.41	6925.7	93.86	6925.69
94.5	6925.67	94.79	6925.66	95.16	6925.65	95.21	6925.65	95.59	6925.63
95.72	6925.63	96.16	6925.61	96.65	6925.59	97.17	6925.58	97.58	6925.56
97.77	6925.56	98.17	6925.54	98.87	6925.52	99.17	6925.51	99.96	6925.48
100.18	6925.48	100.36	6925.47	101.05	6925.45	101.29	6925.43	102.14	6925.33
102.62	6925.26	103.14	6925.18	103.24	6925.16	104.07	6925.03	104.33	6924.99
105	6924.89	105.19	6924.85	105.42	6924.81	105.93	6924.73	106.2	6924.68
106.51	6924.62	106.85	6924.55	107.6	6924.4	107.78	6924.37	108.2	6924.29
108.7	6924.19	108.71	6924.19	109.2	6924.09	109.64	6924.01	109.79	6923.98
110.21	6923.9	110.88	6923.77	111.21	6923.7	111.49	6923.65	111.97	6923.56
112.21	6923.51	113.22	6923.32	113.35	6923.29	114.16	6923.13	114.28	6923.11
114.96	6922.98	115.25	6922.92	116.34	6922.71	117.06	6922.57	117.23	6922.54
117.99	6922.39	118.23	6922.35	118.52	6922.29	118.92	6922.21	119.24	6922.15
119.62	6922.15	119.84	6922.12	120.24	6922.13	120.71	6922.15	120.77	6922.15
121.7	6922.19	121.8	6922.19	122.25	6922.21	122.63	6922.23	122.89	6922.24
123.25	6922.25	123.56	6922.27	123.98	6922.28	124.25	6922.3	124.48	6922.31
125.08	6922.33	125.26	6922.34	125.41	6922.34	126.17	6922.38	126.34	6922.38
127.26	6922.42	127.3	6922.43	128.19	6922.46	128.27	6922.47	128.35	6922.47
128.58	6922.48	129.12	6922.5	129.45	6922.52	130.05	6922.52	130.54	6922.54
130.98	6922.54	131.28	6922.55	131.91	6922.55	132.28	6922.56	132.83	6922.56
133.76	6922.58	134.29	6922.58	134.69	6922.59	135.29	6922.59	135.62	6922.6
136.29	6922.6	136.55	6922.61	137.09	6922.61	137.3	6922.62	137.47	6922.62
138.18	6922.63	138.4	6922.63	139.27	6922.64	139.64	6922.64	140.26	6922.65
140.37	6922.65	141.18	6922.66	141.31	6922.66	141.46	6922.67	142.11	6922.67
142.31	6922.68	143.04	6922.68	143.32	6922.69	143.64	6922.69	143.97	6922.7
144.73	6922.7	144.9	6922.71	145.32	6922.71	145.82	6922.72	146.33	6922.72
146.75	6922.73	146.92	6922.73	147.33	6922.74	148.01	6922.74	148.33	6922.75
148.61	6922.75	149.1	6922.76	149.54	6922.76	150.19	6922.77	150.46	6922.77
151.29	6922.78	151.39	6922.78	151.98	6922.79	152.38	6922.79	153.25	6922.8
153.35	6922.81	153.47	6922.81	154.17	6922.82	154.56	6922.82	155.1	6922.83
155.36	6922.83	155.66	6922.88	156.03	6922.91	156.75	6923.04	156.96	6923.07
157.36	6923.15	157.84	6923.23	158.37	6923.33	158.81	6923.41	158.93	6923.43
159.37	6923.51	159.74	6923.58	160.02	6923.63	160.67	6923.74	161.12	6923.82
161.38	6923.87	162.21	6924.02	162.38	6924.05	162.53	6924.08	162.73	6924.12
163.3	6924.22	163.38	6924.24	163.45	6924.25	164.32	6924.42	164.39	6924.43

Ex RAS Input Report.txt

165.31	6924.62	165.48	6924.66	166.39	6924.84	167.4	6925.05	167.67	6925.1
168.09	6925.19	168.4	6925.25	168.76	6925.3	169.02	6925.34	169.4	6925.38
169.95	6925.43	170.41	6925.46	170.88	6925.5	170.94	6925.5	171.41	6925.54
171.8	6925.57	172.41	6925.62	172.73	6925.64	173.13	6925.67	173.42	6925.69
173.66	6925.71	174.22	6925.75	174.42	6925.77	174.59	6925.78	175.31	6925.84
175.42	6925.85	175.52	6925.85	176.41	6925.92	176.44	6925.93	176.66	6925.94
177.37	6926	177.43	6926	177.5	6926.01	178.43	6926.08	178.59	6926.09
179.23	6926.14	179.44	6926.16	179.68	6926.18	180.15	6926.21	180.44	6926.23
180.77	6926.26	181.08	6926.28	181.44	6926.31	182.01	6926.35	182.45	6926.39
182.94	6926.43	182.96	6926.43	183.45	6926.47	183.87	6926.5	184.05	6926.51
184.45	6926.54	185.14	6926.6	185.46	6926.62	186.23	6926.68	186.46	6926.7
186.65	6926.71	187.46	6926.77	188.42	6926.85	188.51	6926.85	189	6926.89
189.43	6926.93	189.51	6926.93	190.6	6927.02	191.29	6927.07	191.48	6927.09
191.69	6927.1	192.48	6927.16	192.79	6927.19	193.15	6927.22	193.48	6927.24
193.88	6927.27	194.07	6927.29	194.49	6927.32	194.97	6927.36	195	6927.36
195.49	6927.4	196.06	6927.44	196.49	6927.48	196.86	6927.51	197.15	6927.53
197.5	6927.56	197.78	6927.57	198.25	6927.59	198.5	6927.61	199.64	6927.61
200.43	6927.62	200.66	6927.62						

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
0	.05	100.36	.035
		169.02	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	100.36	169.02		33.13	33.13	.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3050

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 25	
Sta	Elev	Sta	Elev
-6.37	6927.39	2.14	6927.27
33.84	6926.18	42.43	6925.86
65.26	6923.3	74.15	6921.58
105.87	6921.74	108.65	6921.76
128.84	6924.75	130.4	6924.89
		142.64	6925.7
		147.29	6926.02
		156.89	6926.65

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
-6.37	.035	56.26	.035
		128.84	.035

Ex RAS Input Report.txt

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
56.26	128.84	75.27	75.27	75.27		.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3000

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 491

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-79.24	6927.64	-78.83	6927.63	-77.35	6927.63	-77.05	6927.62	-76.04	6927.62
-75.64	6927.61	-74.52	6927.61	-74.04	6927.6	-72.62	6927.6	-72.44	6927.59
-71.04	6927.59	-70.73	6927.58	-69.79	6927.58	-69.24	6927.57	-67.9	6927.57
-66.05	6927.55	-64.98	6927.55	-64.12	6927.54	-63.02	6927.54	-62.85	6927.53
-61.78	6927.53	-61.28	6927.52	-60.02	6927.52	-59.65	6927.51	-58.45	6927.51
-58.01	6927.5	-57.01	6927.5	-56.56	6927.49	-55.39	6927.49	-55.01	6927.48
-53.72	6927.48	-53.26	6927.47	-52.19	6927.47	-52	6927.46	-50.89	6927.46
-48.05	6927.43	-46.99	6927.43	-46.87	6927.42	-45.8	6927.42	-45.21	6927.41
-44.74	6927.41	-44.27	6927.4	-43.32	6927.4	-42.99	6927.39	-41.98	6927.39
-41.54	6927.38	-40.98	6927.38	-40.49	6927.37	-39.54	6927.37	-39.41	6927.36
-38.34	6927.36	-37.98	6927.35	-36.97	6927.35	-36.71	6927.34	-35.76	6927.34
-34.08	6927.32	-33.01	6927.31	-31.95	6927.31	-30.88	6927.3	-29.15	6927.28
-28.75	6927.28	-27.96	6927.27	-27.69	6927.26	-26.96	6927.26	-26.62	6927.25
-25.96	6927.25	-24.95	6927.23	-24.42	6927.23	-23.95	6927.22	-23.42	6927.22
-22.95	6927.21	-22.36	6927.21	-21.95	6927.2	-21.29	6927.2	-20.95	6927.19
-20.23	6927.18	-19.69	6927.18	-19.16	6927.17	-18.75	6927.17	-18.1	6927.16
-15.91	6927.14	-15.51	6927.13	-14.9	6927.13	-13.08	6927.11	-12.77	6927.1
-11.93	6927.1	-11.7	6927.09	-11.19	6927.09	-10.93	6927.08	-10.24	6927.08
-9.93	6927.07	-9.3	6927.07	-8.92	6927.06	-8.35	6927.06	-7.92	6927.05
-7.41	6927.05	-6.92	6927.04	-6.37	6927.04	-5.92	6927.03	-5.52	6927.03
-5.31	6927.02	-4.57	6927.02	-4.24	6927.01	-3.63	6927.01	-3.18	6927
-2.68	6927	1.1	6926.96	1.22	6926.95	2.1	6926.95	2.15	6926.94
2.99	6926.94	3.1	6926.93	3.94	6926.93	4.1	6926.92	4.88	6926.92
5.1	6926.91	5.83	6926.91	6.1	6926.9	6.77	6926.9	7.1	6926.89
7.72	6926.89	8.11	6926.88	8.66	6926.88	9.61	6926.86	10.11	6926.86
10.55	6926.85	11.12	6926.85	11.39	6926.84	12.99	6926.82	13.22	6926.82
14.26	6926.8	15.39	6926.79	16.19	6926.77	16.68	6926.77	17.4	6926.75
17.79	6926.75	18.36	6926.7	18.54	6926.7	19.29	6926.62	20.71	6926.49
20.95	6926.46	22.29	6926.35	23.79	6926.21	24.54	6926.15	25.14	6926.09
25.59	6926.06	27.54	6925.88	28.29	6925.82	28.97	6925.76	29.57	6925.7
29.79	6925.69	30.68	6925.61	31.29	6925.55	32.04	6925.49	33.22	6925.38

Ex RAS Input Report.txt

33.54	6925.36	34.01	6925.31	34.29	6925.29	35.79	6925.16	37.19	6925.03
38.04	6924.96	38.44	6924.92	39.51	6924.83	39.58	6924.82	41.04	6924.7
42.87	6924.53	43.29	6924.5	44.01	6924.43	44.15	6924.42	44.79	6924.37
46.29	6924.23	47.04	6924.17	47.31	6924.14	48.54	6924.04	48.79	6924.01
49.52	6923.95	50.2	6923.88	51.11	6923.8	51.54	6923.75	53.43	6923.55
53.79	6923.52	55.06	6923.38	56.03	6923.28	56.56	6923.22	58.07	6923.07
58.28	6923.04	59.03	6922.97	59.78	6922.89	60.81	6922.77	61.71	6922.64
62.03	6922.6	62.78	6922.49	63.53	6922.39	63.93	6922.33	64.28	6922.29
65.05	6922.18	66.15	6922.03	66.53	6921.97	68.03	6921.76	68.36	6921.72
70.28	6921.45	71.03	6921.35	71.42	6921.29	71.69	6921.26	72.8	6921.1
73.28	6921.04	74.2	6920.91	74.3	6920.89	75.01	6920.8	75.53	6920.72
76.12	6920.65	77.03	6920.61	77.23	6920.61	78.94	6920.55	79.28	6920.53
80.03	6920.51	81.53	6920.45	82.03	6920.44	83.88	6920.37	84.15	6920.37
84.99	6920.35	85.28	6920.35	85.9	6920.33	86.1	6920.33	86.27	6920.36
86.78	6920.34	87.2	6920.44	88.4	6920.7	89.03	6920.85	89.42	6920.93
89.78	6921.02	91.64	6921.43	92.03	6921.52	95.78	6922.37	96.07	6922.43
96.53	6922.54	96.89	6922.61	98.29	6922.93	99.01	6923.09	99.82	6923.28
100.28	6923.38	101.61	6923.68	102.53	6923.86	103.83	6923.88	104.03	6923.89
104.46	6923.89	106.05	6923.92	106.78	6923.94	107.78	6923.95	108.53	6923.97
109.1	6923.98	109.62	6923.98	110.48	6924	110.78	6924	111.42	6924.02
111.74	6924.02	112.69	6924.04	113.03	6924.04	113.74	6924.06	115.28	6924.08
116.78	6924.11	117.13	6924.12	117.53	6924.12	119.03	6924.15	119.34	6924.15
121.28	6924.19	121.56	6924.19	123.53	6924.23	124.48	6924.24	125.78	6924.27
125.99	6924.27	127.65	6924.3	128.03	6924.3	128.21	6924.31	129.97	6924.34
130.43	6924.35	130.84	6924.35	131.03	6924.36	132.29	6924.38	133.28	6924.4
133.75	6924.4	134.03	6924.41	134.86	6924.42	135.53	6924.44	135.97	6924.44
136.28	6924.45	137.78	6924.47	138.53	6924.49	140.03	6924.51	140.78	6924.53
142.28	6924.55	143.03	6924.57	144.53	6924.59	144.83	6924.6	145.28	6924.6
146.78	6924.63	147.05	6924.64	147.53	6924.64	149.03	6924.67	149.27	6924.67
151.28	6924.71	151.48	6924.71	152.59	6924.73	152.78	6924.74	153.16	6924.74
154.82	6924.77	155.02	6924.77	155.93	6924.79	157.7	6924.82	158.16	6924.83
158.61	6924.83	158.76	6924.84	159.97	6924.86	160.39	6924.86	161.5	6924.88
161.75	6924.88	162.49	6924.9	162.98	6924.9	163.73	6924.92	164.85	6924.93
166.78	6924.96	166.98	6924.97	167.36	6924.97	168.19	6924.99	168.47	6924.99
169.55	6925.01	169.96	6925.01	170.71	6925.03	171.32	6925.03	172.64	6925.06
173.76	6925.07	173.92	6925.08	174.45	6925.08	174.66	6925.09	175.37	6925.1
175.85	6925.12	177.34	6925.15	177.85	6925.17	179.85	6925.21	180.41	6925.23
181.85	6925.26	182.27	6925.26	182.44	6925.25	183.25	6925.25	183.45	6925.24
184.24	6925.24	184.47	6925.23	185.48	6925.23	185.85	6925.22	186.5	6925.22
186.85	6925.21	187.51	6925.21	187.85	6925.2	188.53	6925.2	188.85	6925.19
189.54	6925.19	189.85	6925.18	190.56	6925.18	190.85	6925.17	191.57	6925.17
191.85	6925.16	192.59	6925.16	192.85	6925.15	193.6	6925.15	193.85	6925.14
194.62	6925.14	194.85	6925.13	195.63	6925.13	195.85	6925.12	196.65	6925.12
196.85	6925.11	197.66	6925.11	197.85	6925.1	198.68	6925.1	198.85	6925.09
199.69	6925.09	199.85	6925.08	200.7	6925.08	200.85	6925.07	201.85	6925.07
201.98	6925.06	202.85	6925.06	202.97	6925.05	203.85	6925.05	203.95	6925.04
204.85	6925.04	204.94	6925.03	205.85	6925.03	205.93	6925.02	206.91	6925.02
210.91	6924.98	223.67	6924.85	224.05	6924.85	224.66	6924.84	225.06	6924.84

Ex RAS Input Report.txt

225.64	6924.83	226.07	6924.83	226.63	6924.82	227.09	6924.82	227.61	6924.81
228.1	6924.81	228.6	6924.8	229.12	6924.8	229.59	6924.79	230.13	6924.79
230.86	6924.78	231.86	6924.72	232.54	6924.57	233.53	6924.38	234.19	6924.24
235.21	6924.04	235.86	6923.92	236.22	6923.84	237.47	6923.6	238.25	6923.44
239.27	6923.24	239.86	6923.12	241.42	6922.82	242.4	6922.62	243.39	6922.43
243.86	6922.33	244.86	6922.14	246.86	6921.74	247.39	6921.75	247.86	6921.77
248.32	6921.89	248.86	6922.02	249.3	6922.14	250.29	6922.39	251.27	6922.65
252.86	6923.05	253.24	6923.15	253.86	6923.29	254.49	6923.44	254.86	6923.52
255.86	6923.76	256.52	6923.91	257.53	6924.15	257.86	6924.22	258.17	6924.3
258.55	6924.38	258.86	6924.46	259.16	6924.46	259.56	6924.48	261.59	6924.54
262.12	6924.56	263.1	6924.58	263.86	6924.61	264.09	6924.61	264.86	6924.64
265.07	6924.64	265.86	6924.67	266.06	6924.67	271.98	6924.85	272.76	6924.87
272.96	6924.87	273.77	6924.9	273.95	6924.9	274.79	6924.93	274.93	6924.93
279.86	6925.08	279.94	6925.08	281.83	6925.14	283.92	6925.2	284.79	6925.23
284.93	6925.24	285.78	6925.26	285.95	6925.27	286.76	6925.29	286.96	6925.3
287.75	6925.32	293.66	6925.5	294.07	6925.51	294.86	6925.54	295.08	6925.54
295.64	6925.56	297.11	6925.62	297.61	6925.63	299.58	6925.71	300.56	6925.74
300.86	6925.76	302.19	6925.8	302.54	6925.82	303.52	6925.85	303.86	6925.87
304.86	6925.9	305.49	6925.93	306.24	6925.95	306.86	6925.98	307.26	6925.99
308.37	6926.03								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-79.24	.05	44.01	.035	102.53	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

44.01	102.53	92.31	92.31	92.31	.1	.3
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
181.81	308.37	6925.28	F

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 2900

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6925.35	.76	6925.35	1.6	6925.34	1.86	6925.33	2.27	6925.33
2.63	6925.32	3.66	6925.3	3.94	6925.3	4.77	6925.29	5.6	6925.27
5.89	6925.27	6.74	6925.25	7.26	6925.25	8.1	6925.23	8.57	6925.23
9.51	6925.21	9.82	6925.21	9.92	6925.2	10.59	6925.19	10.85	6925.19

Ex RAS Input Report.txt

11.87	6925.17	12.25	6925.17	12.6	6925.16	12.9	6925.16	13.09	6925.15
14.75	6925.13	14.96	6925.12	15.29	6925.12	15.58	6925.11	15.98	6925.11
17.24	6925.09	17.97	6925.07	18.25	6925.07	19.06	6925.06	19.32	6925.05
19.74	6925.05	20.09	6925.04	21.12	6925.02	21.4	6925.02	22	6925.01
22.24	6925.01	23.07	6924.99	23.34	6924.99	23.9	6924.98	24.2	6924.97
24.73	6924.97	25.56	6924.95	26.03	6924.95	26.25	6924.94	27.23	6924.93
27.37	6924.92	28.06	6924.91	28.31	6924.91	28.72	6924.88	28.89	6924.88
29.72	6924.82	30.55	6924.77	31.36	6924.71	31.4	6924.71	33.05	6924.61
33.45	6924.58	33.88	6924.56	34.09	6924.54	34.71	6924.51	35.73	6924.44
36.38	6924.4	36.53	6924.4	37.21	6924.35	38.04	6924.3	38.12	6924.3
38.87	6924.25	39.46	6924.22	39.7	6924.2	40.1	6924.18	40.8	6924.13
41.37	6924.1	41.82	6924.07	42.14	6924.05	42.2	6924.05	43.49	6923.97
43.72	6923.95	43.86	6923.95	44.47	6923.91	44.69	6923.89	44.83	6923.89
45.52	6923.84	45.77	6923.83	46.17	6923.8	46.8	6923.77	47.19	6923.74
47.83	6923.7	48.02	6923.67	48.84	6923.51	48.86	6923.51	49.68	6923.32
50.2	6923.21	51.35	6922.95	51.55	6922.91	53.21	6922.54	53.84	6922.39
54.23	6922.31	55.51	6922.02	56.05	6921.9	56.34	6921.84	56.92	6921.71
57.07	6921.67	58	6921.47	58.83	6921.28	59.13	6921.22	60.5	6920.91
61.18	6920.76	61.33	6920.72	61.95	6920.59	62.99	6920.35	63.24	6920.3
64.26	6920.07	64.65	6919.99	65.49	6919.81	67.34	6919.41	67.66	6919.39
67.98	6919.36	68.37	6919.35	75.72	6919.35	76.3	6919.34	82.75	6919.34
82.95	6919.33	88.92	6919.33	89.61	6919.42	90.44	6919.54	90.97	6919.62
91.83	6919.74	92.1	6919.77	93.03	6919.9	94.05	6920.05	94.6	6920.12
95.86	6920.3	96.26	6920.35	96.91	6920.45	97.92	6920.59	98.55	6920.67
99	6920.73	99.89	6920.86	100.42	6920.94	101.23	6921.05	101.28	6921.05
102.08	6921.14	102.57	6921.19	103.92	6921.34	104.58	6921.41	105.26	6921.47
105.65	6921.49	106.38	6921.5	106.6	6921.51	107.41	6921.53	108.43	6921.55
108.74	6921.56	109.29	6921.57	109.57	6921.58	110.4	6921.6	110.63	6921.61
111.23	6921.62	111.52	6921.63	112.54	6921.65	113.32	6921.67	113.57	6921.67
113.73	6921.68	114.4	6921.69	115.39	6921.72	115.63	6921.72	116.22	6921.74
117.05	6921.76	117.35	6921.76	117.89	6921.78	119.55	6921.82	119.73	6921.82
120.38	6921.84	120.76	6921.84	121.21	6921.85	121.79	6921.87	122.05	6921.87
122.72	6921.89	123.71	6921.91	124.87	6921.94	125.4	6921.95	125.9	6921.97
126.2	6921.97	126.75	6921.99	127.04	6921.99	127.87	6922.01	128.09	6922.02
128.7	6922.03	128.98	6922.04	130.01	6922.06	131.19	6922.09	131.88	6922.11
132.12	6922.11	132.86	6922.13	133.09	6922.14	133.46	6922.14	133.69	6922.15
134.52	6922.17	134.8	6922.18	135.14	6922.18	135.35	6922.19	137.02	6922.23
137.2	6922.23	138.23	6922.26	139.25	6922.28	139.51	6922.29	140.28	6922.3
140.34	6922.31	140.62	6922.31	141.18	6922.33	141.52	6922.33	142.01	6922.35
142.33	6922.35	142.84	6922.37	144.2	6922.4	144.5	6922.4	144.99	6922.42
145.33	6922.42	145.42	6922.43	146.17	6922.44	146.44	6922.45	147.47	6922.47
148.66	6922.5	149.36	6922.52	149.58	6922.52	150.33	6922.54	150.92	6922.56
151.16	6922.56	151.99	6922.58	152.61	6922.6	152.82	6922.6	153.6	6922.62
153.73	6922.62	154.48	6922.64	154.66	6922.64	155.69	6922.67	156.72	6922.69
156.98	6922.7	157.63	6922.71	157.74	6922.72	158.64	6922.74	159.8	6922.77
160.82	6922.79	162.8	6922.84	163	6922.84	163.63	6922.86	163.91	6922.86
164.35	6922.87	164.46	6922.88	165.3	6922.9	165.69	6922.9	166.13	6922.92
166.84	6922.93	167.03	6922.94	167.79	6922.95	168.38	6922.97	168.62	6922.97

Ex RAS Input Report.txt

169.46	6922.99	170.07	6923.01	170.29	6923.01	171.06	6923.03	171.21	6923.03
171.95	6923.05	172.12	6923.06	172.41	6923.06	173.61	6923.09	173.75	6923.1
174.18	6923.11	174.45	6923.11	175.09	6923.13	176.23	6923.15	176.43	6923.16
177.26	6923.18	178.29	6923.2	180.46	6923.25	181.1	6923.27	181.37	6923.27
181.81	6923.29	182.4	6923.3	183.15	6923.32	183.42	6923.32	184.2	6923.35
184.42	6923.35	185.19	6923.38	185.42	6923.38	186.18	6923.41	186.42	6923.41
186.67	6923.42	187.18	6923.43	187.67	6923.45	188.17	6923.46	188.68	6923.48
189.16	6923.49	189.69	6923.51	190.15	6923.52	190.7	6923.54	191.15	6923.55
191.7	6923.57	192.14	6923.58	192.71	6923.6	193.13	6923.61	195.73	6923.69
197.75	6923.75	198.09	6923.75	198.42	6923.76	198.76	6923.75	199.42	6923.75
199.76	6923.74	200.77	6923.74	201.07	6923.73	201.78	6923.73	202.06	6923.72
202.79	6923.72	203.06	6923.71	204.05	6923.71	204.42	6923.7	205.42	6923.7
205.81	6923.69	206.82	6923.69	207.03	6923.68	208.02	6923.68	208.42	6923.67
209.84	6923.67	210	6923.66	211.42	6923.66	211.86	6923.65	212.86	6923.65
212.98	6923.64	214.42	6923.64	214.88	6923.63	215.96	6923.63	216.42	6923.62
217.42	6923.62	217.9	6923.61	218.94	6923.61	219.42	6923.6	220.42	6923.6
220.92	6923.59	221.93	6923.59	222.42	6923.58	223.42	6923.58	223.9	6923.57
224.96	6923.57	225.42	6923.56	226.42	6923.56	226.88	6923.55	227.98	6923.55
228.42	6923.54	229.86	6923.54	229.99	6923.53	231.42	6923.53	231.84	6923.52
233.02	6923.52	233.42	6923.51	234.42	6923.51	234.82	6923.5	236.04	6923.5
236.42	6923.49	237.42	6923.49	237.8	6923.48	239.06	6923.48	239.42	6923.47
240.42	6923.47	240.77	6923.46	242.08	6923.46	242.42	6923.45	243.75	6923.45
244.1	6923.44	245.11	6923.44	245.42	6923.43	246.73	6923.43	247.12	6923.42
247.42	6923.42	248.42	6923.29	250.15	6922.98	250.42	6922.92	251.15	6922.79
252.16	6922.6	252.42	6922.56	253.17	6922.42	253.68	6922.32	254.42	6922.19
254.67	6922.14	255.18	6922.05	255.42	6922	255.66	6921.96	256.19	6921.86
257.2	6921.68	257.42	6921.63	258.21	6921.49	258.64	6921.41	259.21	6921.31
260.22	6921.14	261.23	6920.96	261.62	6920.9	262.24	6920.79	262.61	6920.72
263.42	6920.58	263.6	6920.59	264.25	6920.61	264.42	6920.62	265.26	6920.86
265.42	6920.91	266.58	6921.25	267.28	6921.45	267.57	6921.54	268.28	6921.75
269.43	6922.08	270.3	6922.34	270.55	6922.41	271.31	6922.64	271.54	6922.7
272.31	6922.93	272.53	6923	273.32	6923.23	274.33	6923.52	274.52	6923.58
275.51	6923.87	276.34	6924.11	277.35	6924.41	277.5	6924.45	278.36	6924.7
279.37	6925	279.48	6925.03	280.37	6925.3	281.38	6925.59	281.47	6925.61
282.39	6925.87	283.4	6926.16	284.41	6926.35	284.45	6926.36	285.41	6926.19
285.44	6926.19	286.42	6926.08	287.11	6926.04	287.42	6926.03	288.44	6925.97
290.4	6925.85	290.45	6925.85	291.39	6925.8	291.46	6925.79	292.39	6925.74
292.47	6925.73	293.38	6925.68	293.47	6925.68	294.37	6925.62	294.48	6925.62
295.36	6925.57	296.5	6925.49	298.34	6925.38	298.51	6925.36	300.33	6925.25
300.53	6925.23	301.32	6925.18	301.53	6925.17	302.31	6925.12	302.54	6925.1
303.43	6925.04	303.55	6925.04	304.3	6924.99	305.29	6924.92	305.43	6924.92
307.27	6924.79	307.43	6924.79	308.27	6924.73	309.43	6924.66	309.6	6924.64
311.43	6924.53	311.61	6924.51	312.43	6924.46	312.62	6924.46	313.23	6924.41
313.63	6924.41	314.22	6924.35	314.63	6924.36	315.21	6924.31	315.64	6924.32
316.21	6924.31	317.2	6924.33	317.66	6924.35	318.19	6924.36	319.18	6924.4
319.43	6924.4	320.18	6924.44	320.43	6924.44	320.68	6924.46	322.69	6924.54
323.15	6924.56	323.32	6924.56						

Ex RAS Input Report.txt

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .05 48.02 .035 105.26 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
48.02 105.26 118.9 99.71 72.05 .1 .3
Ineffective Flow num= 1
Sta L Sta R Elev Permanent
197.58 323.32 6923.76 F

CROSS SECTION

RIVER: UT_BSC2
REACH: NCONFL-BGM RS: 2800

INPUT
Description: Source: Corrected Effective Topo
Datum: NGVD29
Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 491							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6922.8	.77	6922.78	1	6922.78	1.62	6922.76	1.9	6922.76
2.75	6922.74	3	6922.73	3.71	6922.71	3.89	6922.71	4.61	6922.69
5.51	6922.67	5.8	6922.66	6.17	6922.66	6.81	6922.64	7.82	6922.62
8.82	6922.59	9.12	6922.59	9.58	6922.57	9.83	6922.57	10.03	6922.56
10.72	6922.55	10.93	6922.54	12.74	6922.5	12.99	6922.49	13.64	6922.48
13.85	6922.47	14.13	6922.47	15.27	6922.44	15.87	6922.43	16.35	6922.41
16.4	6922.4	16.87	6922.38	17.25	6922.37	17.54	6922.35	17.88	6922.34
18.15	6922.32	18.68	6922.3	19.05	6922.28	19.82	6922.25	19.96	6922.24
20.5	6922.22	21.76	6922.16	22.09	6922.14	22.91	6922.11	23.23	6922.09
23.57	6922.08	24.36	6922.04	24.47	6922.03	25.37	6921.99	25.5	6921.99
25.93	6921.97	26.64	6921.93	27.18	6921.91	27.95	6921.87	28.08	6921.87
28.91	6921.83	29.26	6921.81	29.89	6921.78	30.05	6921.78	30.97	6921.73
31.97	6921.69	32.33	6921.67	32.98	6921.64	33.99	6921.6	34.99	6921.55
35.74	6921.52	36	6921.5	36.88	6921.46	40.72	6921.29	41.03	6921.28
41.62	6921.25	42.04	6921.24	42.53	6921.21	43.05	6921.19	43.43	6921.17
44.33	6921.14	45.06	6921.1	45.23	6921.1	45.98	6921.06	46.14	6921.06
46.76	6921.03	47.07	6921.02	47.11	6921.01	47.94	6920.98	48.25	6920.96
49.09	6920.93	49.39	6920.91	49.75	6920.9	50.53	6920.86	50.65	6920.86
51.55	6920.82	51.66	6920.81	52.11	6920.8	52.8	6920.76	53.36	6920.74
53.94	6920.71	54.97	6920.67	55.07	6920.67	55.17	6920.66	55.51	6920.65
56.07	6920.62	56.21	6920.62	57.14	6920.57	57.35	6920.57	57.87	6920.54
58.49	6920.52	58.78	6920.5	59.15	6920.49	59.62	6920.47	59.68	6920.46
60.16	6920.44	60.58	6920.37	60.76	6920.32	61.16	6920.25	61.48	6920.16
62.17	6919.98	63.04	6919.75	64.17	6919.44	64.26	6919.41	65.1	6919.19
65.31	6919.13	66	6918.95	66.45	6918.82	67.2	6918.62	67.59	6918.52

Ex RAS Input Report.txt

67.8	6918.46	68.21	6918.36	68.71	6918.23	68.72	6918.22	69.22	6918.1
69.61	6918	69.86	6917.93	70.22	6917.84	70.51	6917.76	71	6917.64
71.41	6917.53	72.14	6917.34	72.32	6917.31	73.02	6917.25	73.27	6917.24
74.25	6917.25	74.41	6917.26	75.03	6917.27	75.26	6917.27	75.55	6917.28
75.93	6917.28	76.23	6917.29	76.69	6917.29	76.83	6917.3	77.27	6917.3
78.28	6917.32	78.64	6917.32	79.28	6917.34	79.54	6917.34	80.1	6917.35
80.44	6917.35	81.24	6917.37	81.77	6917.38	82.3	6917.38	82.37	6917.39
83.15	6917.4	83.51	6917.4	84.05	6917.41	84.32	6917.42	84.65	6917.42
84.96	6917.43	85.32	6917.43	86.33	6917.41	86.76	6917.43	86.92	6917.45
87.34	6917.46	87.66	6917.51	88.06	6917.58	89.2	6917.76	89.35	6917.78
90.52	6917.97	91.28	6918.1	91.47	6918.14	92.18	6918.26	93.08	6918.43
93.75	6918.54	93.98	6918.59	94.88	6918.75	96.02	6918.95	96.4	6919.02
97.16	6919.15	97.4	6919.2	97.59	6919.23	98.3	6919.36	98.5	6919.39
99.27	6919.53	100.57	6919.77	101.21	6919.88	102.11	6920.04	102.43	6920.1
102.85	6920.17	103.44	6920.28	103.91	6920.34	103.98	6920.34	104.45	6920.4
105.45	6920.43	105.72	6920.43	106.26	6920.44	107.4	6920.47	107.53	6920.47
108.02	6920.49	108.53	6920.5	109.67	6920.53	110.23	6920.54	110.49	6920.55
110.81	6920.55	111.49	6920.57	112.94	6920.6	113.08	6920.61	114.22	6920.64
114.51	6920.64	114.75	6920.65	115.36	6920.66	115.65	6920.67	116.49	6920.69
116.78	6920.7	117.46	6920.71	117.53	6920.72	118.36	6920.73	118.54	6920.74
118.77	6920.74	119.26	6920.76	119.55	6920.76	120.55	6920.79	121.97	6920.82
122.57	6920.84	122.87	6920.84	123.57	6920.86	123.77	6920.86	124.46	6920.88
124.68	6920.89	126.48	6920.93	126.73	6920.94	127.39	6920.95	127.6	6920.96
127.87	6920.96	129.01	6920.99	129.61	6921	130.09	6921.02	131	6921.04
131.28	6921.04	131.9	6921.06	132.42	6921.07	133.56	6921.1	133.71	6921.1
134.28	6921.12	134.61	6921.12	134.69	6921.13	135.51	6921.15	135.83	6921.15
136.41	6921.17	136.66	6921.17	137.67	6921.2	139.12	6921.23	139.24	6921.24
139.68	6921.25	140.02	6921.25	140.93	6921.28	141.69	6921.29	141.83	6921.3
143.03	6921.33	143.71	6921.34	143.79	6921.35	144.54	6921.36	144.71	6921.37
144.94	6921.37	145.42	6921.38	146.13	6921.4	146.3	6921.41	147.18	6921.43
147.32	6921.43	148.51	6921.46	148.76	6921.46	148.94	6921.47	149.7	6921.49
150.7	6921.51	150.89	6921.52	151.57	6921.53	151.79	6921.54	152.08	6921.54
152.8	6921.56	153.33	6921.57	153.81	6921.59	154.21	6921.59	155.09	6921.62
155.84	6921.63	155.97	6921.64	157.73	6921.68	158.04	6921.69	158.6	6921.7
158.87	6921.71	159.23	6921.71	159.88	6921.73	160.89	6921.75	161.9	6921.78
162.12	6921.78	162.8	6921.8	163	6921.8	163.54	6921.82	165.19	6921.86
165.63	6921.86	166.38	6921.88	166.51	6921.88	166.96	6921.9	167.39	6921.9
167.57	6921.91	167.97	6921.92	168.27	6921.92	168.76	6921.93	169.95	6921.96
170.24	6921.97	171.01	6921.98	171.14	6921.99	171.6	6922	172.01	6922
172.22	6922.01	173.81	6922.04	174.01	6922.04	174.22	6922.05	174.8	6922.06
175.01	6922.06	175.22	6922.07	175.8	6922.08	176.22	6922.08	176.8	6922.1
177.23	6922.1	177.8	6922.12	178.23	6922.12	178.8	6922.13	179.01	6922.14
179.23	6922.14	179.8	6922.15	180.01	6922.16	180.23	6922.16	180.79	6922.17
181.01	6922.18	181.23	6922.18	181.79	6922.19	182.01	6922.2	182.23	6922.2
182.79	6922.21	183.01	6922.22	183.24	6922.22	183.79	6922.23	184.01	6922.24
184.24	6922.24	184.79	6922.25	185.01	6922.26	185.24	6922.26	185.79	6922.27
186.01	6922.27	186.24	6922.28	186.78	6922.29	187.01	6922.29	187.24	6922.3
187.78	6922.31	188.01	6922.31	188.24	6922.32	189.78	6922.32	190.01	6922.31

Ex RAS Input Report.txt

191.25	6922.31	191.78	6922.3	192.77	6922.3	193.01	6922.29	194.25	6922.29
194.77	6922.28	196.01	6922.28	196.26	6922.27	197.26	6922.27	197.76	6922.26
199.01	6922.26	199.26	6922.25	200.26	6922.25	200.76	6922.24	206.27	6922.24
206.75	6922.23	221.72	6922.23	222.01	6922.22	237.01	6922.22	237.33	6922.21
245.01	6922.21	245.34	6922.19	245.68	6922.18	246.01	6922.16	246.34	6922.11
246.68	6922.05	247.34	6921.95	247.68	6921.89	248.01	6921.84	248.35	6921.78
248.68	6921.73	249.01	6921.67	249.68	6921.57	250.01	6921.51	250.35	6921.46
250.68	6921.4	251.01	6921.35	251.35	6921.29	251.67	6921.24	252.01	6921.18
252.35	6921.13	252.67	6921.07	253.01	6921.02	253.35	6920.96	253.67	6920.91
254.01	6920.85	254.67	6920.75	255.36	6920.63	256.01	6920.53	256.67	6920.42
257.01	6920.36	257.36	6920.31	259.01	6920.03	259.36	6920.12	259.66	6920.21
260.01	6920.29	260.37	6920.45	260.66	6920.57	261.01	6920.73	261.37	6920.88
261.66	6921.01	262.37	6921.31	264.01	6922.03	264.65	6922.3	265.01	6922.46
265.65	6922.73	266.65	6923.17	267.01	6923.32	267.38	6923.48	268.01	6923.76
268.38	6923.92	268.65	6924.03	269.01	6924.19	271.01	6925.05	271.38	6925.22
272.39	6925.65	273.01	6925.92	273.39	6926.08	273.64	6926.17	274.01	6926.33
274.39	6926.48	274.64	6926.56	275.01	6926.72	278.01	6927.83	278.4	6927.98
278.63	6928.06	279.01	6928.21	279.4	6928.35	279.63	6928.44	280.4	6928.72
280.63	6928.81	281.01	6928.95	282.01	6929.33	282.62	6929.55	283.01	6929.7
283.4	6929.84	283.62	6929.93	284.01	6930.07	284.62	6930.3	285.01	6930.44
286.01	6930.82	286.41	6930.96	287.01	6931.19	287.41	6931.3	287.61	6931.37
288.01	6931.48	288.41	6931.48	288.61	6931.47	289.01	6931.47	290.01	6931.45
290.61	6931.45	291.42	6931.43	292.01	6931.43	292.61	6931.42	293.01	6931.41
293.6	6931.41	294.42	6931.39	295.01	6931.39	296.01	6931.37	296.43	6931.37
296.6	6931.36	297.01	6931.36	297.43	6931.35	298.01	6931.35	298.43	6931.34
298.72	6931.34								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	59.62	.035	103.91	.05

Bank	Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
	59.62	103.91	140.72	150.39	162.43		.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
187.97	298.72	6922.44	F

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 2650

INPUT

Description: Source: Corrected Effective Topo
 Datum: NGVD29
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Ex RAS Input Report.txt

Station Elevation Data		num=		491					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-7.75	6919.63	-7.29	6919.63	-6.84	6919.61	-5.84	6919.59	-5.35	6919.57
-4.84	6919.56	-4.37	6919.54	-3.84	6919.53	-3.4	6919.51	-2.84	6919.5
-2.43	6919.48	-1.84	6919.47	-1.45	6919.45	-.84	6919.44	-.48	6919.42
-.19	6919.42	1.16	6919.38	1.87	6919.35	2.16	6919.35	2.9	6919.32
3.16	6919.32	3.93	6919.29	4.16	6919.29	5.35	6919.25	8.27	6919.16
9.08	6919.14	9.24	6919.13	10.11	6919.11	10.21	6919.1	12.15	6919.05
13.12	6919.02	13.21	6919.01	15.07	6918.95	15.27	6918.95	16.3	6918.91
17.33	6918.88	17.98	6918.85	18.95	6918.82	19.93	6918.77	20.9	6918.73
23.81	6918.64	25.17	6918.6	25.58	6918.58	26.17	6918.57	26.61	6918.55
27.17	6918.54	27.64	6918.52	28.17	6918.51	29.17	6918.47	29.71	6918.46
30.17	6918.44	30.74	6918.43	31.17	6918.41	31.77	6918.4	32.17	6918.38
36.93	6918.24	37.41	6918.22	37.96	6918.21	38.38	6918.19	38.99	6918.18
39.35	6918.16	41.05	6918.11	41.3	6918.11	42.08	6918.08	42.27	6918.08
47.13	6917.93	47.24	6917.92	48.18	6917.9	48.27	6917.89	49.07	6917.87
51.98	6917.78	53.18	6917.74	53.42	6917.74	54.18	6917.71	55.18	6917.54
55.87	6917.38	56.18	6917.32	57.18	6917.09	57.55	6917.01	58.78	6916.72
59.61	6916.54	60.19	6916.4	61.19	6916.18	62.7	6915.83	63.64	6915.62
64.19	6915.49	65.59	6915.18	66.56	6914.95	67.86	6914.66	69.19	6914.35
70.19	6914.18	71.19	6914.1	71.41	6914.09	72.39	6914.02	73.36	6913.94
74.19	6913.89	74.33	6913.89	76.11	6913.82	76.27	6913.82	77.14	6913.79
77.24	6913.78	78.21	6913.75	79.2	6913.71	80.16	6913.91	81.13	6914.15
81.27	6914.19	82.3	6914.45	83.33	6914.7	85.01	6915.12	85.39	6915.22
85.99	6915.36	86.96	6915.61	87.93	6915.85	88.2	6915.91	88.48	6915.99
89.2	6916.16	90.07	6916.38	91.58	6916.76	92.2	6916.91	92.61	6917.03
92.79	6917.06	93.2	6917.18	93.76	6917.33	94.2	6917.46	95.2	6917.74
95.7	6917.89	96.2	6918.03	96.67	6918.07	96.73	6918.06	97.2	6918.1
97.76	6918.1	98.2	6918.11	99.2	6918.11	99.59	6918.12	100.86	6918.12
101.2	6918.13	102.2	6918.13	102.5	6918.14	103.47	6918.14	103.95	6918.15
104.44	6918.15	104.98	6918.16	106.21	6918.17	106.39	6918.18	108.08	6918.2
109.21	6918.21	109.3	6918.22	111.24	6918.24	113.19	6918.27	115.13	6918.29
115.29	6918.3	117.07	6918.32	118.21	6918.33	118.39	6918.34	119.02	6918.34
119.21	6918.35	120.45	6918.36	121.93	6918.38	122.9	6918.4	123.54	6918.4
125.21	6918.43	125.82	6918.43	126.64	6918.45	127.22	6918.45	128.22	6918.47
128.73	6918.47	129.7	6918.49	130.22	6918.49	131.22	6918.51	131.79	6918.51
132.82	6918.53	133.22	6918.53	134.22	6918.55	134.89	6918.55	135.22	6918.56
136.95	6918.58	137.98	6918.6	138.45	6918.6	139.42	6918.61	140.39	6918.63
143.14	6918.66	143.3	6918.67	146.23	6918.7	147.19	6918.72	149.13	6918.74
149.32	6918.75	151.08	6918.77	152.23	6918.78	152.42	6918.79	153.02	6918.79
153.23	6918.8	153.99	6918.81	154.48	6918.81	155.93	6918.83	156.9	6918.85
157.57	6918.85	157.88	6918.86	158.6	6918.86	158.85	6918.85	159.64	6918.85
159.82	6918.84	160.79	6918.84	161.23	6918.83	161.76	6918.83	162.23	6918.82
162.73	6918.82	163.23	6918.81	164.23	6918.81	164.68	6918.8	165.23	6918.8
165.65	6918.79	166.62	6918.79	166.85	6918.78	167.59	6918.78	167.88	6918.77
168.92	6918.77	169.23	6918.76	169.95	6918.76	170.23	6918.75	170.98	6918.75
171.24	6918.74	172.24	6918.74	172.45	6918.73	173.42	6918.73	178.2	6918.68
179.25	6918.68	179.59	6918.67	180.26	6918.67	185.08	6918.62	186.05	6918.62

Ex RAS Input Report.txt

186.24	6918.61	187.24	6918.61	187.48	6918.6	188.24	6918.6	188.51	6918.59
189.54	6918.59	189.94	6918.58	190.57	6918.58	190.91	6918.57	191.88	6918.57
192.24	6918.56	192.85	6918.56	193.24	6918.55	193.82	6918.55	194.25	6918.54
195.25	6918.54	195.73	6918.53	196.25	6918.53	196.74	6918.52	197.25	6918.52
197.71	6918.51	198.82	6918.51	199.25	6918.5	199.85	6918.5	200.25	6918.49
200.88	6918.49	201.25	6918.48	202.25	6918.48	202.56	6918.47	203.25	6918.47
203.54	6918.46	204.51	6918.46	205.01	6918.45	205.48	6918.45	208.1	6918.42
209.13	6918.42	209.25	6918.41	210.25	6918.41	210.34	6918.4	211.31	6918.4
212.96	6918.38	216.09	6918.38	216.35	6918.39	219.6	6918.39	220.3	6918.3
222.94	6918	223.46	6917.95	225.04	6917.77	226.11	6917.66	226.98	6917.56
227.7	6917.49	228.2	6917.43	229.09	6917.34	229.28	6917.31	230.14	6917.22
231.2	6917.22	232.45	6917.35	232.94	6917.41	233.3	6917.44	233.73	6917.49
234.36	6917.55	235.31	6917.65	235.41	6917.67	236.47	6917.78	237.21	6917.87
237.52	6917.9	238.79	6918.06	239.26	6918.11	239.63	6918.16	240.84	6918.31
241.74	6918.41	242.42	6918.5	242.8	6918.54	244	6918.62	244.46	6918.64
245.58	6918.67	245.96	6918.69	246.71	6918.7	247.95	6918.73	248.3	6918.73
249.12	6918.75	249.53	6918.75	250.32	6918.77	250.76	6918.77	251.47	6918.79
251.9	6918.79	252.69	6918.81	253.05	6918.81	253.91	6918.83	254.39	6918.83
255.06	6918.85	255.45	6918.85	257.06	6918.89	257.43	6918.89	259.39	6918.94
259.8	6918.94	261.78	6918.99	262.17	6918.99	262.83	6919.01	263.75	6919.03
264.15	6919.03	266.13	6919.08	267.05	6919.09	268.1	6919.12	268.5	6919.12
270.48	6919.17	270.87	6919.17	272.07	6919.2	272.32	6919.2	272.82	6919.22
273.24	6919.22	275.24	6919.27	275.61	6919.27	276.82	6919.3	277.19	6919.3
277.98	6919.32	278.65	6919.33	279.12	6919.33	279.7	6919.34	280.35	6919.36
280.76	6919.36	281.58	6919.38	282.72	6919.39	283.51	6919.41	283.92	6919.41
284.75	6919.43	285.09	6919.43	285.88	6919.45	286.33	6919.45	287.08	6919.47
288.14	6919.48	289.5	6919.51	289.83	6919.51	290.62	6919.53	291.08	6919.53
291.73	6919.55	292.2	6919.55	292.36	6919.56	293.41	6919.57	294.25	6919.59
294.57	6919.59	295.36	6919.61	295.84	6919.61	296.57	6919.63	296.94	6919.63
297.73	6919.65	298.04	6919.65	300.1	6919.68	300.79	6919.7	301.19	6919.7
302.18	6919.72	302.47	6919.72	304.34	6919.76	304.84	6919.76	305.01	6919.77
306.06	6919.78	306.93	6919.8	308.17	6919.82	309.58	6919.86	310.28	6919.87
311.16	6919.89	311.69	6919.91	311.95	6919.91	312.74	6919.93	313.27	6919.95
314.85	6919.98	315.9	6920.01	316.44	6920.02	316.95	6920.04	317.66	6920.05
319.06	6920.09	320.1	6920.11	320.64	6920.13	321.43	6920.14	321.88	6920.16
322.22	6920.16	323.01	6920.18	323.8	6920.21	325.95	6920.26	326.4	6920.28
326.97	6920.29	328.21	6920.33	328.55	6920.33	329.34	6920.36	329.55	6920.36
331.37	6920.41	332.29	6920.44	334.08	6920.48	334.54	6920.5	334.87	6920.5
335.66	6920.53	337.04	6920.56	338.62	6920.61	340.4	6920.65	341.19	6920.68
341.79	6920.69	343.38	6920.74	344.03	6920.75	345.31	6920.79	345.93	6920.8
346.72	6920.83	348.13	6920.86	349.3	6920.9	350.35	6920.92	351.62	6920.96
352.25	6920.97	353.04	6921	353.83	6921.02	354.47	6921.03	355.62	6921.07
356.68	6921.09	358.57	6921.15	359.22	6921.16	360.81	6921.21	361.07	6921.21
361.95	6921.24	362.52	6921.25	363.01	6921.27	364.89	6921.33	365.68	6921.37
366.47	6921.4	370.53	6921.58	371.21	6921.6	371.9	6921.63	373.49	6921.68
375.16	6921.74	375.66	6921.75	376.66	6921.79	376.83	6921.79	377.53	6921.82
377.77	6921.82	379.11	6921.87	379.83	6921.89	382.27	6921.98	384.64	6922.06
385.15	6922.07	387.02	6922.14	387.26	6922.14	388.6	6922.19	389.33	6922.21

Ex RAS Input Report.txt

389.44	6922.22	390.18	6922.24	391.76	6922.3	392.59	6922.32	393.59	6922.36
394.13	6922.37	395.67	6922.43	396.5	6922.45	398.08	6922.51	398.84	6922.53
398.89	6922.54	399.66	6922.56	400.97	6922.61	401.24	6922.61	403.08	6922.68
403.61	6922.69	405.18	6922.75	405.98	6922.77	407.56	6922.83	408.35	6922.85
408.97	6922.85								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
-7.75	.05	48.18	.035	97.2	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	48.18	97.2		48.2 45.53	42.16		.1	.3

Ineffective Flow	num=	1
Sta L	Sta R	Elev
157.31	408.97	6918.88
		F

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 2605

INPUT

Description: Source: 2003 LOMR HEC-2 model
 Datum: NGVD29
 Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		17					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6920	90.01	6918	100.01	6916.2	108.01	6918	115.01	6918.2
127.01	6918	138.01	6917.5	150.01	6918	182.01	6918	190.01	6917.6
200.01	6918	222.01	6918.4	242.01	6918	258.01	6914	270.01	6916
305.01	6918	325	6919.8						

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.05	90.01	.035	305.01	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	90.01	305.01		0 0	0		.1	.3

SUMMARY OF MANNING'S N VALUES

River:UT_BSC2

Reach	River Sta.	n1	n2	n3
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Ex RAS Input Report.txt

NCONFL-BGM	5100	.05	.035	.05
NCONFL-BGM	5000	.05	.035	.05
NCONFL-BGM	4900	.05	.035	.05
NCONFL-BGM	4850	.05	.035	.05
NCONFL-BGM	4750	.05	.035	.05
NCONFL-BGM	4650	.05	.035	.05
NCONFL-BGM	4600	.05	.035	.05
NCONFL-BGM	4550	.05	.035	.05
NCONFL-BGM	4500	.05	.035	.05
NCONFL-BGM	4400	.05	.035	.05
NCONFL-BGM	4300	.05	.035	.05
NCONFL-BGM	4250	.05	.035	.05
NCONFL-BGM	4150	.05	.035	.05
NCONFL-BGM	4000	.05	.035	.05
NCONFL-BGM	3900	.05	.035	.05
NCONFL-BGM	3850	.05	.035	.05
NCONFL-BGM	3800	.05	.035	.05
NCONFL-BGM	3694	.05	.035	.05
NCONFL-BGM	3600	.05	.035	.05
NCONFL-BGM	3500	.05	.035	.05
NCONFL-BGM	3450	.05	.035	.05
NCONFL-BGM	3350	.05	.035	.05
NCONFL-BGM	3300	.05	.035	.05
NCONFL-BGM	3250	.05	.035	.05
NCONFL-BGM	3200	.05	.035	.05
NCONFL-BGM	3150	.05	.035	.05
NCONFL-BGM	3100	.05	.035	.05
NCONFL-BGM	3050	.035	.035	.035
NCONFL-BGM	3000	.05	.035	.05
NCONFL-BGM	2900	.05	.035	.05
NCONFL-BGM	2800	.05	.035	.05
NCONFL-BGM	2650	.05	.035	.05
NCONFL-BGM	2605	.05	.035	.05

SUMMARY OF REACH LENGTHS

River: UT_BSC2

Reach	River Sta.	Left	Channel	Right
NCONFL-BGM	5100	105.09	123.89	136.02
NCONFL-BGM	5000	101.57	100.09	91.93
NCONFL-BGM	4900	70.83	50.05	32.48
NCONFL-BGM	4850	109.19	100.34	86.55

Ex RAS Input Report.txt

NCONFL-BGM	4750	111.78	100.72	82.51
NCONFL-BGM	4650	17.98	49.31	85.86
NCONFL-BGM	4600	48.42	48.42	48.42
NCONFL-BGM	4550	60.05	60.05	60.05
NCONFL-BGM	4500	90.12	91.85	93.21
NCONFL-BGM	4400	126.25	112.69	105.25
NCONFL-BGM	4300	30.91	33.98	43.47
NCONFL-BGM	4250	91.84	91.84	91.84
NCONFL-BGM	4150	164.63	164.63	164.63
NCONFL-BGM	4000	93.31	85.66	98.56
NCONFL-BGM	3900	26.02	48.36	73.69
NCONFL-BGM	3850	46.06	51.61	64.96
NCONFL-BGM	3800	106.47	105.93	111.29
NCONFL-BGM	3694	95.37	93.53	91.5
NCONFL-BGM	3600	108.43	100.15	91.04
NCONFL-BGM	3500	40.72	50.26	59.45
NCONFL-BGM	3450	75.69	100.23	119
NCONFL-BGM	3350	63.32	50.1	22.83
NCONFL-BGM	3300	64.11	49.63	23.06
NCONFL-BGM	3250	50.23	50.23	50.23
NCONFL-BGM	3200	50.08	50.08	50.08
NCONFL-BGM	3150	39.96	50.14	58.01
NCONFL-BGM	3100	33.13	33.13	33.13
NCONFL-BGM	3050	75.27	75.27	75.27
NCONFL-BGM	3000	92.31	92.31	92.31
NCONFL-BGM	2900	118.9	99.71	72.05
NCONFL-BGM	2800	140.72	150.39	162.43
NCONFL-BGM	2650	48.2	45.53	42.16
NCONFL-BGM	2605	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: UT_BSC2

Reach	River Sta.	Contr.	Expan.
NCONFL-BGM	5100	.1	.3
NCONFL-BGM	5000	.1	.3
NCONFL-BGM	4900	.1	.3
NCONFL-BGM	4850	.1	.3
NCONFL-BGM	4750	.1	.3
NCONFL-BGM	4650	.1	.3
NCONFL-BGM	4600	.1	.3
NCONFL-BGM	4550	.1	.3
NCONFL-BGM	4500	.1	.3

Ex RAS Input Report.txt

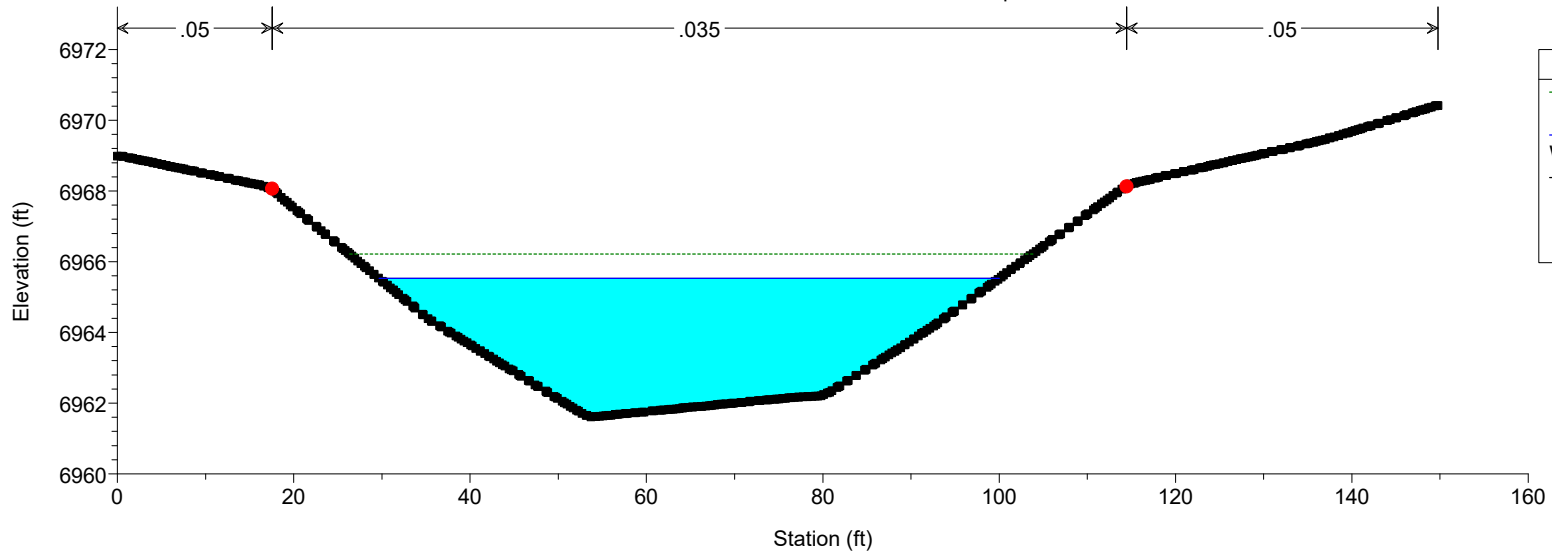
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NCONFL-BGM	4300	.1	.3
NCONFL-BGM	4250	.1	.3
NCONFL-BGM	4150	.3	.5
NCONFL-BGM	4000	.1	.3
NCONFL-BGM	3900	.1	.3
NCONFL-BGM	3850	.1	.3
NCONFL-BGM	3800	.1	.3
NCONFL-BGM	3694	.1	.3
NCONFL-BGM	3600	.1	.3
NCONFL-BGM	3500	.1	.3
NCONFL-BGM	3450	.1	.3
NCONFL-BGM	3350	.1	.3
NCONFL-BGM	3300	.1	.3
NCONFL-BGM	3250	.1	.3
NCONFL-BGM	3200	.1	.3
NCONFL-BGM	3150	.1	.3
NCONFL-BGM	3100	.1	.3
NCONFL-BGM	3050	.1	.3
NCONFL-BGM	3000	.1	.3
NCONFL-BGM	2900	.1	.3
NCONFL-BGM	2800	.1	.3
NCONFL-BGM	2650	.1	.3
NCONFL-BGM	2605	.1	.3

Corrected Effective

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Shear Chan	Shear Total	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(lb/sq ft)	(lb/sq ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NCONFL-BGM	5100	100-YR-REV	1450	6961.61	6965.81	1.31	1.31		6966.63	0.007753	7.26	199.82	73.21	0.77
NCONFL-BGM	5000	100-YR-REV	1450	6959.87	6964.45	1.82	1.1	6964.45	6965.52	0.009873	8.67	203.55	112.98	0.89
NCONFL-BGM	4900	100-YR-REV	1450	6956.13	6960.76	2.05	1.81	6960.76	6962.01	0.012791	9	164.53	71.91	0.99
NCONFL-BGM	4850	100-YR-REV	1450	6954.51	6959.69	2.11	1.38	6959.69	6961.05	0.0103	9.51	168.73	77.99	0.92
NCONFL-BGM	4750	100-YR-REV	1450	6952.35	6957.64	1.78	1.16	6957.64	6958.72	0.010065	8.54	193.64	104.05	0.89
NCONFL-BGM	4650	100-YR-REV	1450	6950.66	6955.77	2.05	1.26	6955.77	6957.08	0.009681	9.42	178.26	85.08	0.9
NCONFL-BGM	4600	100-YR-REV	1450	6949.29	6954.25	2.11	1.53	6954.25	6955.6	0.011157	9.39	163.18	73.41	0.94
NCONFL-BGM	4550	100-YR-REV	1450	6947.92	6953.98	0.79	0.62		6954.43	0.003662	5.86	299.03	108.8	0.55
NCONFL-BGM	4500	100-YR-REV	1450	6947.76	6952.64	2.15	1.96	6952.64	6953.97	0.013043	9.25	157.24	64.3	1
NCONFL-BGM	4400	100-YR-REV	1450	6945.04	6950.89	2.38	2.38	6950.89	6952.42	0.01294	9.93	146.07	48.1	1
NCONFL-BGM	4300	100-YR-REV	1450	6943.59	6948.68	2.29	2.29	6948.68	6950.12	0.013214	9.64	150.44	53.15	1.01
NCONFL-BGM	4250	100-YR-REV	1450	6942.87	6948.01	2.22	2.22	6948.01	6949.4	0.013073	9.46	153.33	55.34	1
NCONFL-BGM	4150	100-YR-REV	1450	6941.91	6946.13	2.08	2.08	6946.13	6947.39	0.013663	9	161.07	65.24	1.01
NCONFL-BGM	4000	100-YR-REV	1450	6938.32	6942.61	1.1	1.07	6942.61	6943.15	0.007928	6.46	256.76	117.49	0.76
NCONFL-BGM	3900	100-YR-REV	1450	6937.27	6940.25	0.8	0.8		6940.7	0.006366	5.38	269.27	133.82	0.67
NCONFL-BGM	3850	100-YR-REV	1450	6935.39	6939.44	1.45	1.45	6939.3	6940.25	0.012222	7.21	201.06	104.8	0.92
NCONFL-BGM	3800	100-YR-REV	1450	6934.46	6938.47	2.08	2.06	6938.47	6939.46	0.017113	8.67	189.62	96.99	1.09
NCONFL-BGM	3694	100-YR-REV	1482	6931.87	6935.66	1.12	1.12		6936.29	0.009046	6.36	232.84	117.04	0.8
NCONFL-BGM	3600	100-YR-REV	1482	6930.63	6934.23	1.93	1.87	6934.23	6935.13	0.016954	8.24	203.11	113.96	1.07
NCONFL-BGM	3500	100-YR-REV	1482	6928.81	6933.1	0.73	0.73		6933.55	0.004315	5.43	273.15	99.76	0.58
NCONFL-BGM	3450	100-YR-REV	1482	6928.02	6931.98	1.94	1.94	6931.98	6933.13	0.013747	8.58	172.65	75.55	1
NCONFL-BGM	3350	100-YR-REV	1482	6926.41	6930.19	1.82	1.47	6930.19	6931.26	0.012797	8.33	183.79	99.51	0.97
NCONFL-BGM	3300	100-YR-REV	1482	6924.89	6929.53	1.42	1.26	6929.18	6930.39	0.009098	7.44	200.07	89.6	0.83
NCONFL-BGM	3250	100-YR-REV	1482	6923.87	6928.77	1.79	1.57	6928.6	6929.86	0.011382	8.39	177.72	79.38	0.93
NCONFL-BGM	3200	100-YR-REV	1482	6923.23	6927.95	2.08	1.9	6927.95	6929.23	0.013067	9.07	164.36	69.72	0.99
NCONFL-BGM	3150	100-YR-REV	1482	6923.17	6926.87	1.99	1.43	6926.87	6928.1	0.011803	8.93	172.45	88.08	0.95
NCONFL-BGM	3100	100-YR-REV	1482	6922.12	6925.7	1.99	1.72	6925.69	6926.9	0.013055	8.78	170.13	80	0.99
NCONFL-BGM	3050	100-YR-REV	1482	6921.42	6926	0.72	0.52		6926.48	0.003291	5.64	276.02	108.1	0.53
NCONFL-BGM	3000	100-YR-REV	1482	6920.33	6925.06	1.63	0.89	6925.06	6926.04	0.009052	8.18	214.31	212.08	0.85
NCONFL-BGM	2900	100-YR-REV	1482	6919.33	6923.12	1.78	1.08	6923.12	6924.15	0.01008	8.53	213.3	147.71	0.89
NCONFL-BGM	2800	100-YR-REV	1482	6917.24	6921.9	1.67	0.78	6921.9	6922.92	0.007745	8.55	226.31	155.5	0.8
NCONFL-BGM	2650	100-YR-REV	1482	6913.71	6919.2	1.23	0.44	6919.2	6919.88	0.00589	7.28	316.68	264.82	0.7
NCONFL-BGM	2605	100-YR-REV	1482	6914	6918.85	0.72	0.63	6918.57	6919.21	0.008288	4.82	321.29	262.7	0.72

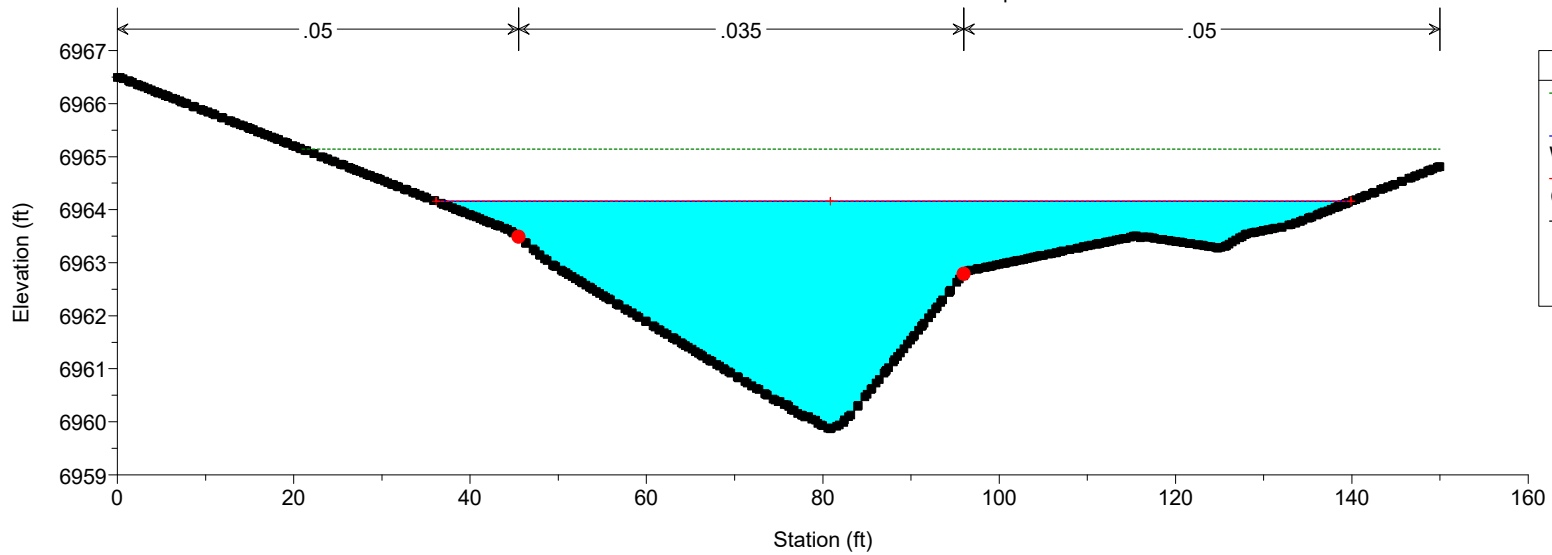
HEC-RAS Model Plan: CE 2/4/2020

Source: Corrected Effective Topo



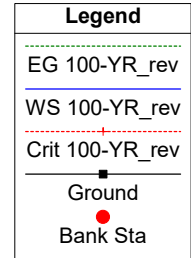
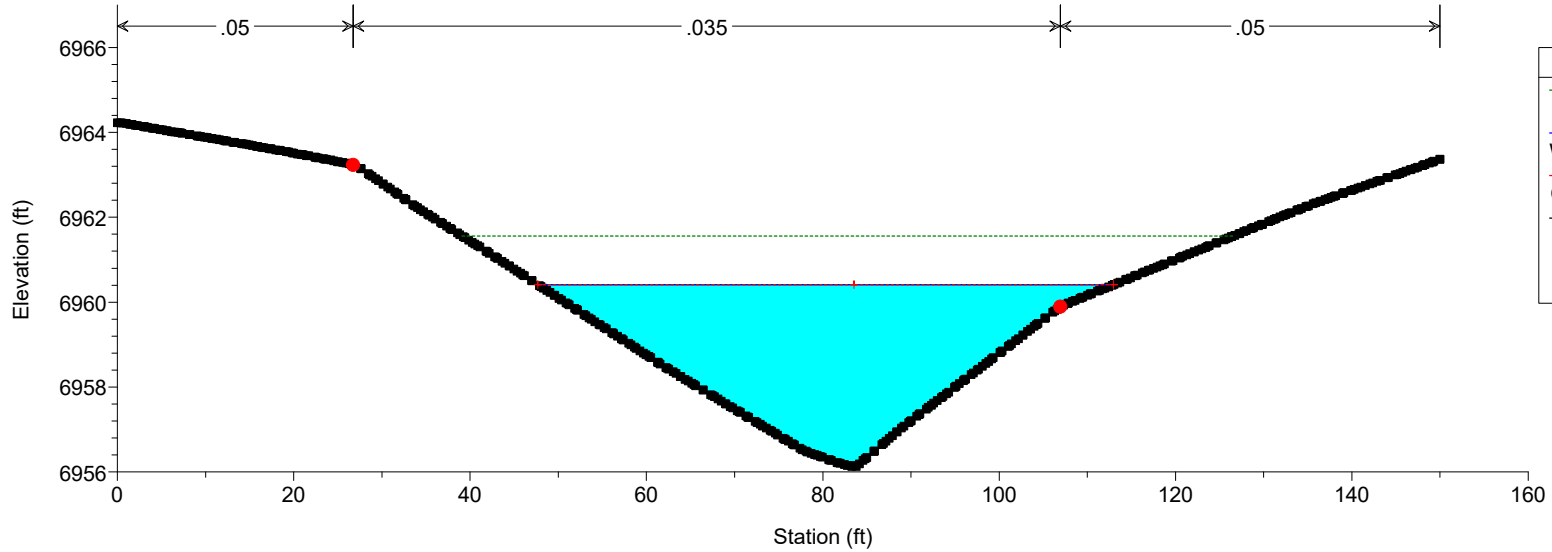
HEC-RAS Model Plan: CE 2/4/2020

Source: Corrected Effective Topo



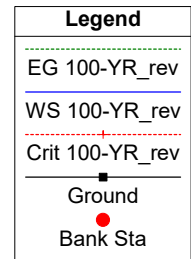
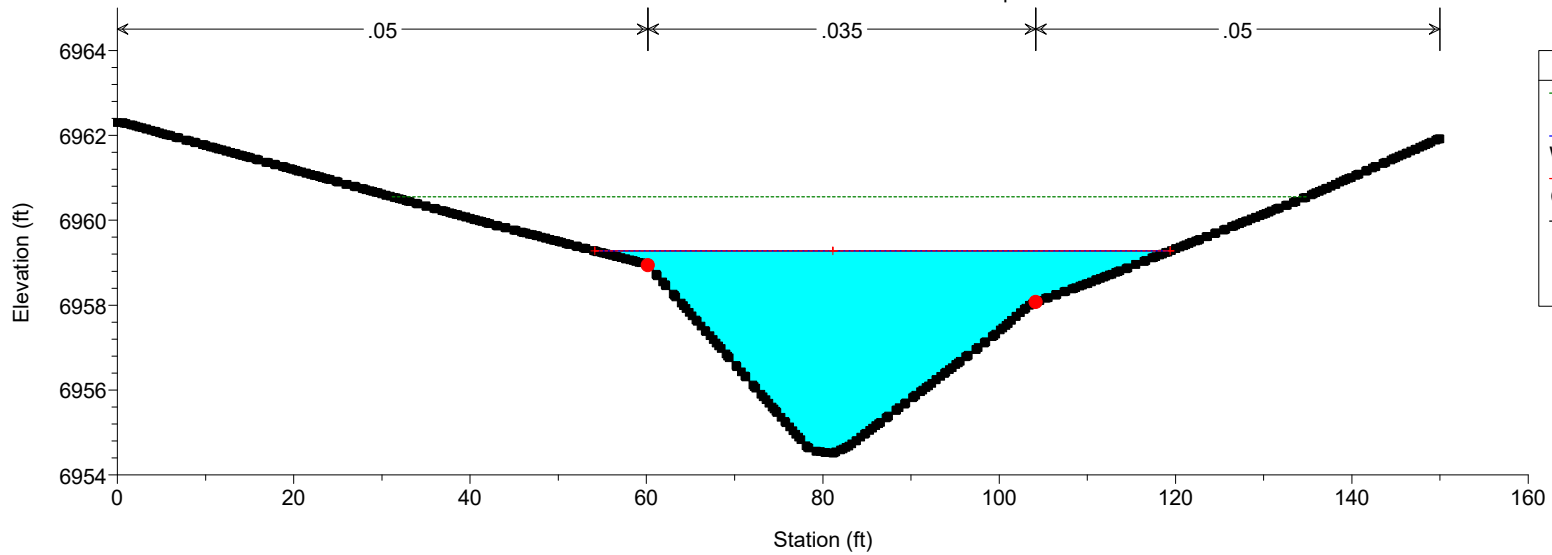
HEC-RAS Model Plan: CE 2/4/2020

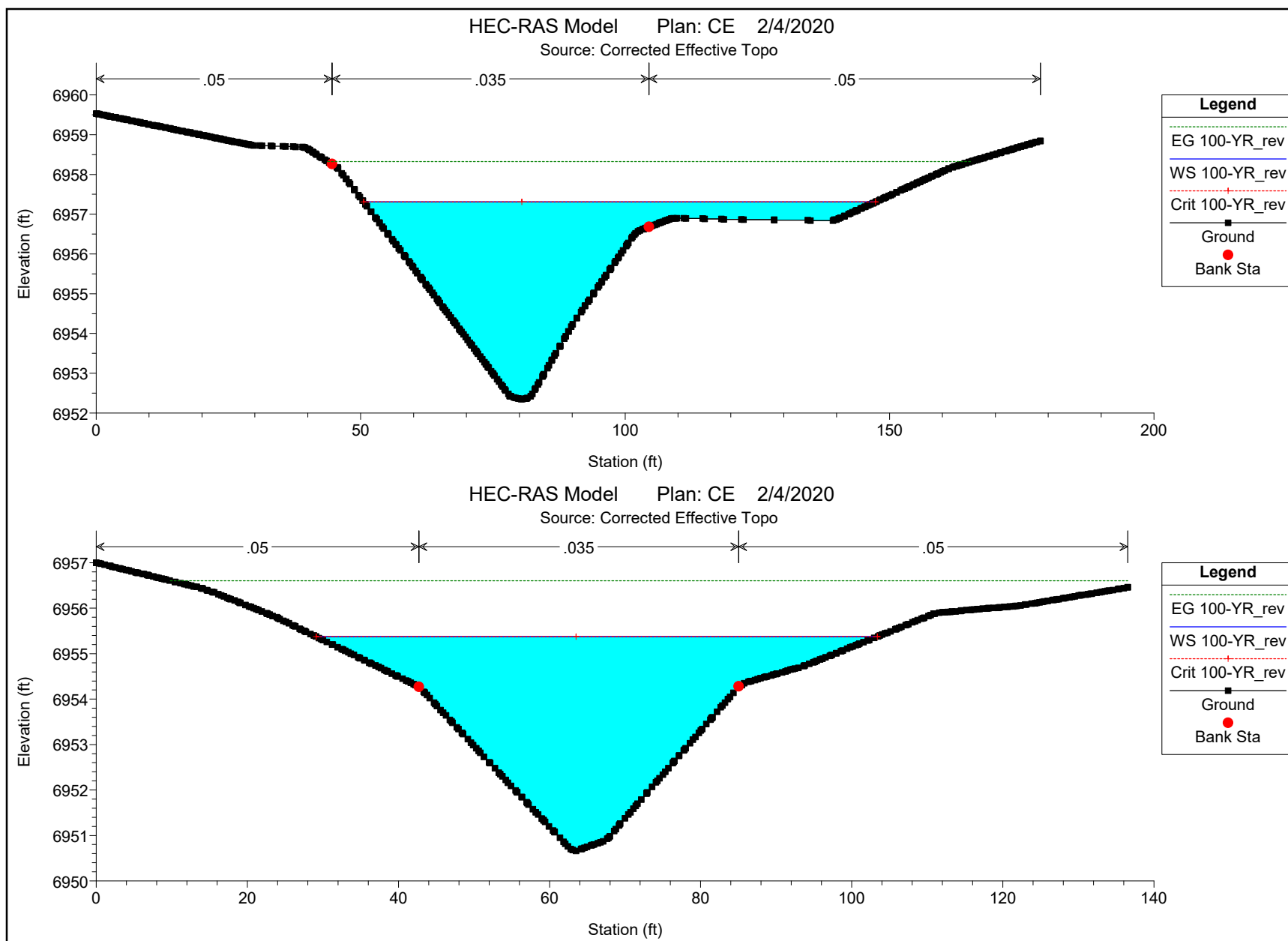
Source: Corrected Effective Topo

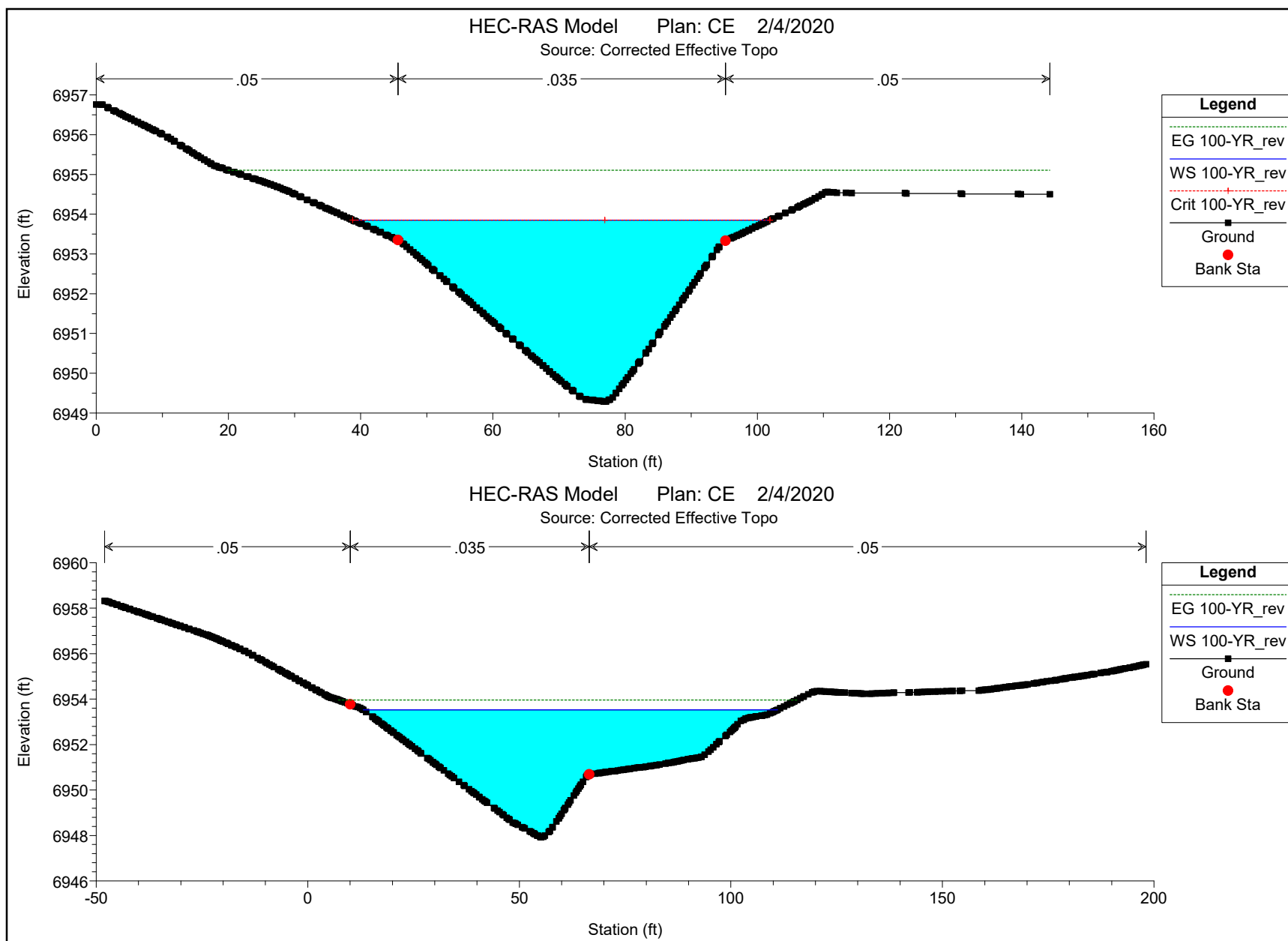


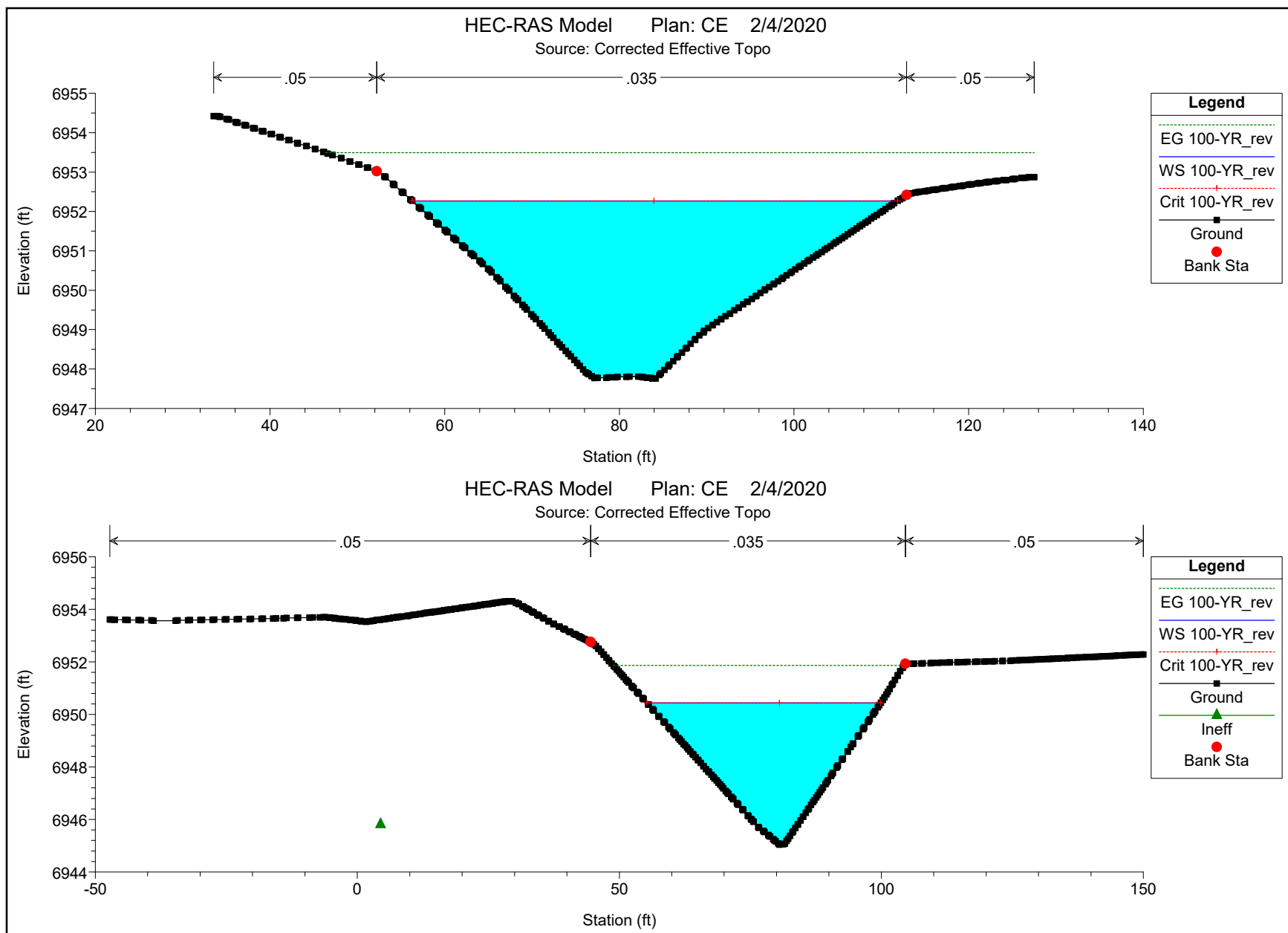
HEC-RAS Model Plan: CE 2/4/2020

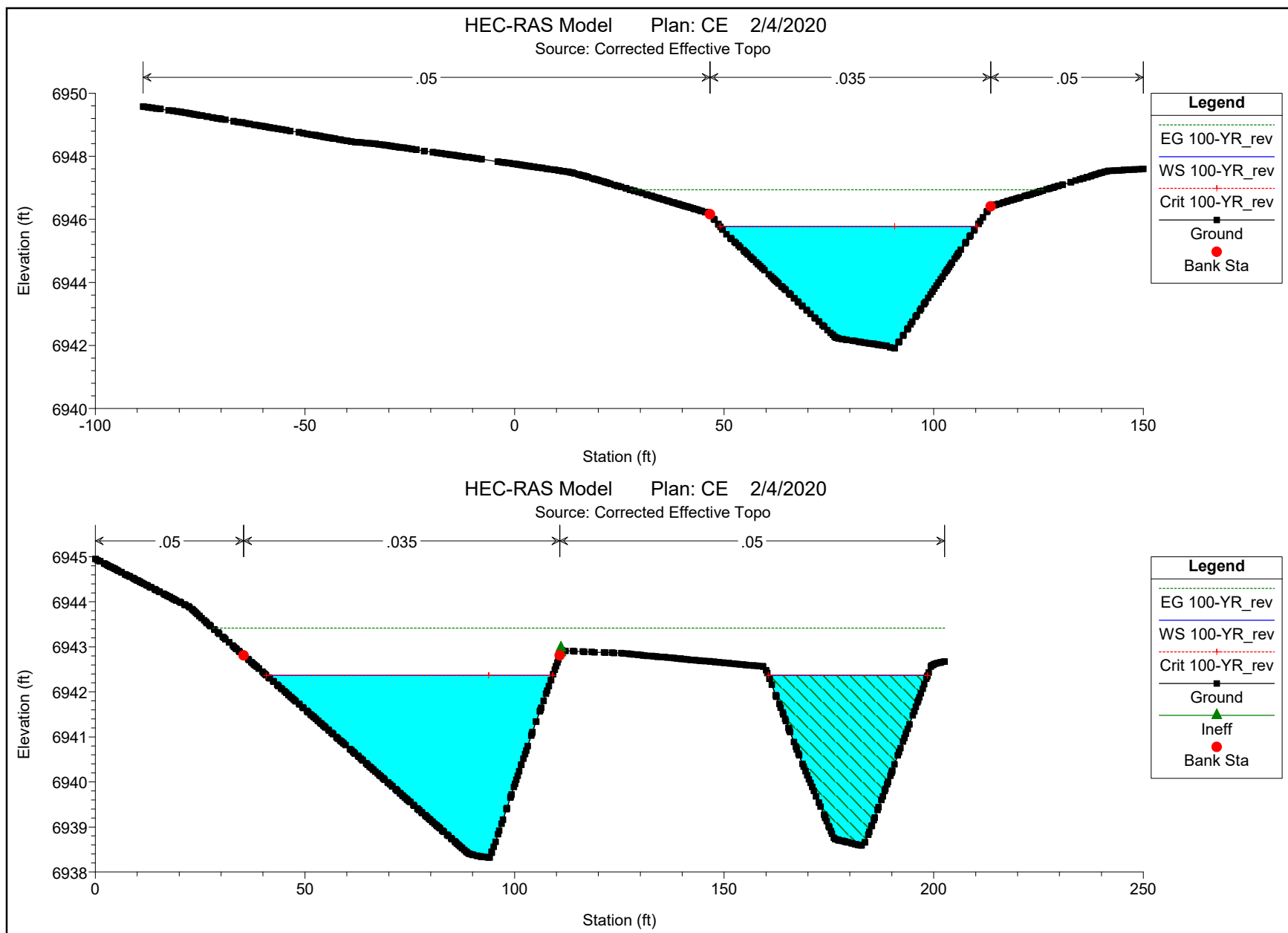
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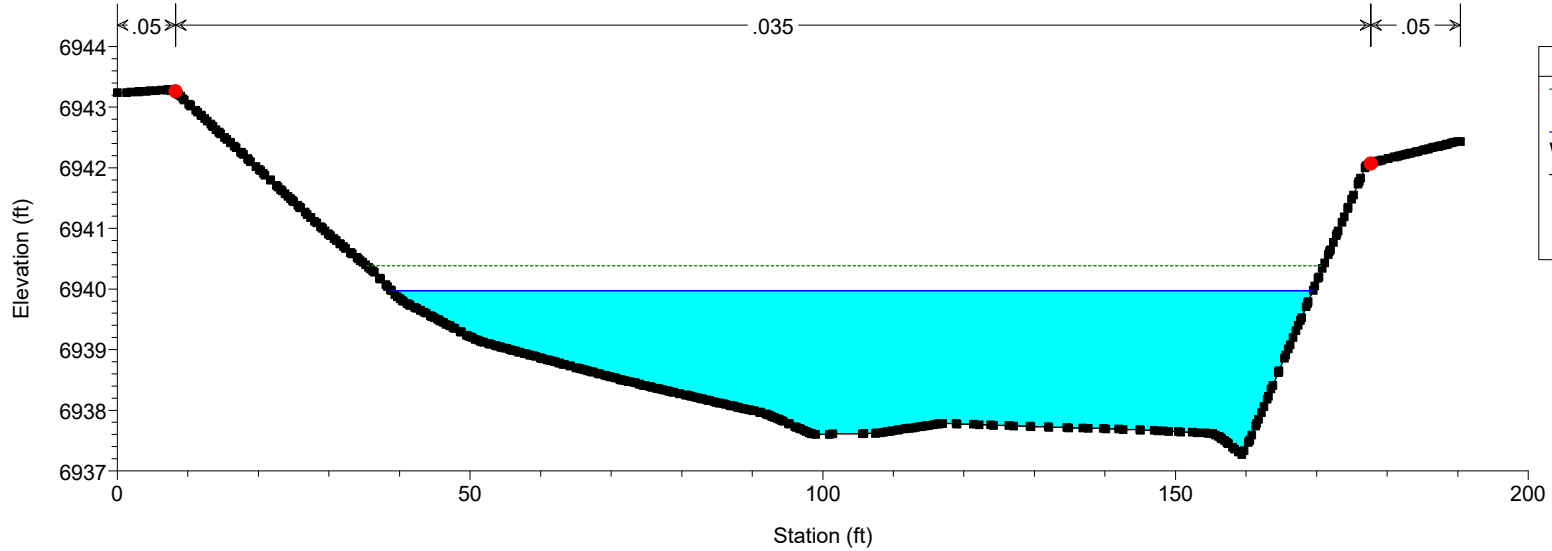






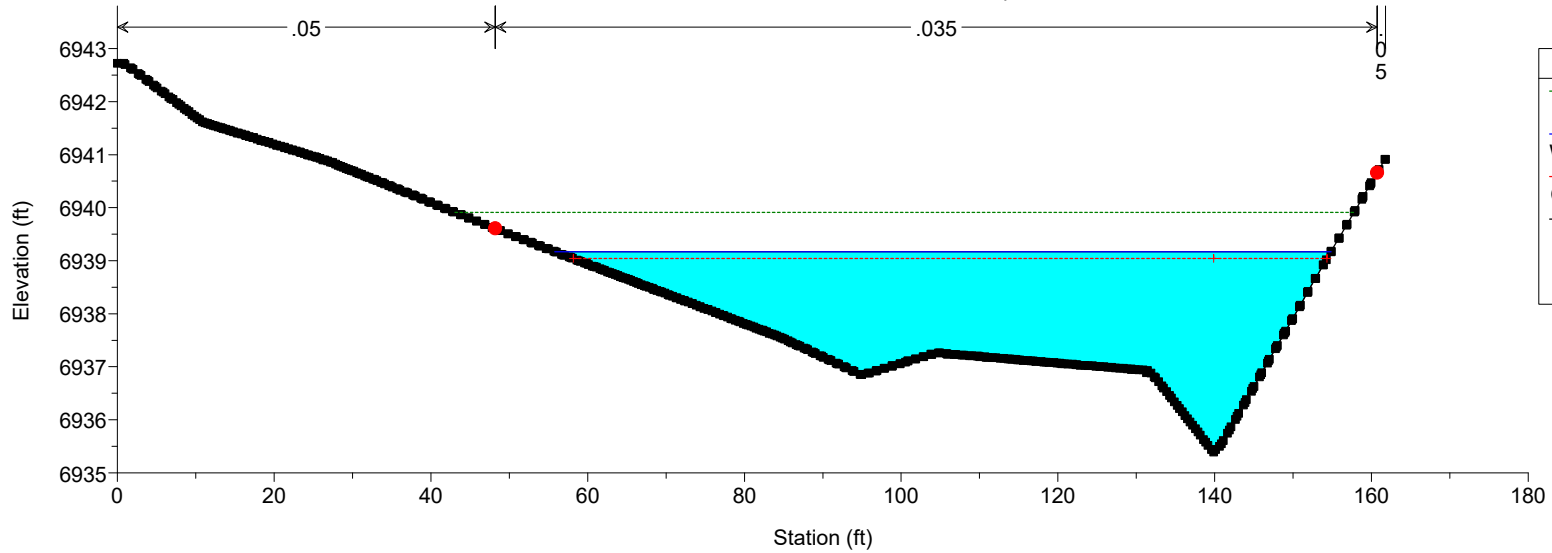
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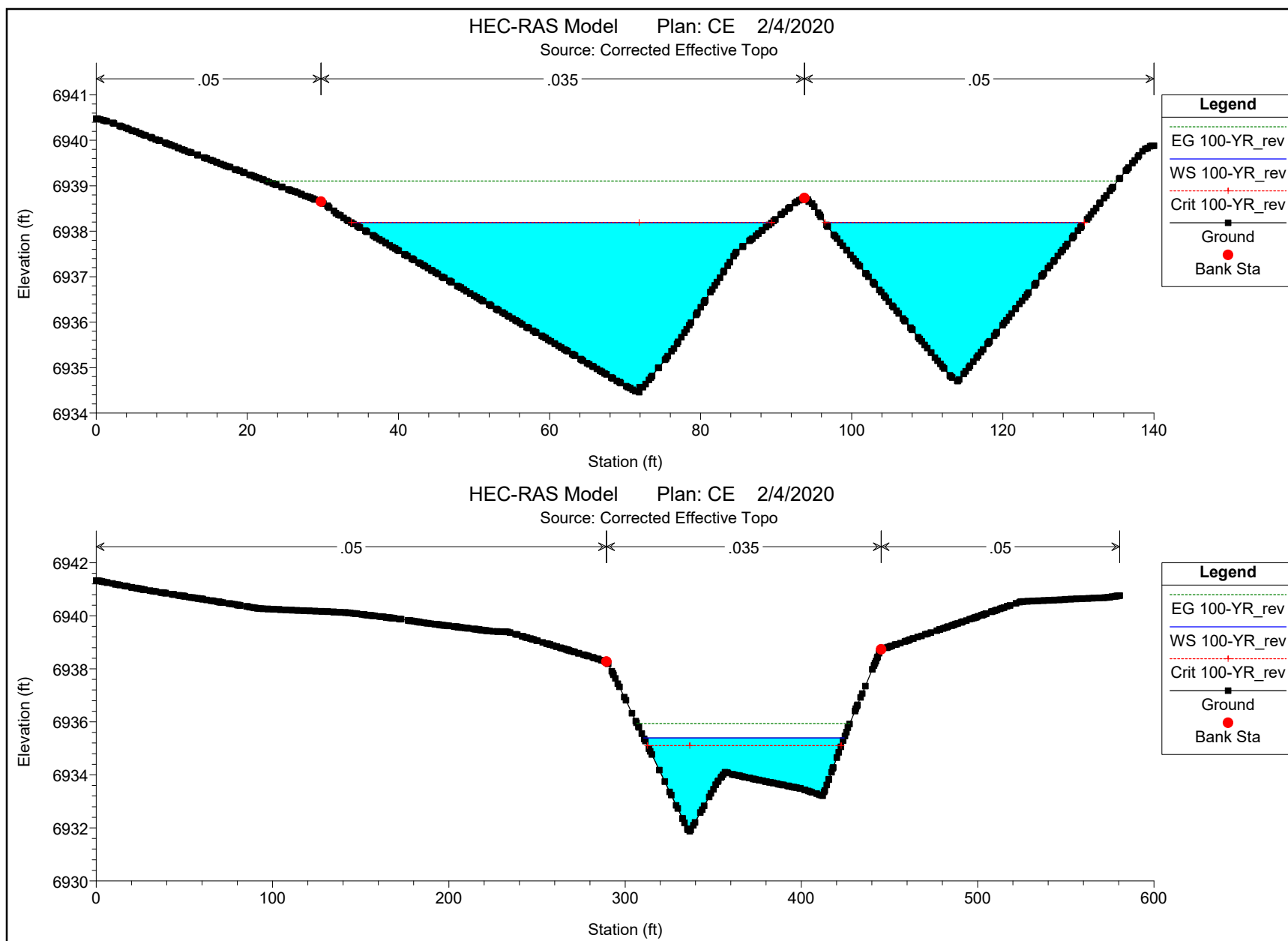
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HEC-RAS Model Plan: CE 2/4/2020

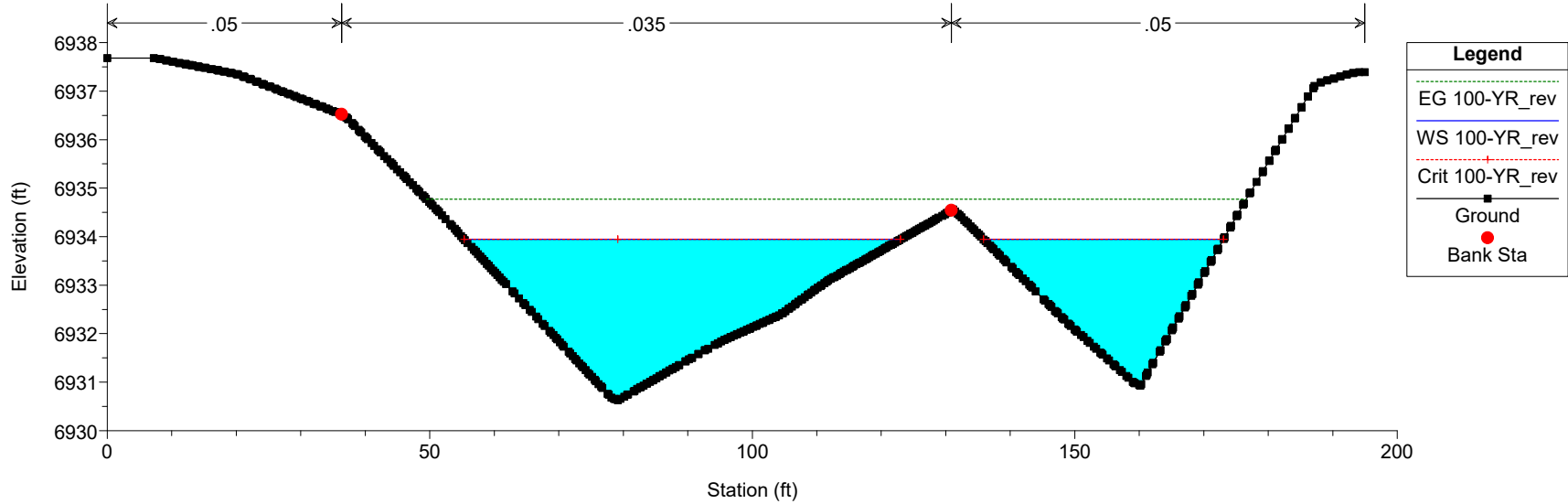
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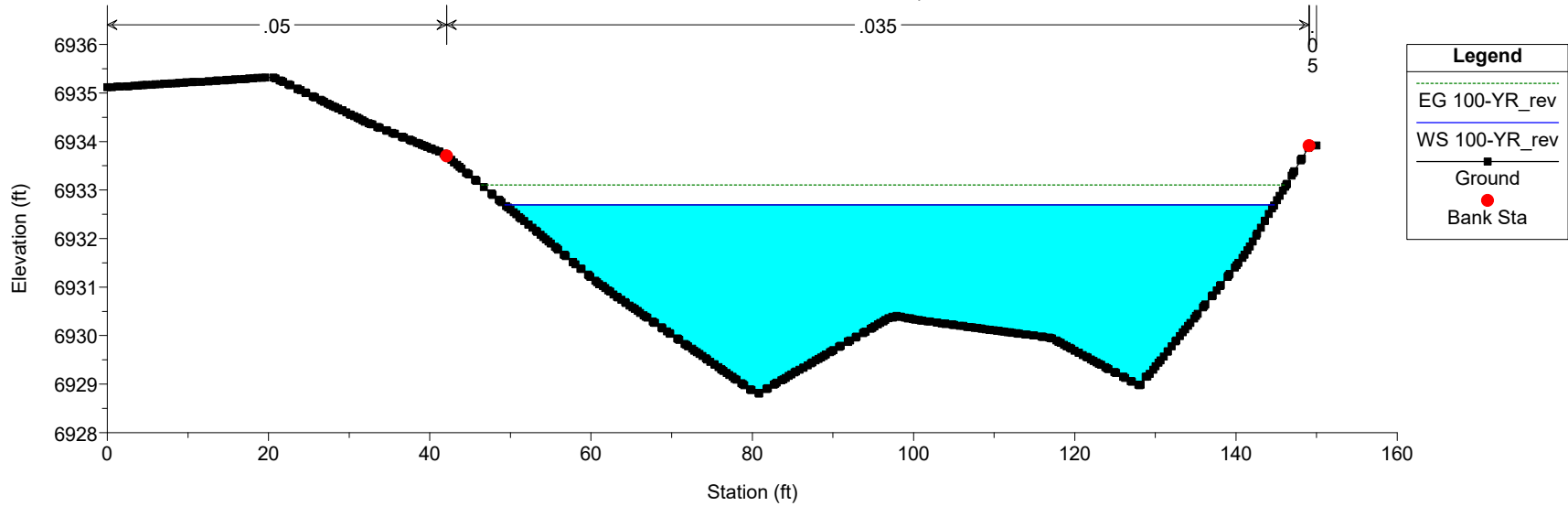
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Source: Corrected Effective Topo



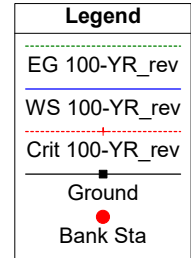
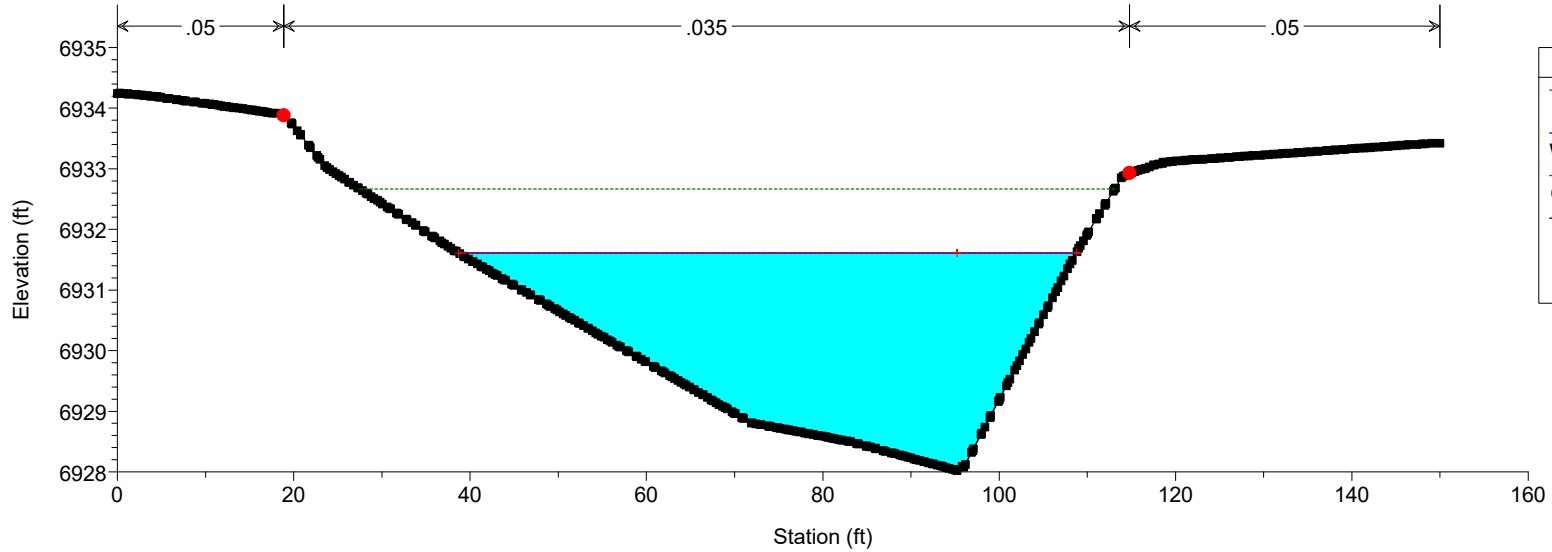
HEC-RAS Model Plan: CE 2/4/2020

Source: Corrected Effective Topo



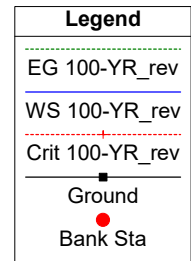
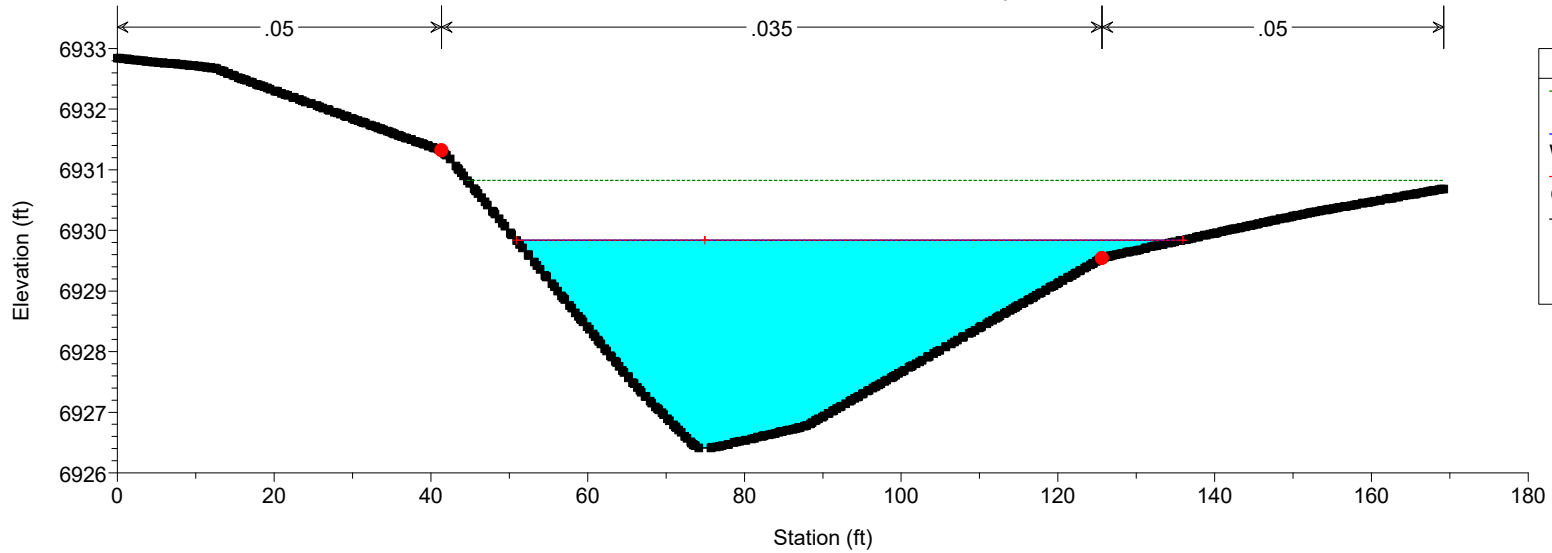
HEC-RAS Model Plan: CE 2/4/2020

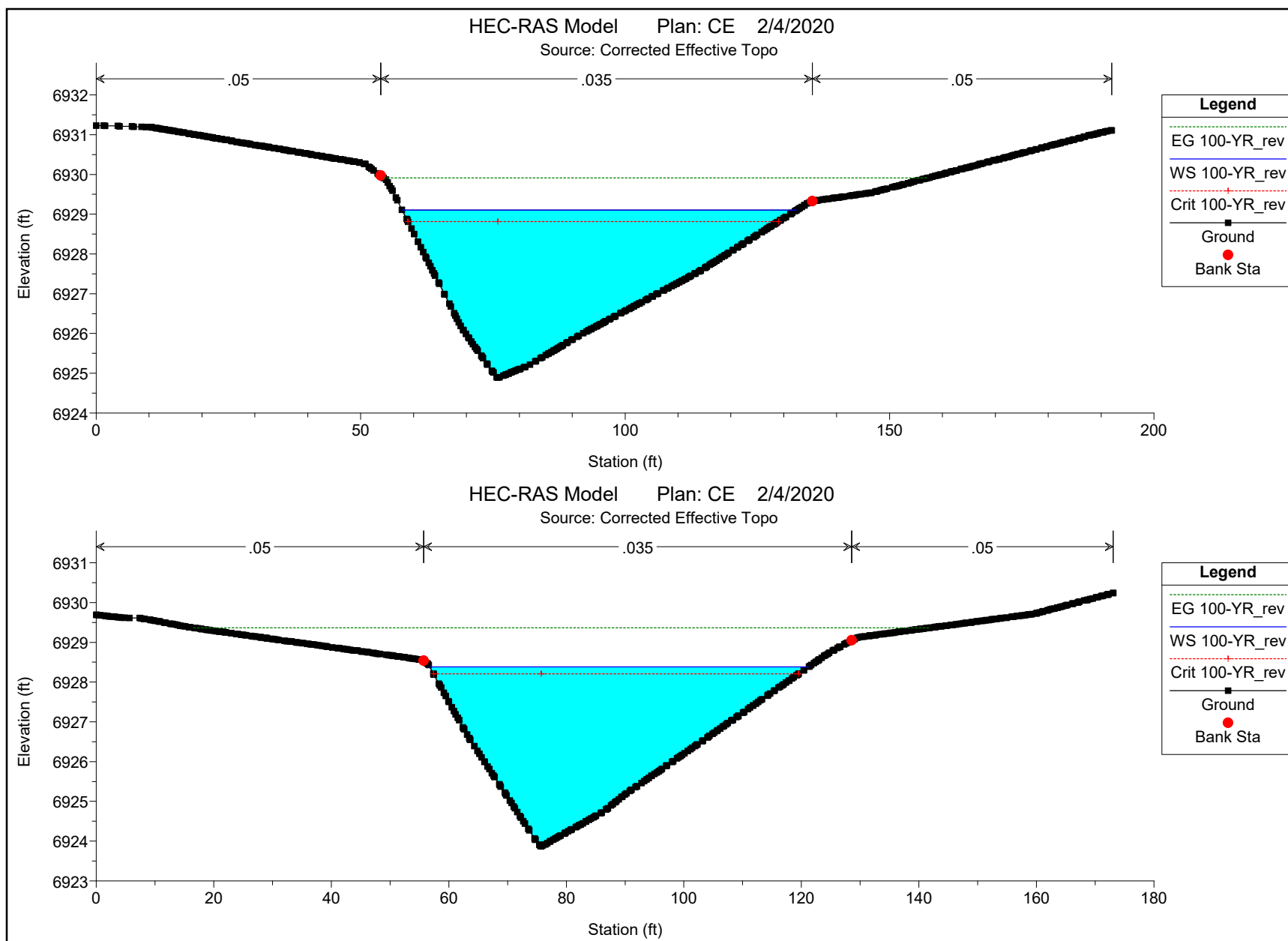
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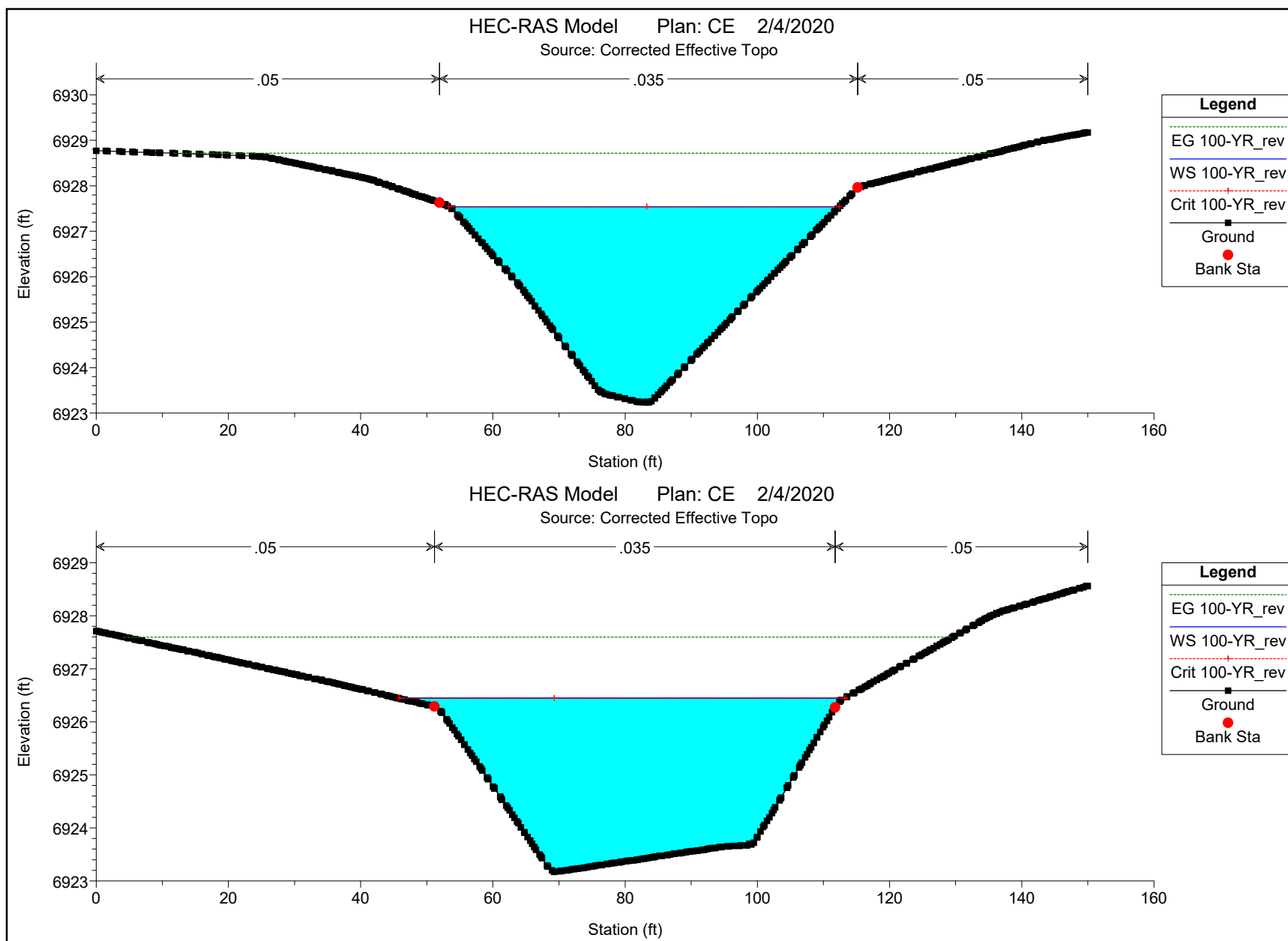


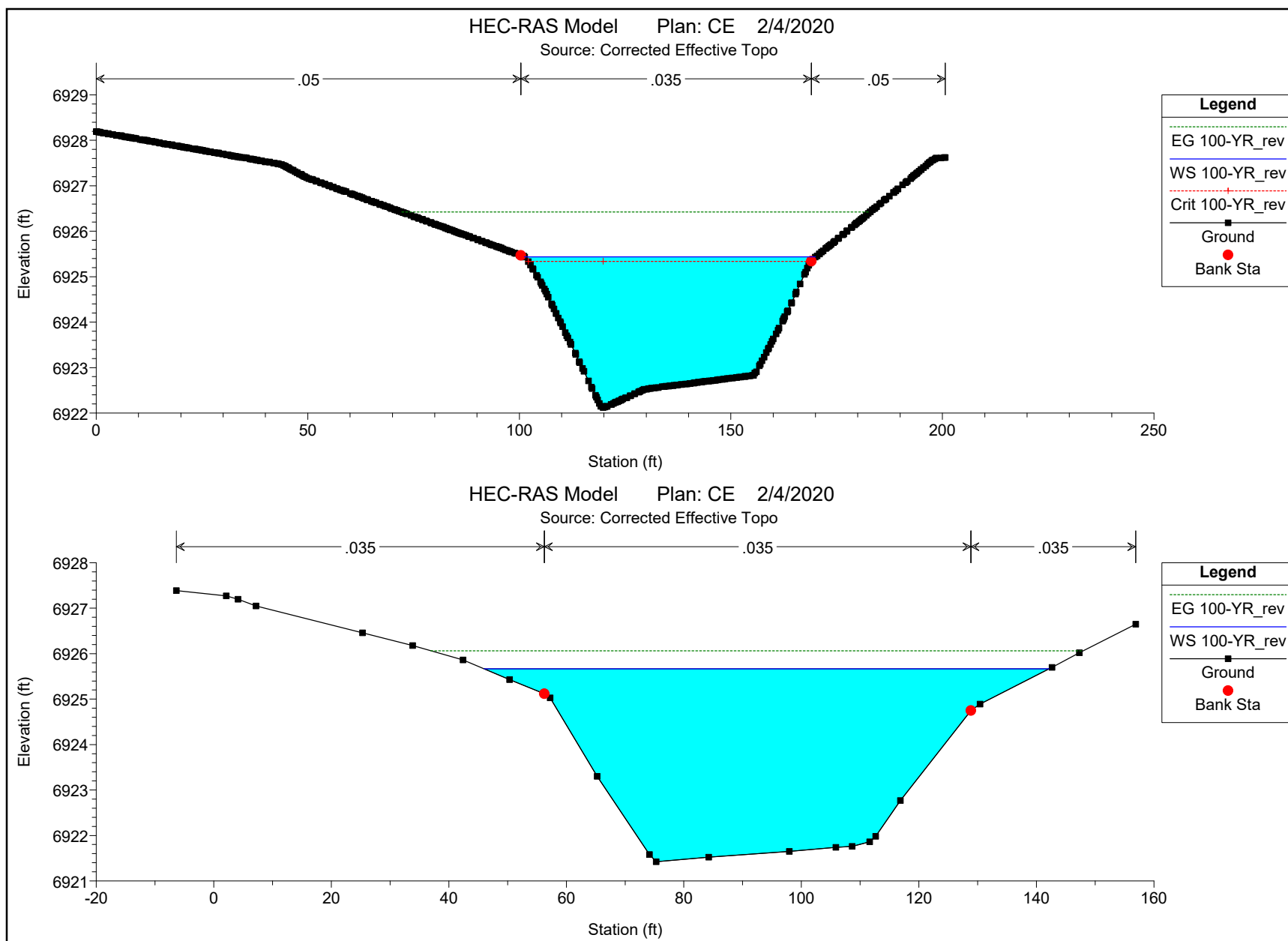
HEC-RAS Model Plan: CE 2/4/2020

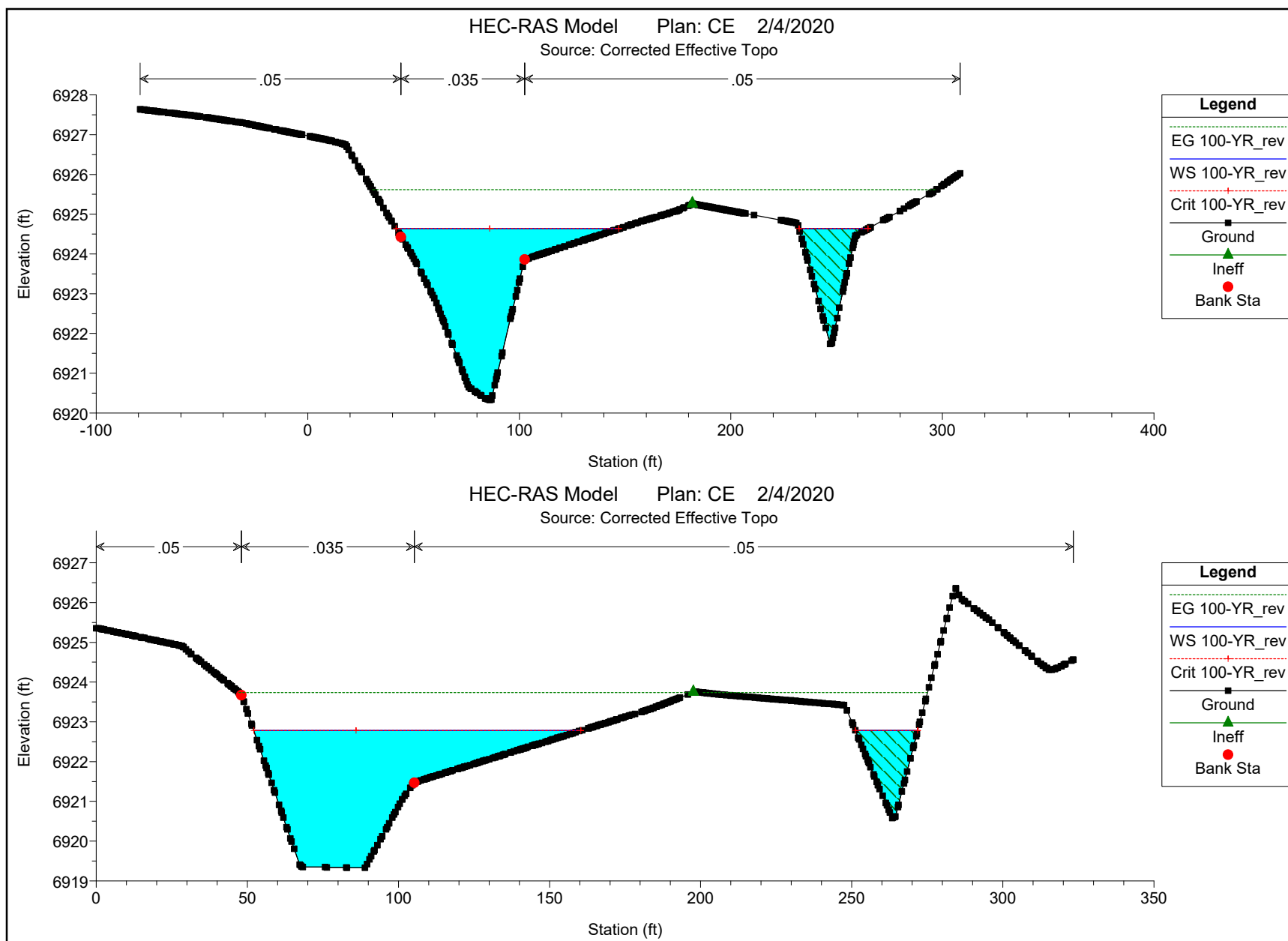
Source: Corrected Effective Topo

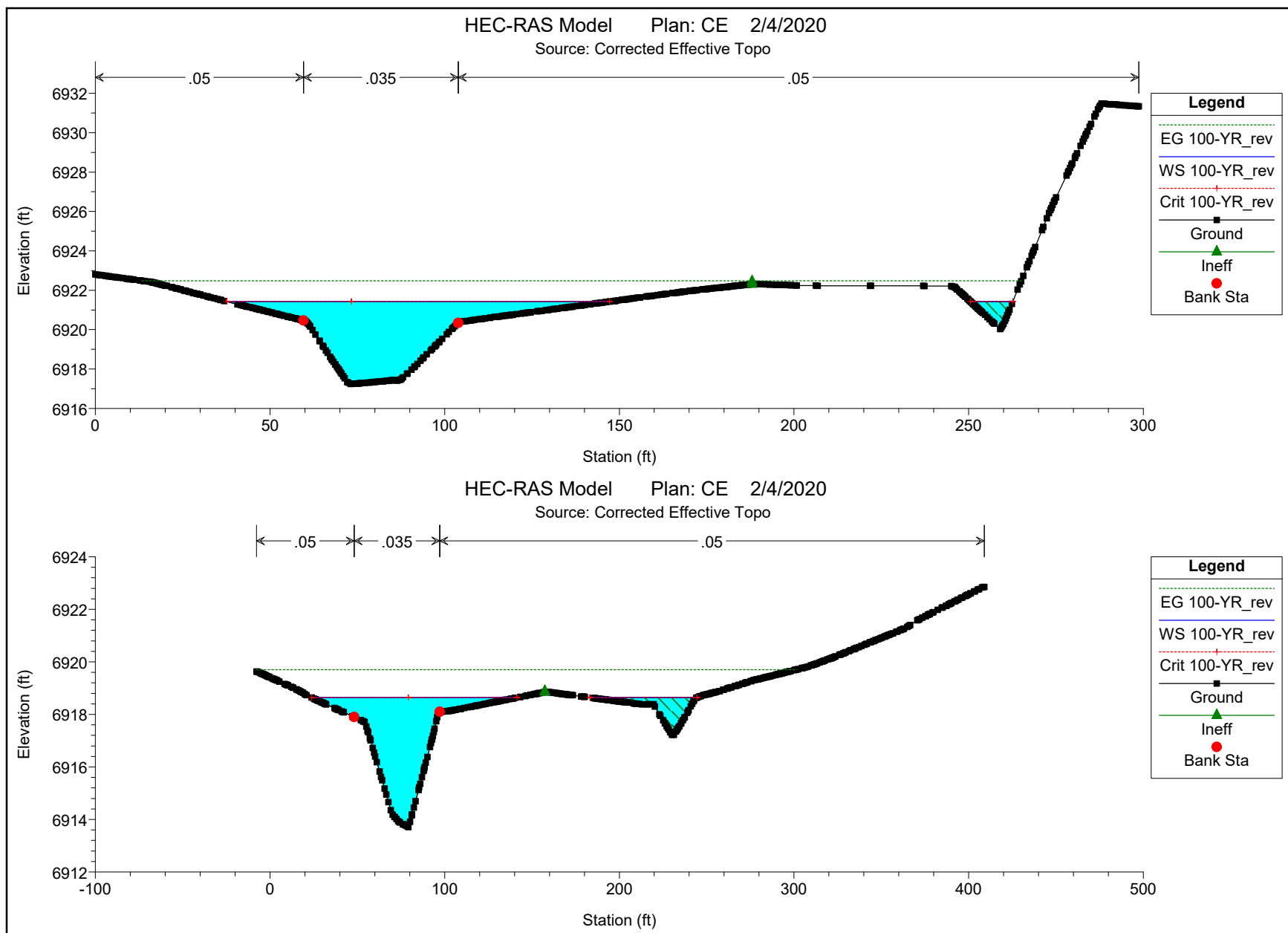






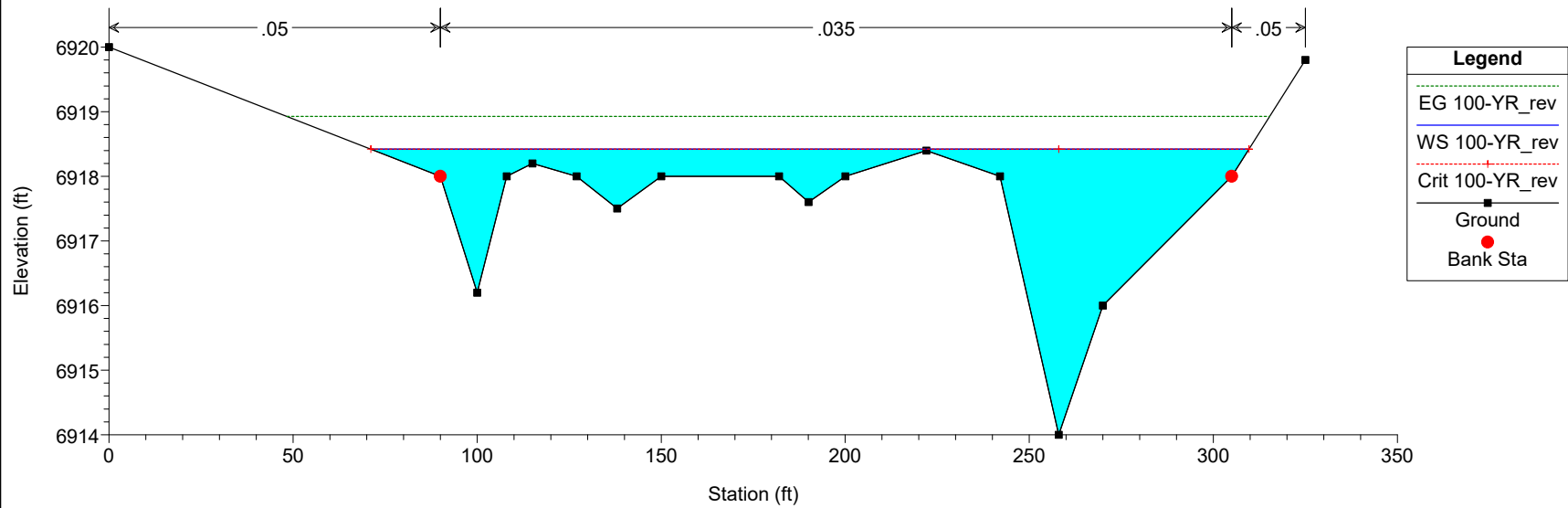






HEC-RAS Model Plan: CE 2/4/2020

Source: 2003 LOMR HEC-2 model



Proposed Conditions Model

Pr RAS Input Report.txt

HEC-RAS HEC-RAS 5.0.7 March 2019

U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X      X  XXXXXX   XXXX      XXXX      XX      XXXX
X      X  X        X      X      X  X      X  X      X
X      X  X        X        X  X      X  X      X
XXXXXXXX XXXX      X        XXX XXXX      XXXXXX   XXXX
X      X  X        X        X  X      X  X      X
X      X  X        X      X      X  X      X  X      X
X      X  XXXXXX   XXXX      X      X  X  X      XXXXX
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PROJECT DATA

Project Title: HEC-RAS Model
Project File : CLH14_Final.prj
Run Date and Time:

Project in English units

Project Description:

CRS Info=<SpatialReference> <CoordinateSystem Code="3502"
Unit="US_survey_Foot" AcadCode="" /> <Registration OffsetX="0" OffsetY="0"
OffsetZ="0" ScaleX="1" ScaleY="1" ScaleZ="1" /></SpatialReference>

PLAN DATA

Plan Title:
Plan File :

Geometry Title: RC_Reduced

Geometry File : h:\Challenger Homes Inc\CO, El Paso
County-CLH0000014.20-Bent Grass\2. P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras
1_24_2020 Final\CLH14_Final.g06

Flow Title : Existing

Flow File : h:\Challenger Homes Inc\CO, El Paso
County-CLH0000014.20-Bent Grass\2. P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras
1_24_2020 Final\CLH14_Final.f01

Pr RAS Input Report.txt

Plan Description:

Corrected effective condition model for the Bent Grass Subdivision Project.
Effective Hydrologic information was incorporated into a corrected effective condition with resurveyed topography as of 2019

Calculated using Hec-Ras v.

5.0.3

Plan Summary Information:

Number of: Cross Sections	=	39	Multiple Openings	=	0
Culverts	=	1	Inline Structures	=	0
Bridges	=	0	Lateral Structures	=	0

Computational Information

Water surface calculation tolerance	=	0.01
Critical depth calculation tolerance	=	0.01
Maximum number of iterations	=	20
Maximum difference tolerance	=	0.33
Flow tolerance factor	=	0.001

Computation Options

Critical depth computed only where necessary	
Conveyance Calculation Method:	At breaks in n values only
Friction Slope Method:	Average Conveyance
Computational Flow Regime:	Subcritical Flow

FLOW DATA

Flow Title: Existing

Flow File : h:\Challenger Homes Inc\CO, El Paso County-CLH0000014.20-Bent Grass\2.
P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras 1_24_2020 Final\CLH14_Final.f01

Flow Data (cfs)

River	Reach	RS	100-YR_rev	5-YR
100-YR				
Existing Channel	East	5100	43	4
1450				
Existing Channel	East	5000	43	4
1450				
Existing Channel	East	3900	880	14
1482				
UT_BSC2	NCONFL-BGM	5100	1200	110

Pr RAS Input Report.txt

1450
UT_BSC2 NCONFL-BGM 3694 1200 110
1482

Boundary Conditions

River Downstream	Reach	Profile	Upstream
UT_BSC2	NCONFL-BGM	100-YR_rev	Normal S = 0.024735
Normal S = 0.019178			
UT_BSC2	NCONFL-BGM	5-YR	Normal S = 0.024735
Normal S = 0.019178			
UT_BSC2	NCONFL-BGM	100-YR	Normal S = 0.024735
Known WS = 6918.85			

GEOMETRY DATA

Geometry Title: RC_Reduced
Geometry File : h:\Challenger Homes Inc\CO, El Paso County-CLH0000014.20-Bent
Grass\2. P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras 1_24_2020 Final\CLH14_Final.g06

CROSS SECTION

RIVER: UT_BSC2
REACH: NCONFL-BGM RS: 5100

INPUT

Description: Source: Revised Condition Topo
Datum: NGVD29
Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=	403						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6967.89	.23	6967.89	.61	6967.86	.87	6967.85	1.23	6967.83
1.53	6967.81	1.97	6967.78	2.23	6967.77	2.46	6967.75	3.06	6967.72
3.24	6967.71	3.39	6967.7	4.15	6967.65	4.24	6967.65	4.31	6967.64
5.2	6967.59	5.25	6967.59	6.17	6967.54	6.25	6967.53	6.34	6967.53
7.09	6967.48	7.25	6967.47	7.44	6967.46	8.02	6967.43	8.25	6967.41

Pr RAS Input Report.txt

8.53	6967.4	8.95	6967.37	9.26	6967.35	9.62	6967.33	9.87	6967.32
10.26	6967.29	10.72	6967.27	10.8	6967.26	11.26	6967.23	11.73	6967.21
11.81	6967.2	12.27	6967.18	12.65	6967.14	12.9	6967.11	13.27	6967.08
13.58	6967.04	14	6966.99	14.27	6966.95	14.51	6966.94	15.09	6966.88
15.28	6966.87	15.43	6966.85	16.19	6966.81	16.28	6966.8	16.36	6966.79
17.28	6966.59	17.32	6966.58	18.21	6966.39	18.29	6966.38	18.37	6966.36
19.14	6966.2	19.29	6966.17	19.47	6966.13	20.07	6966	20.29	6965.96
20.56	6965.9	20.99	6965.8	21.3	6965.74	21.66	6965.66	21.92	6965.6
22.3	6965.52	22.75	6965.41	22.85	6965.39	23.3	6965.29	23.77	6965.18
23.84	6965.16	24.31	6965.06	24.7	6964.97	24.94	6964.91	25.31	6964.83
25.63	6964.76	26.03	6964.66	26.16	6964.63	26.31	6964.6	26.55	6964.54
27.13	6964.41	27.32	6964.37	27.48	6964.33	28.22	6964.16	28.32	6964.14
28.41	6964.12	29.31	6963.91	29.33	6963.91	29.45	6963.88	30.26	6963.69
30.33	6963.68	30.41	6963.66	31.19	6963.5	31.33	6963.47	31.5	6963.44
32.11	6963.32	32.33	6963.28	32.59	6963.22	33.04	6963.14	33.34	6963.08
33.69	6963.01	33.97	6962.96	34.34	6962.89	34.78	6962.8	34.89	6962.78
35.34	6962.69	35.82	6962.58	35.88	6962.58	36.35	6962.47	36.75	6962.38
36.97	6962.33	37.35	6962.24	37.67	6962.18	38.06	6962.1	38.35	6962.05
38.6	6962.01	39.16	6961.91	39.36	6961.88	39.53	6961.85	40.25	6961.73
40.36	6961.71	40.45	6961.69	41.35	6961.69	41.36	6961.68	41.38	6961.68
41.57	6961.69	42.31	6961.74	42.37	6961.74	42.44	6961.75	43.23	6961.79
43.37	6961.8	43.53	6961.82	44.16	6961.93	44.37	6961.94	44.63	6961.98
45.09	6962.06	45.38	6962.1	45.72	6962.16	46.01	6962.2	46.38	6962.26
46.81	6962.3	46.94	6962.31	47.38	6962.34	49	6962.34	49.39	6962.33
50.65	6962.33	51.19	6962.32	52.5	6962.32	53.38	6962.31	54.47	6962.31
55.28	6962.3	57.13	6962.3	57.42	6962.29	58.99	6962.29	59.42	6962.28
61.04	6962.28	61.43	6962.27	63.22	6962.27	63.44	6962.26	64.55	6962.26
65.41	6962.25	67.33	6962.25	67.45	6962.24	68.69	6962.24	69.18	6962.23
69.79	6962.23	70.11	6962.22	71.03	6962.22	71.46	6962.21	72.47	6962.21
72.89	6962.2	73.07	6962.21	73.47	6962.21	73.81	6962.26	74.16	6962.32
74.47	6962.36	74.74	6962.4	75.26	6962.48	75.48	6962.52	75.67	6962.55
76.35	6962.66	76.48	6962.68	76.59	6962.69	77.44	6962.83	77.48	6962.83
77.52	6962.84	77.94	6962.91	78.45	6962.99	78.49	6962.99	78.54	6963
79.37	6963.13	79.49	6963.15	79.63	6963.17	80.3	6963.28	80.49	6963.31
80.72	6963.34	81.23	6963.42	81.5	6963.47	81.82	6963.52	82.15	6963.57
82.5	6963.63	82.91	6963.69	83.08	6963.72	83.5	6963.79	84.01	6963.87
84.51	6963.95	84.93	6964.02	85.1	6964.05	85.51	6964.12	85.86	6964.17
86.19	6964.23	86.51	6964.28	86.79	6964.32	87.29	6964.4	87.52	6964.44
87.71	6964.47	88.38	6964.58	88.52	6964.61	88.64	6964.63	89.48	6964.76
89.52	6964.77	89.57	6964.78	90.07	6964.86	90.49	6964.93	90.53	6964.93
90.57	6964.94	91.42	6965.08	91.53	6965.1	91.66	6965.12	92.35	6965.25
92.53	6965.28	92.76	6965.31	93.27	6965.41	93.54	6965.46	93.85	6965.51
94.2	6965.58	94.54	6965.63	94.64	6965.65	94.95	6965.71	95.13	6965.74
95.54	6965.82	96.04	6965.91	96.05	6965.91	96.55	6966	96.98	6966.08
97.13	6966.1	97.55	6966.18	97.91	6966.24	98.23	6966.3	98.56	6966.36
98.83	6966.41	99.32	6966.5	99.56	6966.54	99.76	6966.58	100.41	6966.7
100.56	6966.73	100.69	6966.75	101.51	6966.9	101.57	6966.91	101.61	6966.92
102.19	6967.02	102.54	6967.09	102.57	6967.09	102.6	6967.1	103.47	6967.25

Pr RAS Input Report.txt

103.57	6967.27	103.7	6967.29	104.39	6967.39	104.58	6967.41	104.79	6967.44
105.32	6967.5	105.58	6967.53	105.88	6967.55	106.25	6967.61	106.58	6967.63
106.98	6967.6	107.17	6967.7	107.59	6967.66	108.07	6967.61	108.1	6967.6
108.59	6967.56	109.03	6967.51	109.17	6967.5	109.59	6967.45	109.95	6967.42
110.26	6967.38	110.6	6967.35	110.88	6967.32	111.35	6967.27	111.6	6967.25
111.81	6967.23	112.45	6967.17	112.6	6967.16	112.73	6967.15	113.54	6967.08
113.61	6967.07	113.66	6967.07	114.32	6967.01	114.59	6966.99	114.64	6966.99
115.51	6966.91	115.61	6966.9	115.73	6966.89	116.44	6966.83	116.62	6966.82
116.82	6966.8	117.37	6966.75	117.62	6966.73	117.92	6966.71	118.29	6966.68
118.62	6966.65	119.01	6966.62	119.22	6966.6	119.63	6966.56	120.1	6966.52
120.15	6966.52	120.63	6966.48	121.07	6966.44	121.2	6966.43	121.63	6966.4
122	6966.37	122.29	6966.35	122.64	6966.33	122.93	6966.31	123.39	6966.28
123.64	6966.26	123.85	6966.25	124.48	6966.21	124.64	6966.19	124.78	6966.19
125.57	6966.13	125.65	6966.13	125.71	6966.12	126.44	6966.07	126.63	6966.06
126.67	6966.06	127.56	6966.01	127.65	6966	127.76	6966	128.49	6965.96
128.66	6965.95	128.86	6965.94	129.41	6965.92	129.66	6965.9	129.95	6965.89
130.34	6965.87	130.66	6965.85	131.04	6965.84	131.27	6965.83	131.67	6965.82
132.14	6965.8	132.19	6965.8	132.67	6965.78	133.12	6965.77	133.23	6965.76
133.67	6965.75	134.05	6965.73	134.32	6965.72	134.68	6965.71	134.97	6965.7
135.42	6965.68	135.68	6965.67	135.9	6965.66	136.51	6965.64	136.68	6965.64
136.83	6965.63	137.61	6965.6	137.75	6965.6	138.56	6965.57	138.68	6965.56
138.7	6965.56	139.61	6965.53	139.69	6965.53	139.79	6965.52	140.53	6965.51
140.7	6965.5	140.89	6965.5	141.46	6965.48	141.7	6965.48	141.98	6965.47
142.39	6965.46	142.7	6965.46	143.08	6965.45	143.31	6965.44	143.71	6965.43
144.17	6965.42	144.24	6965.42	144.71	6965.41	145.17	6965.4	145.26	6965.39
145.71	6965.38	146.09	6965.37	146.36	6965.37	146.72	6965.36	147.02	6965.35
147.45	6965.34	147.72	6965.34	147.95	6965.33	148.55	6965.32	148.72	6965.32
148.87	6965.33	149.64	6965.39	149.76	6965.39				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	16.19	.035	103.7	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	16.19	103.7		123.64	123.64		.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 5000

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 22

Pr RAS Input Report.txt

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6966.08	38.49	6963.58	54	6961.82	54.36	6961.8	54.81	6961.69
63.38	6959.57	71.3	6959.57	74.14	6959.57	75.86	6959.57	80.43	6959.57
89.06	6959.58	89.61	6959.58	89.7	6959.6	89.83	6959.63	90.38	6959.77
99.95	6962.13	104.34	6963.22	111.19	6963.43	118.77	6963.24	121.11	6963.48
125.8	6963.63	150	6965.22						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	38.49	.035	104.34	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	38.49	104.34		106.14	100.12	95.6	.1	.3

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 4900

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6963.99	12.58	6963.53	20.95	6963.2	27.05	6962.33	36.46	6961.09
59.75	6957.96	71.58	6956.48	75.25	6956.2	76.29	6956.13	77.28	6956.08
80.6	6956.68	100.6	6959.86	126.33	6962.03	150	6963.76		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	20.95	.035	126.33	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	20.95	126.33		67.95	50.29	29.23	.1	.3

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 4850

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

Pr RAS Input Report.txt

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6961.95	34.39	6959.99	54.42	6958.91	58.9	6957.85	72.94	6954.52
73.41	6954.5	76.05	6954.44	77.22	6954.55	88.32	6956.31	97.52	6957.97
111.09	6958.96	131.03	6960.59	146.87	6962.04	150	6962.13		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	54.42	.035	111.09	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	54.42	111.09		100.34	100.34	100.34	.1 .3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4750

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 461

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6959.29	.15	6959.29	.34	6959.28	.93	6959.27	1.13	6959.26
1.33	6959.26	1.93	6959.24	2.25	6959.23	2.72	6959.22	2.89	6959.21
3.3	6959.2	3.52	6959.2	4.17	6959.18	4.31	6959.18	4.36	6959.17
4.45	6959.17	5.1	6959.15	5.41	6959.15	5.9	6959.13	6	6959.13
6.46	6959.12	6.69	6959.11	7.41	6959.09	7.56	6959.09	8.28	6959.07
8.56	6959.06	9.07	6959.05	9.11	6959.05	9.61	6959.03	9.87	6959.02
10.65	6959	10.66	6959	11.45	6958.98	11.71	6958.97	12.23	6958.96
12.25	6958.96	12.77	6958.95	13.04	6958.94	13.78	6958.92	13.89	6958.92
14.63	6958.89	14.87	6958.89	15.34	6958.88	15.42	6958.87	15.92	6958.86
16.22	6958.85	16.89	6958.83	17.13	6958.83	17.8	6958.81	18.02	6958.8
18.45	6958.79	18.6	6958.79	19.07	6958.77	19.39	6958.77	20.01	6958.75
20.12	6958.75	20.18	6958.74	20.37	6958.74	20.98	6958.72	21.18	6958.72
21.56	6958.71	21.77	6958.7	22.23	6958.69	22.57	6958.68	23.12	6958.66
23.36	6958.66	23.61	6958.65	24.15	6958.64	24.33	6958.63	24.67	6958.62
24.95	6958.61	25.38	6958.6	25.74	6958.59	26.23	6958.58	26.43	6958.57
26.53	6958.57	26.85	6958.56	27.33	6958.55	27.48	6958.55	27.79	6958.54
28.12	6958.53	28.53	6958.52	28.92	6958.51	29.34	6958.5	29.59	6958.49
29.71	6958.49	30.09	6958.48	30.5	6958.46	30.64	6958.46	30.9	6958.45
31.3	6958.44	31.69	6958.43	32.09	6958.42	32.45	6958.41	32.74	6958.4
32.88	6958.4	33.33	6958.39	33.68	6958.38	34.01	6958.38	34.47	6958.37
35.27	6958.37	35.57	6958.36	36.85	6958.36	36.94	6958.35	37.12	6958.34

Pr RAS Input Report.txt

37.65	6958.34	38	6958.31	38.44	6958.27	38.68	6958.25	39.05	6958.22
39.23	6958.2	39.81	6958.13	40.03	6958.1	40.1	6958.09	40.23	6958.07
40.25	6958.07	40.82	6957.97	41.15	6957.91	41.62	6957.83	41.79	6957.8
42.2	6957.73	42.41	6957.69	43.05	6957.58	43.2	6957.55	43.25	6957.54
43.35	6957.52	44	6957.41	44.3	6957.36	44.79	6957.27	44.9	6957.25
45.35	6957.17	45.58	6957.13	46.29	6957	46.38	6956.99	46.4	6956.98
46.46	6956.97	47.17	6956.85	47.46	6956.8	47.96	6956.71	48.01	6956.7
48.51	6956.61	48.76	6956.57	49.53	6956.43	49.55	6956.43	49.57	6956.42
50.35	6956.29	50.61	6956.24	51.13	6956.15	51.14	6956.15	51.66	6956.05
51.93	6956.01	52.68	6955.87	52.73	6955.87	52.77	6955.86	53.52	6955.72
53.76	6955.68	54.24	6955.6	54.31	6955.58	54.81	6955.5	55.11	6955.44
55.79	6955.32	55.87	6955.31	55.9	6955.3	56.01	6955.28	56.7	6955.16
56.92	6955.12	57.35	6955.05	57.49	6955.02	57.97	6954.94	58.28	6954.88
58.91	6954.77	59.02	6954.75	59.08	6954.74	59.26	6954.71	59.87	6954.6
60.07	6954.56	60.46	6954.5	60.66	6954.46	61.12	6954.38	61.46	6954.32
62.02	6954.22	62.17	6954.19	62.25	6954.18	62.5	6954.14	63.05	6954.04
63.22	6954.01	63.57	6953.94	63.84	6953.9	64.28	6953.82	64.63	6953.76
65.13	6953.67	65.33	6953.63	65.43	6953.62	65.74	6953.56	66.22	6953.48
66.38	6953.45	66.69	6953.39	67.01	6953.34	67.43	6953.26	67.81	6953.19
68.24	6953.12	68.48	6953.08	68.6	6953.05	68.98	6952.99	69.4	6952.91
69.53	6952.89	69.8	6952.84	70.19	6952.77	70.58	6952.7	70.98	6952.63
71.35	6952.57	71.63	6952.52	71.78	6952.49	72.22	6952.41	72.57	6952.35
72.69	6952.33	72.91	6952.33	73.36	6952.29	73.69	6952.28	73.74	6952.28
74.16	6952.27	74.47	6952.26	74.79	6952.25	74.95	6952.26	75.46	6952.28
75.75	6952.29	75.84	6952.3	76.02	6952.32	76.54	6952.33	76.89	6952.38
77.33	6952.48	77.58	6952.54	77.94	6952.62	78.13	6952.66	78.7	6952.8
78.92	6952.85	78.99	6952.86	79.13	6952.9	79.71	6953.03	80.04	6953.11
80.51	6953.21	80.69	6953.25	81.1	6953.35	81.3	6953.4	81.94	6953.54
82.1	6953.58	82.15	6953.59	82.25	6953.61	82.89	6953.76	83.2	6953.83
83.68	6953.94	83.8	6953.97	84.25	6954.07	84.48	6954.13	85.18	6954.29
85.27	6954.31	85.3	6954.32	85.36	6954.33	86.06	6954.49	86.35	6954.56
86.86	6954.67	86.91	6954.69	87.4	6954.8	87.65	6954.86	88.42	6955.03
88.45	6955.04	88.47	6955.04	89.24	6955.19	89.51	6955.24	90.03	6955.34
90.56	6955.44	90.83	6955.5	91.58	6955.64	91.61	6955.65	91.62	6955.65
91.66	6955.66	92.41	6955.81	92.66	6955.85	93.14	6955.95	93.21	6955.96
93.71	6956.06	94	6956.11	94.69	6956.25	94.76	6956.26	94.8	6956.27
94.9	6956.29	95.59	6956.42	95.81	6956.46	96.25	6956.48	96.38	6956.49
96.86	6956.52	97.18	6956.53	97.81	6956.56	97.92	6956.57	97.97	6956.57
98.14	6956.58	98.76	6956.61	98.97	6956.62	99.36	6956.64	99.56	6956.65
100.02	6956.68	100.35	6956.69	100.92	6956.72	101.07	6956.73	101.15	6956.73
101.38	6956.75	101.94	6956.77	102.12	6956.78	102.47	6956.8	102.73	6956.81
103.17	6956.84	103.53	6956.85	104.03	6956.88	104.22	6956.89	104.62	6956.89
105.11	6956.9	105.27	6956.9	105.59	6956.89	109.08	6956.89	109.48	6956.88
112.63	6956.88	113.05	6956.87	116.48	6956.87	116.84	6956.86	120.2	6956.86
120.83	6956.85	125.25	6956.85	125.75	6956.84	132.1	6956.84	132.61	6956.83
136.07	6956.83	136.71	6956.84	136.81	6956.85	136.86	6956.85	137.03	6956.86
137.41	6956.88	137.65	6956.89	137.88	6956.91	138.4	6956.94	138.48	6956.94
138.97	6956.97	139.16	6956.98	139.59	6957.01	139.92	6957.03	140.07	6957.04

Pr RAS Input Report.txt

140.45	6957.06	140.68	6957.07	141.16	6957.1	141.44	6957.12	142.06	6957.16
142.19	6957.17	142.25	6957.17	142.41	6957.18	142.95	6957.21	143.35	6957.24
143.71	6957.26	144.37	6957.3	144.47	6957.3	144.53	6957.31	145.23	6957.35
145.54	6957.37	145.98	6957.4	146.34	6957.42	146.63	6957.43	146.74	6957.44
147	6957.46	147.5	6957.49	147.72	6957.5	148.26	6957.53	148.3	6957.53
148.82	6957.57	149.02	6957.58	149.47	6957.61	149.77	6957.62	149.91	6957.63
150.26	6957.65	150.53	6957.67	151	6957.7	151.29	6957.72	151.94	6957.75
152.05	6957.76	152.1	6957.76	152.22	6957.77	152.81	6957.81	153.19	6957.83
153.56	6957.85	154.19	6957.89	154.28	6957.9	154.41	6957.9	155.08	6957.94
155.38	6957.96	155.84	6957.98	156.15	6957.99	156.47	6958.01	156.6	6958.01
156.88	6958.02	157.35	6958.04	157.56	6958.05	158.11	6958.07	158.66	6958.09
158.87	6958.1	159.35	6958.12	159.63	6958.13	159.75	6958.14	160.07	6958.15
160.39	6958.16	160.85	6958.18	161.14	6958.19	161.82	6958.22	161.9	6958.22
161.94	6958.23	162.04	6958.23	162.66	6958.25	163.03	6958.27	163.42	6958.28
164	6958.31	164.17	6958.31	164.29	6958.32	164.93	6958.34	165.22	6958.36
165.69	6958.37	165.96	6958.39	166.31	6958.4	166.45	6958.4	166.75	6958.42
167.21	6958.43	167.41	6958.44	167.92	6958.46	167.96	6958.46	168.5	6958.49
168.72	6958.5	169.22	6958.52	169.48	6958.53	169.59	6958.53	169.89	6958.54
170.24	6958.56	170.69	6958.57	171	6958.59	171.69	6958.61	171.75	6958.62
171.85	6958.62	172.51	6958.65	172.87	6958.66	173.27	6958.68	173.81	6958.7
173.97	6958.7	174.03	6958.71	174.16	6958.71	174.79	6958.74	175.06	6958.75
175.54	6958.76	175.78	6958.77	176.16	6958.79	176.3	6958.79	176.63	6958.81
177.06	6958.82	177.25	6958.83	177.74	6958.85	177.82	6958.85	178.34	6958.87
178.53	6958.87								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	40.25	.035	96.38	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	40.25	96.38		100.72	100.72		.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4650

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		22					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6956.44	5.23	6956.23	9.7	6956.05	11.8	6955.97	13.75	6955.88
15.98	6955.77	17.47	6955.75	19.19	6955.69	39.69	6954.03	39.7	6954.03
40.7	6953.88	57.45	6950.92	59.62	6950.54	62.99	6950.73	63.73	6950.75

Pr RAS Input Report.txt

68.59 6951.79 81.56 6954.29 100.82 6955.21 110.86 6955.88 117.25 6955.97
128.49 6956.29 136.54 6956.52

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .05 39.7 .035 81.56 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
39.7 81.56 17.95 48.25 87.43 .1 .3

CROSS SECTION

RIVER: UT_BSC2
REACH: NCONFL-BGM RS: 4600

INPUT

Description: Source: Revised Condition Topo
Datum: NGVD29
Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 18
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 6956.26 1.83 6956.11 4.72 6955.85 11.44 6955.16 22.53 6954.54
39.04 6953.33 39.05 6953.33 60.56 6950.2 67.66 6949.26 68.1 6949.28
68.33 6949.29 71.51 6949.23 78.98 6950.86 88.89 6953.25 99.86 6954.11
104.06 6954.54 107.26 6954.49 144.24 6954.44

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .05 39.05 .035 88.89 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
39.05 88.89 48.37 48.37 48.37 .1 .3

CROSS SECTION

RIVER: UT_BSC2
REACH: NCONFL-BGM RS: 4550

INPUT

Description: Source: Revised Condition Topo
Datum: NGVD29
Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev

Pr RAS Input Report.txt

-48.02	6961.13	-47.51	6961.13	-47.35	6961.14	-46.43	6961.17	-46.28	6961.17
-45.47	6961.2	-45.35	6961.2	-44.54	6961.11	-44.41	6961.12	-43.6	6960.94
-43.41	6960.89	-43.2	6960.85	-42.66	6960.73	-42.41	6960.67	-42.12	6960.61
-41.41	6960.45	-41.04	6960.37	-40.79	6960.31	-40.41	6960.23	-39.85	6960.1
-39.4	6960	-38.91	6959.9	-38.89	6959.89	-38.4	6959.78	-37.98	6959.69
-36.73	6959.41	-36.4	6959.34	-35.66	6959.17	-35.39	6959.12	-34.23	6958.86
-33.5	6958.7	-33.29	6958.66	-32.42	6958.46	-32.35	6958.44	-31.89	6958.34
-31.42	6958.23	-31.35	6958.22	-30.48	6958.02	-29.19	6957.72	-28.61	6957.58
-28.38	6957.53	-28.11	6957.46	-27.37	6957.29	-26.73	6957.14	-25.96	6956.95
-25.37	6956.81	-24.88	6956.69	-24.86	6956.69	-23.8	6956.43	-23.37	6956.33
-22.98	6956.27	-22.73	6956.17	-22.36	6956.12	-22.05	6956.09	-21.65	6956.04
-21.36	6956.02	-21.11	6955.99	-20.57	6955.95	-20.17	6955.91	-19.36	6955.84
-19.24	6955.82	-18.42	6955.75	-18.3	6955.73	-17.5	6955.65	-17.34	6955.64
-16.42	6955.54	-16.35	6955.54	-15.49	6955.45	-15.35	6955.43	-15.18	6955.42
-14.55	6955.35	-14.11	6955.31	-13.03	6955.2	-12.68	6955.16	-12.34	6955.13
-11.34	6955.03	-10.33	6954.92	-9.86	6954.88	-9.33	6954.82	-8.33	6954.72
-7.99	6954.69	-7.64	6954.65	-7.33	6954.62	-6.57	6954.54	-6.12	6954.5
-5.49	6954.43	-5.32	6954.42	-5.18	6954.4	-4.32	6954.31	-4.24	6954.31
-3.33	6954.21	-3.3	6954.21	-2.37	6954.11	-1.18	6954.01	-.31	6953.96
.44	6953.92	.69	6953.91	.98	6953.89	1.38	6953.87	1.69	6953.86
2.05	6953.84	2.32	6953.82	3.13	6953.78	3.25	6953.77	3.7	6953.75
4.7	6953.69	6.07	6953.62	6.36	6953.6	6.71	6953.59	7.31	6953.53
8.39	6953.38	8.99	6953.29	9.83	6953.18	10.07	6953.14	10.28	6953.11
10.55	6953.08	10.96	6953.02	11.28	6952.98	12	6952.87	12.68	6952.78
12.72	6952.77	13.87	6952.61	14.62	6952.51	15.07	6952.44	15.92	6952.33
16.44	6952.25	17.05	6952.17	17.46	6952.11	17.78	6952.07	18.27	6952
18.5	6951.96	19.22	6951.86	19.85	6951.78	19.94	6951.76	21.04	6951.61
21.39	6951.56	21.92	6951.49	22.24	6951.44	23.43	6951.28	23.74	6951.23
24.28	6951.16	25.57	6950.98	25.82	6950.94	26.44	6950.85	27.89	6950.65
28.21	6950.61	28.61	6950.55	29.22	6950.47	29.41	6950.44	30.06	6950.35
30.6	6950.27	30.78	6950.25	31.04	6950.21	31.5	6950.15	31.8	6950.1
32.22	6950.05	32.87	6949.96	33.24	6949.9	34.19	6949.77	35.39	6949.6
35.83	6949.54	36.52	6949.44	36.58	6949.44	37.28	6949.33	38	6949.23
38.72	6949.12	38.97	6949.09	39.45	6949.02	40.16	6948.91	40.89	6948.81
41.36	6948.74	41.99	6948.64	42.33	6948.59	42.56	6948.57	43.06	6948.51
43.82	6948.44	44.95	6948.34	45.22	6948.32	46.14	6948.23	46.67	6948.19
47.34	6948.13	47.47	6948.11	48.11	6948.05	48.53	6948.02	48.83	6947.99
49.3	6947.95	49.56	6947.92	50.28	6948	50.55	6948.11	50.92	6948.18
51.12	6948.23	51.72	6948.4	52.45	6948.6	53.89	6949	54.01	6949.04
54.51	6949.18	54.61	6949.2	54.77	6949.25	55.34	6949.41	56.78	6949.81
56.9	6949.84	57.48	6950	57.5	6950.01	58.42	6950.27	58.95	6950.41
59.67	6950.62	60.39	6950.82	60.49	6950.84	61.11	6951.02	61.68	6951.18
61.84	6951.22	62.07	6951.29	62.47	6951.4	62.56	6951.42	63.28	6951.62
63.6	6951.67	64.16	6951.7	64.47	6951.72	65.5	6951.78	65.96	6951.8
66.43	6951.83	66.85	6951.85	67.45	6951.89	68.55	6951.95	68.95	6951.97
69.18	6951.99	69.57	6952	70.37	6952.04	70.98	6952.06	71.78	6952.1
72.4	6952.12	73.19	6952.16	73.5	6952.18	73.78	6952.19	74.69	6952.25
75.13	6952.27	76.19	6952.33	76.47	6952.35	77.04	6952.38	77.81	6952.43

Pr RAS Input Report.txt

78.46	6952.46	79.16	6952.5	79.17	6952.51	79.47	6952.52	80.47	6952.59
81.3	6952.65	81.78	6952.68	82.01	6952.69	82.72	6952.74	83.08	6952.77
83.43	6952.79	84.14	6952.84	84.71	6952.87	84.85	6952.87	86.28	6952.97
86.9	6953.05	86.99	6953.04	87.12	6953.05	87.71	6953.05	88.14	6953.13
89.13	6953.16	89.85	6953.19	90.47	6953.21	90.64	6953.21	91.13	6953.23
91.52	6953.25	92	6953.26	92.72	6953.29	93.05	6953.3	93.45	6953.32
94.09	6953.34	94.23	6953.35	94.46	6953.35	95.62	6953.4	96.35	6953.42
97.38	6953.46	98.02	6953.5	98.56	6953.55	98.86	6953.57	99.83	6953.66
100.13	6953.68	101.13	6953.77	101.52	6953.81	102.99	6953.94	103.4	6953.97
104.47	6954.07	104.73	6954.09	105.67	6954.17	105.95	6954.18	106.48	6954.21
106.8	6954.24	107.17	6954.23	108.6	6954.23	108.91	6954.22	110.39	6954.22
110.74	6954.21	111.89	6954.21	112.42	6954.2	113.5	6954.2	113.72	6954.19
114.94	6954.19	115.55	6954.18	115.82	6954.18	116.47	6954.17	117.36	6954.17
117.81	6954.16	118.03	6954.16	118.72	6954.15	119.62	6954.15	119.91	6954.14
120.49	6954.14	120.96	6954.13	122	6954.13	122.01	6954.12	123.07	6954.12
123.19	6954.11	124.12	6954.11	124.37	6954.1	125.06	6954.11	125.25	6954.11
125.94	6954.12	126.24	6954.12	126.72	6954.13	127.51	6954.13	128.12	6954.14
128.47	6954.14	129.11	6954.15	129.39	6954.15	129.9	6954.16	130.73	6954.16
131.33	6954.17	131.85	6954.17	132.36	6954.18	132.75	6954.18	133.18	6954.19
133.99	6954.19	134.18	6954.2	134.81	6954.2	135.47	6954.21	136.47	6954.21
136.63	6954.22	137.66	6954.22	138.15	6954.23	139	6954.23	139.49	6954.24
139.84	6954.24	141.52	6954.25	141.75	6954.25	142.05	6954.26	143.27	6954.26
143.77	6954.27	145.02	6954.27	145.64	6954.28	145.9	6954.28	147.65	6954.29
148.52	6954.29	148.83	6954.3	150.24	6954.3	150.51	6954.31	151.75	6954.31
151.88	6954.32	153.96	6954.32	154.77	6954.33	157.16	6954.33	157.6	6954.34
158.1	6954.34	158.81	6954.36	159.26	6954.37	159.86	6954.39	160.05	6954.39
160.6	6954.41	160.92	6954.41	161.08	6954.42	161.63	6954.43	161.97	6954.44
162.42	6954.46	162.66	6954.46	163.03	6954.47	163.21	6954.48	163.74	6954.49
164.25	6954.51	164.79	6954.52	165.58	6954.54	166.19	6954.56	166.37	6954.56
167.16	6954.59	167.43	6954.59	167.94	6954.61	168.73	6954.63	169.36	6954.65
169.52	6954.65	170.41	6954.67	170.61	6954.68	171.47	6954.7	171.89	6954.72
172.2	6954.72	172.68	6954.74	173.47	6954.76	173.58	6954.77	173.78	6954.77
174.26	6954.79	175.05	6954.81	175.69	6954.83	175.84	6954.83	176.3	6954.85
176.74	6954.86	177.42	6954.89	178.21	6954.91	178.55	6954.93	179	6954.94
179.44	6954.96	179.79	6954.97	179.9	6954.98	180.14	6954.98	180.58	6955
180.96	6955.01	181.37	6955.03	182.01	6955.05	182.16	6955.06	182.58	6955.07
182.95	6955.09	183.07	6955.09	183.74	6955.12	184.12	6955.13	184.53	6955.15
185.18	6955.17	185.32	6955.18	186.11	6955.2	186.49	6955.22	186.9	6955.23
187.29	6955.25	187.68	6955.26	188.34	6955.29	188.47	6955.29	188.86	6955.31
189.26	6955.32	189.4	6955.33	190.05	6955.35	190.45	6955.37	191.26	6955.39
191.63	6955.41	192	6955.42	192.42	6955.44	192.85	6955.45	193.21	6955.47
193.62	6955.48	194	6955.5	194.44	6955.51	194.79	6955.53	195.58	6955.55
195.73	6955.56	196.37	6955.58	196.78	6955.6	197.16	6955.61	197.84	6955.64
198.28	6955.65	198.89	6955.68	199.53	6955.7	199.95	6955.72	200.32	6955.73
200.79	6955.75	201	6955.75	201.11	6955.76	201.9	6955.79	202.06	6955.79
202.38	6955.81	203.11	6955.83	203.48	6955.85	203.97	6955.86	204.27	6955.88
204.56	6955.89	205.06	6955.9	205.22	6955.91	205.85	6955.93	206.28	6955.95
206.64	6955.96	208.21	6956.02	208.39	6956.03	209	6956.05	209.44	6956.07

Pr RAS Input Report.txt

209.79	6956.08	211.37	6956.14	211.55	6956.14	212.16	6956.17	212.61	6956.18
212.95	6956.2	213.5	6956.22	213.74	6956.22	214.53	6956.25	214.72	6956.26
215.09	6956.27	215.27	6956.27						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-48.02	.05	10.07	.035	62.47	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	10.07	62.47		60.1	60.1		.1	.3

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 4500

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
33.56	6958.43	46.11	6955.1	55.02	6952.74	69.08	6947.9	75.54	6947.96
76.98	6947.94	77.38	6948	83.71	6948.98	107.55	6952.53	110.42	6952.62
126.61	6953.03	127.51	6953.05						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
33.56	.05	46.11	.035	107.55	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	46.11	107.55		88.02	91.85		.1	.3

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 4400

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 489

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
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Pr RAS Input Report.txt

-47.22	6953.53	-46.37	6953.53	-45.81	6953.52	-45.37	6953.52	-44.8	6953.51
-44.38	6953.51	-43.79	6953.5	-42.4	6953.5	-41.78	6953.46	-41.59	6953.45
-41.41	6953.44	-40.77	6953.41	-40.59	6953.4	-40.41	6953.4	-39.76	6953.36
-39.59	6953.35	-39.42	6953.35	-38.76	6953.31	-38.59	6953.3	-38.43	6953.3
-37.75	6953.26	-37.59	6953.25	-37.44	6953.23	-36.74	6953.13	-36.59	6953.1
-36.44	6953.07	-35.73	6952.89	-35.59	6952.85	-35.45	6952.82	-34.72	6952.64
-34.59	6952.6	-34.46	6952.57	-33.72	6952.38	-33.59	6952.35	-33.47	6952.32
-32.71	6952.13	-32.59	6952.1	-32.48	6952.07	-31.7	6951.88	-31.59	6951.85
-31.48	6951.83	-30.69	6951.63	-30.59	6951.6	-30.49	6951.58	-29.68	6951.38
-29.59	6951.35	-29.5	6951.33	-28.68	6951.13	-28.59	6951.1	-28.51	6951.08
-27.67	6950.87	-27.59	6950.85	-27.51	6950.83	-26.66	6950.62	-26.59	6950.6
-26.52	6950.59	-25.65	6950.37	-25.59	6950.35	-25.53	6950.34	-24.65	6950.12
-24.59	6950.1	-24.54	6950.09	-23.64	6949.87	-23.59	6949.85	-23.55	6949.84
-22.63	6949.61	-22.59	6949.6	-22.55	6949.59	-21.62	6949.36	-21.59	6949.35
-21.56	6949.35	-20.61	6949.11	-20.59	6949.1	-20.57	6949.1	-19.61	6948.86
-19.59	6948.85	-19.58	6948.85	-18.6	6948.61	-18.59	6948.6	-17.71	6948.38
-17.59	6948.35	-16.6	6948.23	-12.59	6948.23	-12.55	6948.24	-11.64	6948.35
-11.59	6948.36	-11.54	6948.37	-10.65	6948.59	-10.59	6948.61	-10.54	6948.62
-9.65	6948.84	-9.59	6948.86	-9.53	6948.87	-8.66	6949.09	-8.59	6949.11
-8.52	6949.12	-7.67	6949.34	-7.59	6949.36	-7.51	6949.38	-6.68	6949.59
-6.59	6949.61	-6.5	6949.63	-5.69	6949.83	-5.59	6949.86	-5.5	6949.88
-4.69	6950.08	-4.59	6950.11	-4.49	6950.13	-3.7	6950.33	-3.59	6950.36
-3.48	6950.38	-2.71	6950.58	-2.59	6950.61	-2.47	6950.64	-1.72	6950.83
-1.59	6950.86	-1.47	6950.89	-.72	6951.07	-.59	6951.11	-.46	6951.14
.27	6951.32	.41	6951.36	.55	6951.39	1.26	6951.57	1.41	6951.61
1.56	6951.64	1.76	6951.69	1.93	6951.72	2.35	6951.79	3.07	6951.9
3.08	6951.91	3.09	6951.91	3.82	6952.02	4.22	6952.09	4.55	6952.14
5.14	6952.23	5.29	6952.26	5.37	6952.27	5.67	6952.32	6.02	6952.37
6.52	6952.45	6.76	6952.49	7.18	6952.56	7.49	6952.61	7.66	6952.63
8.23	6952.72	8.27	6952.73	8.81	6952.82	8.96	6952.84	9.23	6952.88
9.69	6952.96	9.95	6953	10.43	6953.08	10.87	6953.14	11.1	6953.18
11.16	6953.19	11.28	6953.21	11.9	6953.31	12.24	6953.36	12.63	6953.43
13.33	6953.54	13.39	6953.54	13.47	6953.55	14.1	6953.63	14.54	6953.68
14.84	6953.72	15.38	6953.78	15.57	6953.8	15.68	6953.8	16.07	6953.83
16.31	6953.84	16.83	6953.87	17.04	6953.89	17.43	6953.91	17.78	6953.93
17.97	6953.95	18.51	6953.98	18.67	6953.99	19.12	6954.02	19.25	6954.03
19.47	6954.04	19.98	6954.07	20.27	6954.09	20.72	6954.12	21.27	6954.15
21.41	6954.16	21.45	6954.17	21.52	6954.17	22.19	6954.18	22.56	6954.24
22.92	6954.26	23.57	6954.21	23.65	6954.2	23.7	6954.19	23.87	6954.2
24.39	6954.18	24.85	6954.21	25.12	6954.15	25.62	6954.1	25.86	6954.03
25.99	6954.01	26.47	6953.95	26.59	6954.03	27.14	6953.91	27.33	6953.84
27.67	6953.81	28.06	6953.78	28.29	6953.75	28.8	6953.71	29.07	6953.64
29.43	6953.6	29.53	6953.58	29.71	6953.56	30.27	6953.51	30.58	6953.47
30.69	6953.45	31.14	6953.32	31.22	6953.29	31.28	6953.27	32.2	6953
32.22	6953	32.23	6952.99	32.58	6952.9	33.19	6952.75	33.25	6952.73
34.14	6952.5	34.22	6952.48	34.31	6952.46	35.09	6952.26	35.22	6952.23
35.37	6952.19	36.04	6952.02	36.22	6951.97	36.43	6951.92	36.99	6951.77
37.22	6951.71	37.48	6951.64	37.94	6951.53	38.22	6951.45	38.54	6951.37

Pr RAS Input Report.txt

38.89	6951.28	39.23	6951.2	39.33	6951.17	39.6	6951.1	39.84	6951.04
40.23	6950.94	40.65	6950.83	40.79	6950.79	41.23	6950.68	41.71	6950.56
41.74	6950.55	42.23	6950.43	42.7	6950.31	42.77	6950.29	43.23	6950.17
43.65	6950.06	43.83	6950.02	44.23	6949.91	44.6	6949.82	44.88	6949.74
45.23	6949.66	45.55	6949.57	45.94	6949.47	46.24	6949.4	46.5	6949.33
47	6949.2	47.24	6949.14	47.45	6949.09	48.06	6948.93	48.24	6948.88
48.4	6948.84	49.11	6948.66	49.24	6948.63	49.35	6948.6	50.17	6948.39
50.24	6948.37	50.3	6948.35	51.23	6948.12	51.24	6948.11	51.25	6948.11
51.49	6948.05	52.21	6947.87	52.24	6947.86	52.29	6947.84	53.16	6947.62
53.24	6947.6	53.34	6947.57	54.11	6947.38	54.25	6947.34	54.4	6947.3
55.06	6947.13	55.25	6947.08	55.46	6947.03	56.01	6946.89	56.25	6946.83
56.51	6946.76	56.96	6946.64	57.25	6946.57	57.57	6946.49	57.91	6946.4
58.25	6946.31	58.63	6946.22	58.86	6946.16	59.25	6946.06	59.69	6945.94
59.81	6945.91	60.25	6945.8	60.74	6945.67	60.76	6945.67	61.26	6945.54
61.72	6945.48	61.8	6945.48	62.26	6945.42	62.67	6945.38	62.86	6945.36
63.26	6945.32	63.62	6945.29	63.92	6945.26	64.26	6945.23	64.57	6945.2
64.97	6945.16	65.26	6945.13	65.52	6945.1	66.03	6945.05	66.26	6945.03
66.47	6945.02	67.09	6945.01	67.26	6945	84.29	6945	84.54	6945.03
85.06	6945.01	85.29	6945.04	85.49	6945.09	86.12	6945.23	86.29	6945.26
86.44	6945.3	87.18	6945.46	87.29	6945.49	87.39	6945.51	88.23	6945.7
88.29	6945.71	88.34	6945.72	89.29	6945.93	89.32	6945.94	90.24	6946.14
90.29	6946.15	90.35	6946.16	91.2	6946.35	91.29	6946.37	91.41	6946.4
92.15	6946.56	92.3	6946.6	92.46	6946.63	93.1	6946.77	93.3	6946.82
93.52	6946.87	94.05	6946.98	94.3	6947.04	94.58	6947.1	95	6947.19
95.3	6947.26	95.63	6947.34	95.95	6947.4	96.3	6947.48	96.69	6947.57
96.9	6947.62	97.3	6947.7	97.75	6947.8	97.85	6947.83	98.3	6947.93
98.65	6948.01	98.8	6948.04	99.31	6948.15	99.75	6948.25	99.86	6948.27
100.31	6948.37	100.71	6948.46	100.92	6948.51	101.31	6948.59	101.66	6948.67
101.98	6948.74	102.31	6948.81	102.61	6948.88	103.04	6948.97	103.31	6949.04
103.56	6949.09	104.09	6949.21	104.31	6949.26	104.51	6949.3	105.15	6949.44
105.31	6949.48	105.46	6949.51	106.21	6949.68	106.31	6949.7	106.41	6949.72
107.27	6949.91	107.32	6949.92	107.36	6949.93	108.23	6950.13	108.31	6950.14
108.32	6950.15	109.26	6950.35	109.32	6950.37	109.38	6950.38	110.22	6950.57
110.32	6950.59	110.44	6950.61	111.17	6950.78	111.32	6950.81	111.49	6950.85
112.12	6950.99	112.32	6951.03	112.55	6951.08	113.07	6951.2	113.32	6951.25
113.61	6951.32	114.02	6951.41	114.33	6951.48	114.67	6951.55	114.97	6951.62
115.33	6951.7	115.72	6951.78	115.92	6951.83	116.33	6951.92	116.78	6952.01
116.87	6951.98	117.33	6952.08	117.84	6952.08	118.33	6952.09	118.77	6952.08
118.9	6952.09	119.33	6952.08	119.72	6952.08	119.95	6952.09	120.33	6952.08
120.68	6952.09	121.33	6952.09	121.63	6952.1	122.58	6952.1	123.12	6952.11
123.53	6952.11	124.18	6952.12	124.48	6952.12	125.24	6952.13	125.43	6952.13
126.3	6952.14	126.38	6952.14	127.14	6952.15	127.35	6952.15	128.28	6952.16
128.41	6952.16	129.23	6952.17	130.19	6952.17	130.35	6952.18	131.35	6952.18
131.58	6952.19	132.35	6952.19	132.64	6952.2	133.35	6952.2	133.7	6952.21
134.35	6952.21	134.76	6952.22	135.35	6952.22	135.81	6952.23	136.87	6952.23
137.36	6952.24	137.93	6952.24	138.36	6952.25	138.98	6952.25	139.36	6952.26
140.04	6952.26	140.36	6952.27	141.1	6952.27	141.36	6952.28	142.36	6952.28
142.55	6952.29	143.36	6952.29	143.5	6952.3	144.45	6952.3	145.33	6952.31

Pr RAS Input Report.txt

145.4	6952.31	146.06	6952.32	146.39	6952.32	147.3	6952.33	147.44	6952.33
148.25	6952.34	148.5	6952.34	149.21	6952.35	149.99	6952.35		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.22	.035	39.33	.035	98.65	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
39.33	98.65	117.95	112.69	105.12		.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-47.22	22.09	6954.31	T

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 4300

INPUT
 Description: Source: Revised Condition Topo
 Datum: NGVD29
 Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-124.14	6947.84	-123.93	6947.84	-123.72	6947.81	-123.12	6947.76	-122.75	6947.72
-122.08	6947.66	-121.93	6947.64	-121.78	6947.63	-121.05	6947.56	-120.81	6947.54
-120.02	6947.46	-119.84	6947.44	-118.87	6947.35	-117.95	6947.26	-117.9	6947.26
-116.92	6947.17	-115.96	6947.07	-115.88	6947.07	-114.99	6946.98	-114.85	6946.97
-113.82	6946.87	-113.05	6946.8	-112.78	6946.77	-112.08	6946.7	-111.92	6946.69
-111.75	6946.67	-111.11	6946.61	-110.72	6946.57	-109.69	6946.48	-109.17	6946.43
-108.92	6946.4	-108.65	6946.38	-108.2	6946.33	-107.92	6946.31	-106.92	6946.21
-105.92	6946.12	-105.55	6946.08	-105.29	6946.06	-104.92	6946.02	-104.32	6945.96
-103.92	6945.93	-103.49	6945.88	-103.35	6945.87	-102.92	6945.83	-102.45	6945.79
-102.38	6945.78	-101.92	6945.74	-100.92	6945.64	-100.45	6945.59	-100.39	6945.59
-99.92	6945.54	-99.35	6945.49	-98.51	6945.41	-97.92	6945.35	-97.54	6945.32
-97.29	6945.29	-96.92	6945.26	-96.57	6945.22	-96.26	6945.2	-95.92	6945.16
-95.6	6945.13	-95.22	6945.1	-94.63	6945.04	-94.19	6945	-93.91	6944.97
-93.66	6944.95	-93.16	6944.9	-92.91	6944.88	-92.69	6944.85	-92.12	6944.8
-91.09	6944.7	-90.91	6944.69	-90.75	6944.67	-90.06	6944.6	-89.78	6944.58
-89.02	6944.51	-88.81	6944.48	-87.99	6944.41	-87.84	6944.39	-86.96	6944.31
-86.87	6944.3	-85.5	6944.17	-84.93	6944.11	-84.89	6944.11	-83.86	6944.01
-82.99	6943.93	-82.83	6943.91	-81.79	6943.82	-81.05	6943.74	-80.76	6943.72
-80.08	6943.65	-79.91	6943.64	-79.73	6943.62	-78.91	6943.54	-78.14	6943.47
-77.91	6943.44	-77.66	6943.42	-77.17	6943.37	-76.91	6943.35	-76.63	6943.32
-76.2	6943.28	-75.91	6943.25	-74.56	6943.21	-74.26	6943.21	-73.53	6943.19
-73.29	6943.19	-72.49	6943.15	-72.32	6943.15	-71.46	6943.11	-71.35	6943.08

Pr RAS Input Report.txt

-70.9	6943.06	-70.43	6943.03	-70.38	6943.03	-69.9	6942.99	-69.41	6942.96
-69.39	6942.95	-68.9	6942.91	-68.44	6942.88	-68.36	6942.87	-67.9	6942.84
-67.33	6942.8	-66.9	6942.78	-66.5	6942.75	-66.3	6942.74	-65.9	6942.71
-65.53	6942.69	-65.26	6942.67	-64.56	6942.63	-64.23	6942.6	-63.59	6942.56
-63.2	6942.54	-62.9	6942.52	-62.62	6942.49	-62.16	6942.47	-61.65	6942.41
-61.13	6942.37	-60.68	6942.31	-60.1	6942.24	-59.71	6942.2	-59.06	6942.12
-58.9	6942.11	-58.03	6942	-57.78	6941.98	-56.9	6941.89	-56.81	6941.89
-55.96	6941.81	-54.93	6941.72	-54.87	6941.71	-53.9	6941.6	-53.86	6941.6
-52.93	6941.48	-52.87	6941.48	-51.96	6941.37	-51.83	6941.35	-50.99	6941.25
-50.8	6941.23	-50.02	6941.13	-49.77	6941.1	-49.05	6941.04	-48.73	6941
-48.08	6940.94	-47.11	6940.84	-46.89	6940.81	-46.67	6940.79	-45.89	6940.7
-45.63	6940.68	-44.89	6940.6	-44.6	6940.56	-43.89	6940.49	-43.57	6940.45
-43.23	6940.48	-42.89	6940.44	-42.53	6940.42	-42.26	6940.49	-41.89	6940.46
-41.29	6940.49	-40.89	6940.52	-40.47	6940.56	-40.32	6940.57	-39.89	6940.61
-39.44	6940.67	-38.89	6940.74	-38.4	6940.8	-38.38	6940.8	-37.41	6940.92
-37.37	6940.92	-36.89	6940.98	-36.44	6941.04	-36.34	6941.05	-35.89	6941.11
-34.89	6941.23	-33.89	6941.36	-33.53	6941.4	-33.24	6941.44	-32.56	6941.52
-31.89	6941.61	-31.17	6941.68	-30.89	6941.71	-30.14	6941.85	-29.89	6941.89
-29.65	6941.98	-28.89	6942.27	-28.68	6942.33	-28.07	6942.49	-27.89	6942.54
-27.71	6942.53	-23.83	6942.53	-22.91	6942.58	-22.86	6942.58	-22.22	6942.69
-21.89	6942.75	-21.87	6942.76	-20.92	6942.92	-19.95	6943.16	-19.81	6943.19
-18.98	6943.38	-18.77	6943.42	-18.01	6943.55	-17.74	6943.59	-16.88	6943.74
-16.08	6943.93	-15.88	6943.98	-15.67	6944.02	-15.11	6944.15	-14.88	6944.2
-14.14	6944.32	-13.88	6944.37	-13.61	6944.41	-13.17	6944.48	-12.88	6944.53
-12.57	6944.6	-12.2	6944.69	-11.88	6944.76	-11.54	6944.84	-10.88	6944.99
-9.88	6945.15	-9.48	6945.22	-8.88	6945.32	-8.32	6945.45	-7.88	6945.54
-7.41	6945.65	-7.35	6945.67	-6.88	6945.78	-6.38	6945.87	-5.88	6945.97
-5.41	6946.06	-5.34	6946.07	-4.88	6946.16	-3.88	6946.39	-3.47	6946.45
-2.88	6946.54	-2.5	6946.52	-2.24	6946.51	-1.53	6946.47	-.56	6946.41
-.18	6946.39	.13	6946.38	.41	6946.38	.86	6946.37	1.13	6946.37
1.89	6946.4	2.35	6946.42	3.32	6946.47	3.95	6946.5	4.29	6946.52
4.99	6946.55	5.13	6946.56	5.26	6946.56	6.02	6946.6	7.05	6946.65
7.2	6946.65	8.09	6946.7	8.17	6946.7	9.12	6946.78	9.42	6946.8
10.11	6946.87	10.15	6946.87	11.08	6946.95	12.05	6947.04	12.22	6947.05
13.02	6947.13	13.25	6947.15	13.99	6947.22	14.13	6947.23	14.29	6947.25
14.96	6947.31	15.32	6947.35	16.13	6947.43	16.35	6947.46	16.9	6947.51
17.38	6947.57	17.87	6947.62	18.13	6947.65	18.42	6947.69	18.84	6947.74
19.13	6947.77	19.45	6947.81	19.81	6947.85	20.13	6947.89	20.48	6947.93
20.78	6947.96	21.13	6948.01	21.52	6948.05	22.14	6948.13	23.14	6948.25
23.58	6948.3	23.68	6948.32	24.14	6948.37	24.62	6948.43	24.65	6948.43
25.62	6948.55	25.65	6948.56	26.14	6948.62	26.68	6948.68	27.14	6948.74
28.14	6948.86	29.14	6948.99	29.5	6949.04	29.78	6949.07	30.14	6949.12
30.82	6949.2	31.44	6949.28	31.85	6949.33	32.14	6949.37	32.41	6949.4
32.88	6949.46	33.14	6949.49	33.38	6949.51	33.91	6949.59	34.14	6949.61
34.35	6949.56	34.91	6949.42	35.14	6949.37	36.15	6949.11	36.63	6949
36.68	6948.98	37.11	6948.87	37.16	6948.86	37.57	6948.76	38.45	6948.54
39.34	6948.32	40.16	6948.12	40.22	6948.1	40.41	6948.06	41.11	6947.88
41.34	6947.83	41.99	6947.66	42.51	6947.54	42.87	6947.44	43.22	6947.36

Pr RAS Input Report.txt

43.69	6947.24	43.76	6947.23	44.23	6947.11	44.64	6947.01	44.87	6946.95
45.53	6946.79	46.04	6946.66	47.22	6946.37	48.18	6946.13	48.39	6946.07
49.07	6945.91	49.28	6945.85	49.95	6945.69	50.29	6945.6	50.84	6945.47
51.3	6945.35	51.72	6945.25	52.31	6945.1	52.61	6945.03	53.1	6944.9
53.32	6944.85	53.49	6944.82	54.28	6944.71	87.11	6944.71	87.22	6944.72
91.7	6944.72	91.92	6944.75	92.71	6944.88	93.1	6944.97	93.72	6945.13
94.18	6945.24	94.28	6945.27	94.73	6945.38	95.07	6945.46	95.45	6945.56
95.95	6945.68	96.75	6945.88	96.84	6945.9	97.47	6946.06	97.76	6946.13
97.81	6946.15	98.77	6946.39	98.98	6946.44	99.49	6946.57	100.16	6946.73
100.38	6946.79	100.79	6946.89	101.34	6947.03	101.8	6947.14	102.48	6947.31
102.51	6947.32	102.81	6947.4	103.03	6947.45	103.69	6947.62	103.92	6947.67
104.8	6947.89	104.87	6947.91	106.85	6948.4	107.45	6948.56	107.86	6948.66
108.34	6948.78	108.4	6948.79	109.57	6949.09	109.88	6949.16	110.11	6949.22
110.75	6949.38	110.99	6949.44	111.73	6949.63	111.88	6949.66	112.76	6949.88
113.1	6949.97	113.65	6950.1	113.92	6950.17	114.28	6950.19	114.53	6950.19
114.93	6950.21	115.94	6950.21	116.3	6950.22	117.81	6950.22	117.96	6950.23
118.98	6950.23	119.84	6950.24	120.16	6950.24	120.72	6950.25	121.34	6950.25
121.61	6950.26	122.51	6950.26	123.01	6950.27	123.69	6950.27	124.02	6950.28
124.26	6950.28	124.87	6950.29	125.15	6950.29	126.92	6950.31	127.22	6950.31
127.8	6950.32	128.4	6950.32	128.69	6950.33	129.07	6950.33	129.57	6950.34
130.08	6950.34	130.45	6950.35	131.09	6950.35	131.34	6950.36	132.1	6950.36
132.22	6950.37	133.11	6950.37	133.13	6950.38	133.99	6950.38	134.12	6950.39
134.88	6950.39	135.13	6950.4	135.76	6950.4	136.14	6950.41	136.65	6950.41
137.15	6950.42	137.81	6950.42	138.15	6950.43	138.42	6950.43	138.98	6950.44
139.3	6950.44	140.26	6950.45	141.07	6950.46	141.34	6950.46	141.96	6950.47
142.51	6950.47	142.84	6950.48	143.2	6950.48	143.69	6950.49	144.21	6950.49
144.61	6950.5	145.22	6950.5	145.49	6950.51	146.23	6950.51	146.38	6950.52
147.22	6950.52	147.24	6950.53	148.15	6950.53	148.25	6950.54	149.03	6950.54
149.26	6950.55	150.01	6950.55						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-124.14	.035	37.11	.035	102.48	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	37.11	102.48		6.2	14.98		.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-124.14	33.44	6949.62	T

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4280

INPUT

Description: Source: Revised Condition Topo

Pr RAS Input Report.txt

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-154.13	6948.39	-154.06	6948.39	-153.33	6948.33	-153.02	6948.31	-152.36	6948.25
-151.99	6948.23	-151.68	6948.2	-151.4	6948.18	-150.95	6948.14	-149.92	6948.06
-149.46	6948.02	-148.88	6947.98	-148.68	6947.96	-148.49	6947.95	-147.84	6947.9
-147.68	6947.88	-147.53	6947.87	-146.56	6947.79	-145.77	6947.73	-145.59	6947.71
-144.62	6947.63	-143.7	6947.56	-143.65	6947.55	-142.67	6947.48	-141.72	6947.4
-141.63	6947.39	-140.75	6947.32	-140.6	6947.31	-139.56	6947.22	-138.81	6947.16
-138.53	6947.14	-137.85	6947.08	-137.67	6947.07	-137.49	6947.05	-136.88	6947.01
-136.45	6946.97	-135.91	6946.93	-134.94	6946.85	-134.67	6946.83	-134.38	6946.8
-133.98	6946.77	-133.67	6946.74	-133.35	6946.72	-132.67	6946.66	-131.28	6946.55
-131.07	6946.53	-130.67	6946.5	-130.1	6946.46	-129.67	6946.42	-129.21	6946.38
-129.14	6946.38	-128.67	6946.34	-127.67	6946.26	-127.2	6946.22	-127.14	6946.21
-126.67	6946.18	-126.23	6946.14	-125.67	6946.1	-125.26	6946.06	-125.07	6946.05
-124.67	6946.01	-124.03	6945.96	-123.67	6945.93	-123.33	6945.91	-122.67	6945.85
-122.36	6945.83	-121.96	6945.79	-121.39	6945.75	-120.43	6945.67	-119.89	6945.63
-119.46	6945.59	-118.85	6945.54	-118.67	6945.53	-118.49	6945.51	-117.82	6945.46
-117.66	6945.45	-117.52	6945.43	-116.66	6945.36	-116.55	6945.36	-115.75	6945.29
-115.59	6945.28	-114.71	6945.21	-114.62	6945.2	-113.68	6945.12	-113.65	6945.12
-112.68	6945.04	-112.64	6945.04	-111.6	6944.95	-110.75	6944.88	-110.57	6944.87
-109.78	6944.81	-108.81	6944.73	-108.66	6944.71	-108.5	6944.7	-107.84	6944.65
-107.66	6944.63	-107.46	6944.62	-106.66	6944.55	-105.91	6944.55	-105.66	6944.54
-104.94	6944.54	-104.66	6944.55	-104.36	6944.55	-103.97	6944.52	-103.32	6944.52
-103	6944.49	-102.29	6944.49	-102.04	6944.45	-101.66	6944.46	-101.25	6944.46
-101.07	6944.43	-100.66	6944.43	-100.22	6944.4	-100.1	6944.4	-99.66	6944.37
-99.13	6944.35	-98.66	6944.32	-98.14	6944.3	-97.65	6944.27	-97.2	6944.25
-97.11	6944.24	-96.23	6944.2	-96.07	6944.19	-95.04	6944.14	-94.29	6944.1
-94	6944.09	-93.65	6944.06	-93.33	6944.01	-92.97	6943.97	-92.65	6943.92
-92.36	6943.87	-91.93	6943.8	-91.65	6943.75	-91.39	6943.73	-90.9	6943.63
-90.65	6943.6	-90.42	6943.58	-89.86	6943.5	-89.45	6943.46	-88.65	6943.37
-88.49	6943.35	-87.79	6943.28	-87.65	6943.26	-87.52	6943.25	-86.75	6943.17
-86.65	6943.15	-85.72	6943.05	-85.58	6943.03	-84.68	6942.87	-84.61	6942.85
-83.65	6942.66	-83.63	6942.66	-82.68	6942.53	-81.71	6942.39	-81.58	6942.37
-80.74	6942.26	-80.65	6942.24	-80.54	6942.23	-79.65	6942.1	-79.51	6942.07
-78.81	6941.93	-78.47	6941.86	-77.84	6941.75	-77.64	6941.7	-76.87	6941.58
-76.4	6941.5	-75.64	6941.38	-74.94	6941.25	-74.64	6941.2	-73.97	6941.07
-73.64	6941.01	-73.29	6940.94	-73	6940.91	-72.64	6940.84	-72.26	6940.79
-72.03	6940.78	-71.64	6940.72	-71.22	6940.68	-71.06	6940.67	-70.64	6940.62
-70.19	6940.58	-69.64	6940.52	-69.15	6940.46	-69.13	6940.46	-68.64	6940.4
-68.16	6940.39	-68.12	6940.34	-67.64	6940.32	-67.19	6940.38	-67.08	6940.36
-66.64	6940.41	-66.23	6940.46	-66.05	6940.49	-65.64	6940.54	-65.26	6940.58
-65.01	6940.62	-64.29	6940.7	-63.98	6940.74	-63.64	6940.79	-63.32	6940.82
-62.64	6940.91	-62.35	6940.94	-61.64	6941.02	-61.39	6941.09	-60.87	6941.24
-60.64	6941.31	-60.42	6941.39	-59.83	6941.62	-59.64	6941.69	-59.45	6941.74
-58.8	6941.89	-58.64	6941.93	-56.55	6941.93	-55.69	6941.92	-54.61	6941.92

Pr RAS Input Report.txt

-53.96	6941.96	-53.62	6941.99	-52.68	6942.15	-52.59	6942.17	-51.71	6942.32
-51.55	6942.35	-50.74	6942.53	-50.63	6942.56	-50.52	6942.58	-49.77	6942.75
-49.63	6942.78	-49.48	6942.8	-48.63	6942.95	-48.44	6942.98	-47.84	6943.08
-47.41	6943.16	-46.87	6943.28	-46.63	6943.33	-46.37	6943.39	-45.9	6943.49
-45.63	6943.55	-45.34	6943.6	-44.93	6943.66	-44.63	6943.71	-44.3	6943.77
-43.96	6943.82	-43.63	6943.88	-43.27	6943.95	-43	6944.01	-42.63	6944.08
-42.23	6944.17	-42.03	6944.21	-41.63	6944.3	-41.2	6944.37	-41.06	6944.4
-40.09	6944.56	-39.63	6944.64	-39.13	6944.74	-38.63	6944.83	-38.16	6944.94
-38.09	6944.96	-37.19	6945.15	-37.05	6945.17	-36.62	6945.26	-36.22	6945.33
-35.62	6945.45	-35.25	6945.53	-34.98	6945.58	-34.62	6945.66	-34.29	6945.7
-33.95	6945.75	-33.62	6945.79	-33.32	6945.77	-32.91	6945.75	-32.62	6945.73
-32.35	6945.72	-31.88	6945.69	-31.62	6945.68	-31.38	6945.66	-30.84	6945.63
-30.41	6945.61	-29.62	6945.57	-29.45	6945.57	-28.77	6945.6	-28.62	6945.61
-28.48	6945.61	-27.74	6945.65	-27.62	6945.65	-27.51	6945.66	-26.7	6945.7
-26.54	6945.7	-25.67	6945.76	-25.58	6945.76	-24.63	6945.85	-23.64	6945.94
-23.59	6945.94	-22.56	6946.04	-21.7	6946.13	-20.74	6946.24	-20.62	6946.25
-20.49	6946.27	-19.77	6946.35	-18.8	6946.47	-18.62	6946.49	-18.42	6946.52
-17.83	6946.59	-17.61	6946.62	-17.38	6946.64	-16.87	6946.71	-16.35	6946.77
-15.9	6946.83	-15.61	6946.86	-14.93	6946.95	-13.96	6947.07	-13.24	6947.15
-12.99	6947.19	-12.61	6947.23	-12.2	6947.27	-12.03	6947.3	-11.61	6947.34
-11.17	6947.39	-11.06	6947.4	-10.61	6947.45	-10.13	6947.5	-10.09	6947.5
-9.12	6947.6	-9.1	6947.6	-8.61	6947.66	-8.15	6947.7	-7.61	6947.76
-7.19	6947.8	-7.03	6947.82	-6.61	6947.86	-6.22	6947.91	-5.99	6947.93
-5.25	6948.01	-4.96	6948.04	-4.61	6948.07	-4.28	6948.11	-3.92	6948.15
-3.32	6948.21	-2.89	6948.25	-2.35	6948.31	-1.85	6948.36	-1.61	6948.39
-1.38	6948.41	-.81	6948.47	-.41	6948.51	.22	6948.58	.56	6948.62
1.26	6948.69	1.39	6948.7	1.52	6948.72	2.29	6948.82	2.4	6948.83
2.49	6948.85	3.46	6949.08	4.4	6949.31	4.43	6949.3	5.37	6949.08
5.4	6949.07	6.4	6948.82	6.85	6948.7	6.86	6948.7	7.32	6948.59
8.55	6948.28	9.21	6948.11	9.4	6948.07	9.61	6948.01	10.16	6947.88
10.68	6947.75	11.11	6947.64	11.4	6947.57	12.05	6947.4	12.41	6947.32
13	6947.17	13.41	6947.07	14.41	6946.81	15.41	6946.56	15.84	6946.46
16.41	6946.31	16.79	6946.22	17.41	6946.06	17.73	6945.98	18.12	6945.89
18.42	6945.81	18.68	6945.75	19.18	6945.62	19.42	6945.56	20.25	6945.36
20.57	6945.27	21.52	6945.04	22.37	6944.82	22.47	6944.8	23.21	6944.7
23.41	6944.67	23.42	6944.66	28.43	6944.66	28.75	6944.67	29.09	6944.66
29.43	6944.66	29.82	6944.67	31.94	6944.67	32.44	6944.66	32.88	6944.66
33.01	6944.67	33.44	6944.67	33.82	6944.66	34.44	6944.66	34.77	6944.67
35.14	6944.66	36.66	6944.66	37.26	6944.67	37.45	6944.66	41.52	6944.66
42.34	6944.65	42.45	6944.65	42.58	6944.66	43.29	6944.65	46.46	6944.65
46.83	6944.66	47.08	6944.65	47.46	6944.65	47.9	6944.66	48.02	6944.65
48.46	6944.66	58.53	6944.66	59.38	6944.65	59.6	6944.65	60.33	6944.64
60.66	6944.66	61.27	6944.7	61.49	6944.72	61.72	6944.78	62.22	6944.9
62.49	6944.96	62.79	6945.04	63.17	6945.12	63.49	6945.2	64.11	6945.34
64.91	6945.53	65.06	6945.56	65.49	6945.66	65.98	6945.77	66.01	6945.77
66.49	6945.89	67.5	6946.11	67.9	6946.2	68.1	6946.25	68.85	6946.42
69.17	6946.49	69.79	6946.64	70.23	6946.73	70.5	6946.8	70.74	6946.85
71.29	6946.98	71.5	6947.02	71.69	6947.07	72.5	6947.25	73.42	6947.46

Pr RAS Input Report.txt

73.58	6947.5	74.53	6947.71	75.47	6947.93	75.55	6947.94	76.42	6948.14
76.61	6948.18	77.67	6948.43	78.31	6948.57	78.51	6948.62	79.26	6948.78
79.51	6948.83	79.8	6948.9	80.14	6948.97	80.52	6949.04	80.86	6949.12
81.15	6949.18	81.52	6949.25	81.93	6949.34	82.1	6949.38	82.52	6949.46
82.99	6949.48	83.05	6949.48	83.52	6949.5	84.52	6949.5	84.94	6949.51
86.18	6949.51	86.53	6949.52	87.53	6949.52	87.78	6949.53	88.73	6949.53
89.37	6949.54	89.67	6949.54	90.44	6949.55	90.62	6949.55	91.5	6949.56
92.09	6949.57	92.49	6949.57						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-154.13	.035	6.85	.035	80.14	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	6.85	80.14		19	19	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-154.13	3.47	6949.25	T

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4250

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 491

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-147.06	6947.35	-146.97	6947.35	-146.38	6947.28	-145.96	6947.24	-145.42	6947.18
-144.96	6947.12	-144.46	6947.07	-143.96	6947.01	-142.96	6946.9	-141.96	6946.78
-140.96	6946.67	-140.63	6946.64	-140.28	6946.59	-139.96	6946.56	-139.67	6946.53
-139.23	6946.49	-138.96	6946.46	-138.18	6946.4	-137.75	6946.36	-137.14	6946.3
-136.96	6946.29	-136.79	6946.27	-136.09	6946.21	-135.83	6946.19	-135.04	6946.12
-134.87	6946.1	-134	6946.03	-133.91	6946.02	-132.99	6945.94	-132.95	6945.93
-132	6945.85	-131.04	6945.76	-130.95	6945.76	-130.86	6945.75	-130.08	6945.68
-129.81	6945.66	-129.12	6945.59	-128.95	6945.58	-128.76	6945.56	-128.16	6945.51
-127.72	6945.47	-127.2	6945.42	-126.67	6945.38	-126.24	6945.34	-125.95	6945.31
-125.63	6945.29	-124.95	6945.23	-124.58	6945.19	-124.32	6945.18	-123.94	6945.14
-123.53	6945.11	-123.36	6945.1	-122.94	6945.06	-122.49	6945.02	-122.41	6945.02
-121.94	6944.98	-120.94	6944.9	-120.39	6944.85	-119.94	6944.82	-119.53	6944.78
-119.35	6944.77	-118.94	6944.74	-118.3	6944.69	-117.94	6944.66	-117.61	6944.63
-117.25	6944.6	-116.94	6944.58	-116.65	6944.55	-116.21	6944.52	-115.69	6944.48
-115.16	6944.43	-114.94	6944.42	-114.73	6944.4	-114.11	6944.35	-113.94	6944.34
-113.77	6944.32	-113.07	6944.28	-112.94	6944.27	-112.02	6944.27	-111.93	6944.26

Pr RAS Input Report.txt

-108.98	6944.26	-108.93	6944.25	-108.02	6944.25	-107.83	6944.23	-107.06	6944.24
-106.93	6944.22	-106.79	6944.21	-106.1	6944.18	-105.93	6944.16	-105.74	6944.15
-105.14	6944.1	-104.93	6944.09	-104.69	6944.09	-104.18	6944.08	-103.93	6944.08
-103.65	6944.07	-102.93	6944.07	-102.6	6944.06	-101.93	6944.06	-101.55	6944.05
-100.92	6944.05	-100.51	6944.04	-100.35	6944.04	-99.92	6944.03	-99.39	6944.03
-98.92	6944.02	-98.41	6944.02	-97.92	6944.01	-97.37	6944.01	-96.92	6944
-96.51	6944	-96.32	6943.99	-95.55	6943.99	-95.27	6943.98	-94.59	6943.98
-94.23	6943.97	-93.64	6943.97	-93.18	6943.96	-92.68	6943.96	-92.13	6943.95
-91.92	6943.95	-91.72	6943.94	-90.92	6943.94	-90.76	6943.93	-89.91	6943.93
-89.8	6943.92	-88.99	6943.91	-88.84	6943.91	-87.95	6943.9	-87.17	6943.9
-86.9	6943.89	-85.96	6943.88	-85.85	6943.88	-85.01	6943.87	-84.81	6943.87
-84.05	6943.86	-83.76	6943.86	-83.09	6943.85	-82.71	6943.85	-82.13	6943.84
-81.67	6943.84	-81.17	6943.83	-80.91	6943.83	-80.62	6943.82	-79.91	6943.82
-79.57	6943.81	-79.25	6943.81	-78.91	6943.8	-78.29	6943.8	-77.9	6943.79
-77.33	6943.79	-76.9	6943.78	-76.37	6943.78	-75.9	6943.77	-75.39	6943.77
-74.9	6943.76	-74.46	6943.71	-74.34	6943.76	-73.9	6943.71	-73.5	6943.59
-73.29	6943.69	-72.9	6943.58	-72.54	6943.49	-72.25	6943.4	-71.9	6943.31
-71.58	6943.25	-71.2	6943.17	-70.9	6943.11	-70.16	6942.9	-69.9	6942.83
-69.66	6942.77	-68.9	6942.55	-68.7	6942.51	-68.06	6942.33	-67.9	6942.29
-67.02	6942.12	-66.89	6942.1	-66.78	6942.07	-65.97	6941.89	-65.83	6941.85
-64.92	6941.62	-64.87	6941.61	-64.26	6941.45	-63.91	6941.37	-63.88	6941.36
-62.95	6941.16	-62.83	6941.13	-61.99	6940.94	-61.78	6940.9	-61.03	6940.72
-60.89	6940.69	-60.74	6940.65	-60.07	6940.51	-59.89	6940.47	-59.69	6940.45
-59.11	6940.4	-58.89	6940.37	-58.64	6940.35	-58.15	6940.3	-57.89	6940.27
-57.6	6940.25	-57.19	6940.21	-56.89	6940.19	-56.55	6940.16	-56.24	6940.13
-55.88	6940.1	-55.5	6940.18	-55.28	6940.27	-54.88	6940.35	-54.46	6940.42
-54.32	6940.45	-53.88	6940.52	-51.32	6940.52	-50.88	6940.51	-49.88	6940.51
-49.52	6940.54	-49.22	6940.57	-48.88	6940.6	-48.56	6940.66	-48.18	6940.72
-47.88	6940.78	-47.6	6940.82	-47.13	6940.9	-46.88	6940.95	-46.08	6941.09
-45.69	6941.17	-45.04	6941.3	-44.73	6941.36	-43.99	6941.48	-43.77	6941.52
-42.94	6941.66	-42.81	6941.68	-41.9	6941.83	-41.34	6941.94	-40.89	6942.03
-40.85	6942.04	-39.93	6942.19	-38.97	6942.34	-38.76	6942.38	-38.01	6942.5
-37.87	6942.53	-37.71	6942.55	-37.06	6942.68	-36.66	6942.74	-35.87	6942.88
-35.14	6943	-34.87	6943.04	-34.57	6943.09	-34.18	6943.16	-33.87	6943.21
-33.52	6943.26	-33.22	6943.33	-32.86	6943.38	-32.48	6943.42	-32.26	6943.47
-31.86	6943.52	-31.43	6943.58	-31.3	6943.59	-30.86	6943.65	-30.38	6943.71
-30.34	6943.71	-29.38	6943.83	-29.34	6943.84	-28.86	6943.9	-28.42	6943.97
-28.29	6943.97	-27.86	6944.05	-27.47	6944.1	-27.24	6944.17	-26.86	6944.22
-26.51	6944.23	-26.2	6944.31	-25.55	6944.33	-25.15	6944.34	-24.59	6944.36
-23.63	6944.4	-23.06	6944.42	-22.86	6944.42	-22.67	6944.43	-22.01	6944.45
-21.85	6944.46	-21.71	6944.46	-20.96	6944.49	-20.85	6944.49	-20.75	6944.5
-19.92	6944.53	-19.79	6944.53	-18.87	6944.56	-18.43	6944.58	-17.88	6944.6
-17.82	6944.6	-16.92	6944.63	-16.78	6944.64	-15.96	6944.66	-15.73	6944.68
-15	6944.71	-14.85	6944.72	-14.69	6944.72	-14.04	6944.76	-13.08	6944.81
-12.85	6944.82	-12.59	6944.81	-12.12	6944.72	-11.85	6944.71	-11.55	6944.67
-11.16	6944.61	-10.85	6944.56	-10.5	6944.51	-9.84	6944.42	-9.45	6944.36
-8.84	6944.27	-8.29	6944.18	-7.84	6944.12	-7.36	6944.03	-7.33	6944.09
-6.84	6944	-6.37	6944.05	-6.31	6943.99	-5.84	6944.04	-5.41	6944.08

Pr RAS Input Report.txt

-5.27	6944.1	-4.84	6944.14	-4.45	6944.18	-4.22	6944.2	-3.84	6944.24
-3.49	6944.28	-2.84	6944.34	-2.53	6944.37	-1.84	6944.44	-1.57	6944.47
-1.08	6944.52	-.84	6944.54	-.61	6944.57	.16	6944.65	.35	6944.66
1.01	6944.73	1.17	6944.75	1.3	6944.76	2.26	6944.86	3.11	6944.94
3.22	6944.96	4.15	6945.05	4.18	6945.05	4.48	6945.08	5.14	6945.15
5.2	6945.16	6.1	6945.25	6.25	6945.25	7.06	6945.16	7.17	6945.15
7.29	6945.11	8.02	6944.9	8.17	6944.86	8.98	6944.62	9.17	6944.56
9.39	6944.5	10.17	6944.27	10.43	6944.2	10.89	6944.07	11.17	6943.98
11.48	6943.89	11.85	6943.79	12.18	6943.69	12.81	6943.51	13.18	6943.4
13.57	6943.29	13.77	6943.23	14.62	6942.98	14.73	6942.95	15.67	6942.68
15.69	6942.67	16.18	6942.53	16.65	6942.39	16.71	6942.38	17.18	6942.24
17.61	6942.12	17.76	6942.07	18.18	6941.95	18.57	6941.87	18.81	6941.78
19.18	6941.7	19.57	6941.62	20.18	6941.49	20.48	6941.43	20.91	6941.34
21.18	6941.28	21.44	6941.23	21.96	6941.12	22.18	6941.07	22.39	6941.03
23.01	6940.9	23.35	6940.82	24.06	6940.67	24.19	6940.65	24.3	6940.62
25.11	6940.45	25.19	6940.44	25.26	6940.42	26.21	6940.22	26.72	6940.15
27.17	6940.09	27.19	6940.08	29.32	6940.08	30.03	6940.09	64.23	6940.09
65.06	6940.17	65.23	6940.19	65.38	6940.22	66.11	6940.41	66.23	6940.44
66.34	6940.46	67.16	6940.67	67.3	6940.7	68.21	6940.93	69.21	6941.18
69.23	6941.19	70.16	6941.42	71.24	6941.69	71.37	6941.72	72.07	6941.9
72.42	6941.98	73.03	6942.14	73.24	6942.19	73.43	6942.24	73.98	6942.38
74.24	6942.44	74.52	6942.51	74.94	6942.61	75.24	6942.69	75.89	6942.85
76.63	6943.04	76.85	6943.09	77.24	6943.19	78.24	6943.44	78.73	6943.56
78.76	6943.57	79.25	6943.69	79.72	6943.81	79.78	6943.83	80.25	6943.94
80.67	6944.05	81.25	6944.19	81.63	6944.29	82.25	6944.44	82.58	6944.53
82.93	6944.61	83.25	6944.69	83.54	6944.77	83.98	6944.88	84.25	6944.94
85.04	6945.14	85.25	6945.19	86.09	6945.4	86.25	6945.45	86.4	6945.48
87.14	6945.67	87.25	6945.7	87.36	6945.72	88.19	6945.93	89.24	6946.19
89.27	6946.2	90.26	6946.45	90.29	6946.46	91.18	6946.68	92.26	6946.95
92.4	6946.98	93.09	6947.16	93.45	6947.24	94.05	6947.39	94.26	6947.45
94.5	6947.51	95	6947.63	95.26	6947.7	95.96	6947.87	96.26	6947.95
96.6	6948.03	97.65	6948.3	97.87	6948.35	98.27	6948.45	98.7	6948.56
99.27	6948.7	99.75	6948.82	99.78	6948.83	100.27	6948.95	100.81	6949.09
101.27	6949.2	101.69	6949.21	101.86	6949.35	104.27	6949.35	104.56	6949.34
105.22	6949.34								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
-147.06	.035	17.61	.035	73.43	.035

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	17.61	73.43		15.35	15.35	15.35		.1	.3
Ineffective Flow	num=		1						
Sta L	Sta R	Elev	Permanent						
-147.06	-12.62	6944.87	T						

CROSS SECTION

Pr RAS Input Report.txt

RIVER: UT_BSC2
 REACH: NCONFL-BGM

RS: 4240

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 491

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-125.51	6947.39	-125.37	6947.37	-124.53	6947.28	-124.32	6947.26	-123.57	6947.17
-123.43	6947.16	-123.28	6947.14	-122.62	6947.06	-121.66	6946.96	-121.18	6946.9
-120.14	6946.79	-119.74	6946.74	-119.43	6946.71	-119.09	6946.67	-118.78	6946.63
-118.43	6946.59	-118.04	6946.55	-117.82	6946.53	-117.43	6946.48	-117	6946.43
-116.86	6946.42	-116.43	6946.37	-115.95	6946.32	-115.9	6946.31	-115.42	6946.26
-114.94	6946.2	-114.9	6946.2	-114.42	6946.15	-113.99	6946.1	-113.86	6946.08
-113.42	6946.03	-113.03	6945.99	-112.81	6945.96	-112.42	6945.92	-112.07	6945.88
-111.76	6945.85	-111.42	6945.81	-111.11	6945.77	-110.42	6945.7	-110.15	6945.67
-109.42	6945.58	-109.19	6945.56	-108.62	6945.49	-108.23	6945.45	-107.58	6945.38
-107.27	6945.34	-106.53	6945.26	-106.31	6945.24	-105.48	6945.14	-105.35	6945.13
-104.44	6945.03	-104.4	6945.02	-103.95	6944.97	-103.44	6944.91	-103.39	6944.91
-102.48	6944.81	-102.34	6944.79	-101.52	6944.7	-101.41	6944.69	-101.3	6944.67
-100.56	6944.59	-100.41	6944.57	-100.25	6944.56	-99.6	6944.48	-99.2	6944.44
-98.16	6944.31	-97.41	6944.2	-97.11	6944.12	-96.72	6944.03	-96.06	6943.86
-95.76	6943.79	-95.02	6943.6	-94.81	6943.58	-94.41	6943.48	-93.97	6943.38
-93.85	6943.36	-93.41	6943.26	-92.92	6943.13	-92.4	6942.98	-91.93	6942.83
-91.88	6942.84	-91.4	6942.69	-90.97	6942.58	-90.83	6942.55	-90.01	6942.34
-89.78	6942.28	-89.4	6942.19	-88.74	6942.02	-88.4	6941.93	-88.09	6941.86
-87.69	6941.76	-87.4	6941.68	-87.13	6941.62	-86.64	6941.49	-86.4	6941.43
-86.17	6941.38	-85.4	6941.19	-85.22	6941.14	-84.55	6940.97	-84.4	6940.94
-84.26	6940.9	-83.5	6940.71	-83.4	6940.69	-83.3	6940.66	-82.46	6940.45
-82.34	6940.43	-81.41	6940.24	-81.38	6940.24	-81.05	6940.19	-80.42	6940.1
-80.36	6940.09	-79.46	6940.05	-79.39	6940.04	-78.5	6940.03	-78.27	6940.03
-77.54	6940.02	-77.22	6940.02	-76.58	6940.01	-76.18	6940.01	-75.63	6940
-75.13	6940	-74.67	6939.99	-74.39	6939.99	-74.08	6939.98	-73.39	6939.98
-73.04	6939.97	-72.75	6939.97	-72.39	6939.96	-71.79	6939.96	-71.39	6939.95
-70.83	6939.95	-70.38	6939.94	-69.87	6939.94	-69.38	6939.93	-68.91	6939.93
-68.85	6939.92	-68.38	6939.92	-67.95	6939.91	-67.38	6939.91	-67	6939.9
-66.38	6939.9	-66.04	6939.89	-65.38	6939.89	-65.08	6939.88	-64.66	6939.88
-64.38	6939.87	-63.62	6939.87	-63.38	6939.86	-63.16	6939.86	-62.57	6939.85
-62.2	6939.85	-61.52	6939.84	-61.24	6939.84	-60.48	6939.83	-60.28	6939.83
-59.43	6939.82	-59.32	6939.82	-58.36	6939.81	-58.14	6939.8	-57.41	6939.79
-56.45	6939.78	-56.29	6939.78	-55.49	6939.77	-55.24	6939.77	-54.53	6939.76
-54.2	6939.76	-53.57	6939.75	-53.15	6939.75	-52.61	6939.74	-52.37	6939.74
-52.1	6939.73	-51.37	6939.73	-51.06	6939.72	-50.69	6939.72	-50.37	6939.71
-49.73	6939.71	-49.37	6939.7	-48.77	6939.7	-48.37	6939.69	-47.82	6939.69
-46.87	6939.67	-46.36	6939.67	-45.9	6939.66	-45.36	6939.66	-44.94	6939.65

Pr RAS Input Report.txt

-44.36	6939.65	-43.98	6939.64	-43.73	6939.64	-43.36	6939.63	-42.69	6939.63
-42.36	6939.62	-42.06	6939.62	-41.64	6939.61	-41.1	6939.61	-40.59	6939.6
-39.55	6939.6	-39.36	6939.59	-38.36	6939.59	-38.23	6939.58	-37.27	6939.58
-36.41	6939.57	-36.31	6939.57	-35.36	6939.56	-35.24	6939.56	-34.39	6939.55
-33.43	6939.54	-33.27	6939.54	-32.47	6939.53	-31.51	6939.53	-31.35	6939.52
-31.17	6939.52	-30.55	6939.38	-30.35	6939.38	-30.13	6939.37	-29.6	6939.34
-29.35	6939.33	-28.64	6939.33	-28.35	6939.32	-25.34	6939.32	-24.89	6939.34
-24.8	6939.38	-24.34	6939.4	-23.85	6939.4	-23.84	6939.46	-23.34	6939.45
-22.34	6939.45	-21.92	6939.44	-21.34	6939.44	-20.96	6939.43	-20.01	6939.43
-19.66	6939.42	-19.05	6939.42	-18.61	6939.41	-18.09	6939.41	-17.57	6939.4
-16.52	6939.4	-16.34	6939.39	-15.34	6939.39	-15.21	6939.38	-14.43	6939.41
-14.34	6939.41	-14.25	6939.42	-13.38	6939.64	-13.29	6939.65	-12.34	6939.89
-11.33	6940.14	-11.29	6940.16	-10.42	6940.37	-10.33	6940.39	-10.24	6940.42
-9.46	6940.61	-9.33	6940.64	-9.19	6940.68	-8.5	6940.85	-8.33	6940.89
-8.15	6940.94	-7.54	6941.09	-7.33	6941.14	-7.1	6941.2	-6.58	6941.33
-6.05	6941.46	-5.62	6941.57	-5.01	6941.72	-4.66	6941.81	-4.33	6941.89
-3.96	6941.99	-3.7	6942.05	-3.33	6942.14	-2.91	6942.22	-2.74	6942.29
-2.32	6942.36	-1.87	6942.36	-1.78	6942.46	-1.32	6942.46	-.83	6942.45
-.32	6942.45	.13	6942.44	1.09	6942.44	1.27	6942.43	2.32	6942.43
2.68	6942.42	3.37	6942.42	3.68	6942.41	4.68	6942.41	4.93	6942.4
5.68	6942.4	5.89	6942.39	6.85	6942.39	7.55	6942.38	7.8	6942.38
8.6	6942.37	8.76	6942.37	10.57	6942.35	10.69	6942.35	11.64	6942.34
12.69	6942.34	12.79	6942.33	13.83	6942.33	14.52	6942.32	14.88	6942.32
15.48	6942.31	15.93	6942.31	16.44	6942.3	16.97	6942.3	17.39	6942.29
18.35	6942.29	18.69	6942.28	19.31	6942.28	19.69	6942.27	20.7	6942.27
21.16	6942.26	21.7	6942.26	22.19	6942.25	22.7	6942.25	23.15	6942.24
24.11	6942.24	24.3	6942.23	25.34	6942.23	25.7	6942.22	26.39	6942.22
26.7	6942.21	27.7	6942.21	27.94	6942.2	28.7	6942.2	28.9	6942.17
29.53	6942.19	29.7	6942.17	29.86	6942.16	30.53	6942.14	30.58	6942.13
30.82	6942.13	31.61	6942.06	31.7	6942.06	31.79	6942.03	32.65	6941.78
32.76	6941.75	33.69	6941.48	34.21	6941.31	34.72	6941.16	35.66	6940.91
35.76	6940.88	36.62	6940.66	36.8	6940.61	37.59	6940.4	37.83	6940.34
38.87	6940.07	39.71	6939.85	39.91	6939.8	40.49	6939.65	40.94	6939.53
41.46	6939.4	41.71	6939.33	41.98	6939.26	42.42	6939.14	42.71	6939.07
43.02	6938.99	43.39	6938.89	43.71	6938.81	44.05	6938.72	44.71	6938.55
45.32	6938.39	46.29	6938.14	47.17	6937.91	47.26	6937.89	48.2	6937.64
48.23	6937.63	48.71	6937.51	49.19	6937.38	49.24	6937.37	49.71	6937.24
50.16	6937.14	50.28	6937.11	50.72	6937.01	87.86	6937.01	88.63	6937.03
88.74	6937.04	88.83	6937.06	89.67	6937.28	89.8	6937.32	90.71	6937.56
90.76	6937.57	91.74	6937.83	92.78	6938.1	93.66	6938.34	93.82	6938.38
94.63	6938.59	94.85	6938.65	95.6	6938.85	95.74	6938.88	96.56	6939.1
96.74	6939.15	97.53	6939.36	97.74	6939.41	97.96	6939.47	98.5	6939.61
98.74	6939.68	99	6939.74	99.47	6939.87	100.04	6940.02	100.74	6940.2
101.4	6940.38	101.74	6940.47	102.11	6940.56	103.15	6940.84	103.33	6940.89
103.74	6940.99	104.18	6941.11	104.3	6941.14	104.74	6941.26	105.22	6941.38
105.27	6941.4	105.74	6941.52	106.23	6941.65	106.26	6941.66	107.2	6941.91
107.29	6941.93	108.17	6942.16	108.75	6942.31	109.13	6942.42	109.37	6942.48
110.1	6942.67	110.4	6942.75	110.75	6942.84	111.07	6942.93	111.44	6943.02

Pr RAS Input Report.txt

111.75	6943.11	112.03	6943.18	112.48	6943.3	112.75	6943.37	113	6943.44
113.52	6943.57	113.97	6943.69	114.55	6943.84	114.93	6943.95	115.9	6944.2
116.63	6944.39	116.87	6944.45	117.66	6944.66	117.83	6944.71	118.7	6944.94
118.8	6944.97	119.74	6945.21	119.77	6945.22	120.22	6945.34	120.77	6945.48
121.81	6945.76	122.67	6945.98	122.75	6946.01	122.85	6946.03	123.64	6946.24
123.88	6946.3	124.75	6946.53	124.92	6946.58	125.68	6946.78	125.76	6946.8
125.96	6946.85	126.54	6947	126.76	6947.06	126.99	6947.11	127.5	6947.24
127.76	6947.31	128.03	6947.37	128.47	6947.48	128.76	6947.56	129.07	6947.63
129.44	6947.73	129.76	6947.81	130.1	6947.89	130.4	6947.97	130.76	6948.06
131.14	6948.15	131.76	6948.31	132.34	6948.45	132.76	6948.56	133.21	6948.67
133.3	6948.69	133.76	6948.81	134.25	6948.93	134.27	6948.94	134.76	6949.06
135.29	6949.18	135.76	6949.29	136.32	6949.29	136.76	6949.3	141.04	6949.3
141.51	6949.29	144.9	6949.29	145.65	6949.28	147.81	6949.28	148.76	6949.27
150	6949.27								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-125.51	.035	31.61	.035	108.17	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	31.61	108.17		46.77	46.77		.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-125.51	-2.53	6942.48	T

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4200

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 377							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-82.45	6943.36	-82.13	6943.36	-81.93	6943.31	-81.72	6943.26	-81.16	6943.12
-80.93	6943.06	-80.69	6943	-80.18	6942.88	-79.93	6942.81	-79.66	6942.75
-79.21	6942.63	-78.93	6942.56	-78.63	6942.49	-78.24	6942.39	-77.93	6942.31
-77.6	6942.23	-77.27	6942.15	-76.93	6942.06	-76.57	6941.97	-76.29	6941.9
-75.93	6941.81	-75.54	6941.72	-75.32	6941.66	-74.93	6941.56	-74.51	6941.46
-74.35	6941.42	-73.93	6941.31	-73.48	6941.2	-73.37	6941.18	-72.93	6941.06
-72.45	6940.95	-72.4	6940.93	-71.93	6940.81	-71.43	6940.69	-70.93	6940.56
-70.46	6940.45	-70.4	6940.43	-69.93	6940.31	-69.48	6940.2	-69.37	6940.17
-68.93	6940.06	-68.51	6939.96	-68.34	6939.92	-67.93	6939.81	-67.54	6939.72
-67.31	6939.66	-66.93	6939.56	-66.56	6939.47	-66.28	6939.4	-65.93	6939.31

Pr RAS Input Report.txt

-65.59	6939.29	-65.25	6939.27	-64.92	6939.25	-50.92	6939.25	-50.84	6939.26
-50.03	6939.28	-49.81	6939.28	-49.05	6939.29	-41.57	6939.29	-41.27	6939.3
-39.92	6939.3	-39.51	6939.27	-39.33	6939.28	-38.92	6939.26	-38.48	6939.25
-38.35	6939.26	-37.92	6939.25	-37.38	6939.25	-36.92	6939.24	-32.31	6939.24
-31.91	6939.23	-26.91	6939.23	-26.68	6939.22	-21.81	6939.22	-17.92	6939.21
-15.98	6939.21	-15.91	6939.2	-12.91	6939.2	-12.75	6939.12	-12.09	6938.79
-11.91	6938.7	-10.91	6938.7	-10.69	6938.77	-10.14	6938.94	-9.91	6939.02
-9.66	6939.06	-9.17	6939.15	-8.91	6939.2	-8.63	6939.2	-8.2	6939.21
-7.91	6939.21	-7.6	6939.22	-7.22	6939.22	-6.91	6939.23	-6.57	6939.23
-6.25	6939.24	-5.54	6939.24	-5.28	6939.25	-2.9	6939.25	-2.45	6939.36
-2.36	6939.39	-1.9	6939.5	-1.42	6939.62	-1.39	6939.63	-.9	6939.75
-.41	6939.87	-.39	6939.88	.1	6940	.56	6940.12	.64	6940.13
1.1	6940.25	1.53	6940.36	1.66	6940.39	2.1	6940.5	2.51	6940.6
2.69	6940.65	3.1	6940.75	3.48	6940.85	3.72	6940.91	4.1	6941
4.45	6941.09	4.75	6941.16	5.1	6941.25	5.42	6941.33	5.78	6941.42
6.1	6941.5	6.4	6941.57	6.81	6941.68	7.1	6941.75	7.37	6941.82
7.84	6941.94	8.1	6942	8.34	6942.06	8.87	6942.19	9.1	6942.25
9.32	6942.3	9.9	6942.45	10.1	6942.5	10.29	6942.55	10.93	6942.71
11.1	6942.75	11.26	6942.79	17.1	6943.41	19.04	6943.41	19.1	6943.42
21.22	6943.42	21.96	6943.43	23.28	6943.43	23.91	6943.44	26.11	6943.44
26.37	6943.45	28.11	6943.45	28.44	6943.46	30.11	6943.46	30.5	6943.47
31.68	6943.47	32.11	6943.48	32.57	6943.43	32.65	6943.48	33.11	6943.43
33.6	6943.33	33.62	6943.41	34.11	6943.3	34.59	6943.2	34.63	6943.19
35.11	6943.08	35.56	6942.98	35.66	6942.96	36.11	6942.86	36.53	6942.77
36.7	6942.73	36.8	6942.71	37.11	6942.64	37.5	6942.55	37.73	6942.5
38.11	6942.42	38.47	6942.34	38.76	6942.27	39.11	6942.19	39.44	6942.12
39.79	6942.04	40.11	6941.97	40.41	6941.91	40.83	6941.81	41.11	6941.75
41.38	6941.69	41.86	6941.58	42.11	6941.53	42.35	6941.47	42.89	6941.33
43.11	6941.28	43.32	6941.22	43.92	6941.07	44.11	6941.03	44.29	6940.98
44.96	6940.81	45.11	6940.78	45.26	6940.74	50.11	6939.53	50.12	6939.52
51.08	6939.28	51.12	6939.28	51.15	6939.27	52.05	6939.04	52.12	6939.03
52.19	6939.01	53.02	6938.8	53.12	6938.78	53.22	6938.75	53.99	6938.56
54.12	6938.53	54.25	6938.49	54.96	6938.31	55.12	6938.28	55.28	6938.23
55.93	6938.07	56.12	6938.03	56.32	6937.98	56.9	6937.83	57.12	6937.78
57.35	6937.72	57.87	6937.59	58.12	6937.53	58.38	6937.46	58.84	6937.35
59.12	6937.28	59.41	6937.2	59.81	6937.1	60.12	6937.03	60.45	6936.98
60.78	6936.92	61.12	6936.87	98.13	6936.87	98.62	6936.91	98.65	6936.92
99.14	6936.96	99.59	6937.07	99.68	6937.1	100.14	6937.21	100.56	6937.32
100.72	6937.36	101.14	6937.46	101.53	6937.56	101.75	6937.61	102.14	6937.71
102.5	6937.8	102.78	6937.87	103.14	6937.96	103.47	6938.04	103.81	6938.13
104.14	6938.21	104.44	6938.29	104.85	6938.39	105.14	6938.46	105.41	6938.53
105.88	6938.65	106.14	6938.71	106.38	6938.77	106.91	6938.91	107.14	6938.96
107.35	6939.02	107.95	6939.16	108.14	6939.21	108.32	6939.26	108.98	6939.42
109.14	6939.46	109.29	6939.5	110.01	6939.68	110.14	6939.71	110.26	6939.74
111.04	6939.94	111.14	6939.96	111.23	6939.99	112.08	6940.2	112.14	6940.21
112.2	6940.23	114.14	6940.71	115.11	6940.96	115.14	6940.96	115.17	6940.97
116.08	6941.2	116.14	6941.21	116.21	6941.23	117.05	6941.44	117.14	6941.46
117.24	6941.49	118.02	6941.68	118.14	6941.71	118.27	6941.75	118.99	6941.93

Pr RAS Input Report.txt

119.14	6941.96	119.3	6942	119.96	6942.17	120.14	6942.21	120.34	6942.26
120.93	6942.41	121.14	6942.46	121.37	6942.52	121.9	6942.65	122.14	6942.71
122.4	6942.78	122.87	6942.9	123.15	6942.96	123.43	6943.04	123.84	6943.14
124.15	6943.21	124.47	6943.29	124.81	6943.38	125.15	6943.46	125.5	6943.55
125.78	6943.62	126.15	6943.71	126.53	6943.81	126.75	6943.87	127.15	6943.96
127.56	6944.07	127.72	6944.11	128.15	6944.21	128.6	6944.33	128.69	6944.35
129.15	6944.46	129.63	6944.59	129.66	6944.59	130.15	6944.71	130.64	6944.84
130.66	6944.84	131.15	6944.97	131.61	6945.08	131.69	6945.1	132.15	6945.21
132.58	6945.32	132.73	6945.36	133.15	6945.47	133.55	6945.56	133.76	6945.62
134.15	6945.72	134.52	6945.81	134.79	6945.88	135.15	6945.97	135.49	6946.05
135.83	6946.13	136.15	6946.22	136.46	6946.29	136.86	6946.39	137.15	6946.47
137.43	6946.53	137.89	6946.65	138.15	6946.72	138.4	6946.78	138.92	6946.91
139.15	6946.97	139.37	6947.02	139.96	6947.17	140.15	6947.22	140.34	6947.26
140.99	6947.43	141.15	6947.47	141.31	6947.5	142.02	6947.68	142.15	6947.72
142.28	6947.75	142.76	6947.87	143.05	6947.95	143.15	6947.97	143.25	6948
144.09	6948.32	144.15	6948.34	144.22	6948.36	145.12	6948.41	145.15	6948.41
145.19	6948.42	147.13	6948.43	147.18	6948.43	148.1	6948.44	148.22	6948.44
149.07	6948.45	150.14	6948.45						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-82.45	.035	36.8	.035	142.76	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

36.8	142.76	13.79	13.79	13.79	.1	.3
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Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-82.45	44	6945.81	T
114	150.14	6945.81	T

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4175

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 487

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-114.99	6944.58	-114.85	6944.58	-114.38	6944.53	-114.32	6944.53	-113.85	6944.48
-113.41	6944.43	-113.28	6944.42	-112.85	6944.37	-112.44	6944.33	-112.25	6944.31
-111.85	6944.27	-111.47	6944.18	-111.21	6944.12	-110.85	6944.04	-110.51	6943.95
-110.18	6943.87	-109.85	6943.79	-109.54	6943.71	-109.14	6943.61	-108.85	6943.54
-108.57	6943.47	-108.11	6943.35	-107.85	6943.29	-107.6	6943.23	-107.07	6943.09

Pr RAS Input Report.txt

-106.85	6943.04	-106.63	6942.98	-106.04	6942.83	-105.84	6942.79	-105.66	6942.74
-105	6942.58	-104.84	6942.54	-104.7	6942.5	-103.97	6942.32	-103.84	6942.29
-103.73	6942.26	-102.93	6942.06	-102.84	6942.04	-102.76	6942.02	-101.9	6941.8
-101.84	6941.79	-101.79	6941.77	-100.86	6941.54	-100.84	6941.54	-100.82	6941.53
-100.27	6941.39	-99.86	6941.29	-99.84	6941.29	-99.83	6941.28	-98.89	6941.05
-98.84	6941.04	-98.79	6941.02	-97.92	6940.81	-97.84	6940.79	-97.76	6940.76
-96.95	6940.56	-96.84	6940.54	-96.72	6940.51	-95.98	6940.32	-95.84	6940.29
-95.69	6940.25	-95.01	6940.08	-94.84	6940.04	-94.65	6939.99	-94.05	6939.84
-93.84	6939.79	-93.62	6939.73	-93.08	6939.6	-92.84	6939.54	-92.58	6939.47
-92.11	6939.35	-91.84	6939.29	-91.55	6939.28	-91.14	6939.26	-90.84	6939.25
-83.83	6939.25	-83.4	6939.28	-83.27	6939.37	-82.83	6939.4	-82.43	6939.51
-82.23	6939.56	-81.83	6939.66	-81.46	6939.75	-81.2	6939.82	-80.83	6939.91
-80.49	6940	-80.16	6940.08	-79.83	6940.17	-79.52	6940.24	-79.13	6940.34
-78.83	6940.42	-78.56	6940.49	-78.09	6940.61	-77.83	6940.67	-77.59	6940.73
-77.06	6940.87	-76.83	6940.93	-76.62	6940.96	-76.02	6941.07	-75.83	6941.1
-73.95	6941.1	-73.83	6941.11	-71.78	6941.11	-70.85	6941.12	-68.78	6941.12
-67.91	6941.13	-65.83	6941.13	-65.67	6941.12	-65	6941.07	-64.82	6941.06
-64.64	6941.01	-64.03	6940.86	-63.82	6940.81	-63.6	6940.75	-63.07	6940.62
-62.82	6940.56	-62.57	6940.5	-62.1	6940.38	-61.82	6940.32	-61.53	6940.24
-61.13	6940.14	-60.82	6940.07	-60.5	6939.99	-60.16	6939.91	-59.82	6939.82
-59.46	6939.73	-59.19	6939.67	-58.82	6939.58	-58.43	6939.48	-58.22	6939.43
-57.82	6939.33	-57.39	6939.26	-57.26	6939.32	-56.82	6939.25	-43.7	6939.25
-42.9	6938.84	-42.81	6938.84	-42.73	6938.81	-41.86	6938.78	-41.81	6938.75
-31.81	6938.75	-31.51	6939.12	-31.12	6939.1	-30.81	6939.49	-30.48	6939.29
-30.15	6939.51	-29.81	6939.3	-29.44	6939.3	-29.18	6939.32	-28.81	6939.32
-28.41	6939.38	-28.21	6939.47	-27.81	6939.53	-27.37	6939.64	-27.24	6939.67
-26.81	6939.78	-26.34	6939.9	-26.27	6939.91	-25.81	6940.03	-25.31	6940.15
-25.3	6940.15	-24.81	6940.28	-24.34	6940.4	-24.27	6940.41	-23.8	6940.53
-23.37	6940.64	-23.23	6940.67	-22.8	6940.78	-22.2	6940.93	-21.8	6941.03
-21.43	6941.12	-21.16	6941.19	-20.8	6941.28	-20.47	6941.36	-20.13	6941.45
-19.8	6941.53	-19.5	6941.61	-19.09	6941.71	-18.8	6941.78	-18.53	6941.85
-18.06	6941.96	-17.8	6942.03	-17.56	6942.09	-17.02	6942.22	-16.8	6942.28
-16.59	6942.33	-15.99	6942.48	-15.8	6942.53	-15.63	6942.57	-14.95	6942.74
-14.8	6942.78	-14.66	6942.82	-13.92	6943	-13.8	6943.03	-13.69	6943.06
-12.88	6943.26	-12.8	6943.28	-12.72	6943.3	-11.85	6943.52	-11.8	6943.53
-11.75	6943.54	-10.81	6943.78	-10.78	6943.78	-10.36	6943.89	-9.82	6944.02
-9.8	6944.03	-9.78	6944.03	-8.85	6944.24	-8.8	6944.26	-8.74	6944.26
-7.88	6944.3	-7.8	6944.31	-7.71	6944.31	-6.91	6944.35	-6.8	6944.36
-6.67	6944.36	-5.94	6944.4	-5.8	6944.41	-5.64	6944.41	-4.98	6944.45
-4.8	6944.46	-4.6	6944.47	-4.01	6944.5	-3.79	6944.51	-3.57	6944.52
-3.04	6944.54	-2.79	6944.56	-2.53	6944.57	-2.07	6944.59	-1.79	6944.61
-1.5	6944.62	-1.1	6944.64	-.79	6944.66	-.46	6944.67	-.13	6944.69
.21	6944.71	.57	6944.71	.83	6944.72	1.21	6944.72	1.61	6944.63
1.8	6944.58	2.21	6944.49	2.64	6944.38	2.77	6944.35	3.21	6944.25
3.68	6944.14	3.74	6944.13	4.21	6944.02	4.71	6943.9	5.21	6943.78
5.67	6943.67	5.75	6943.65	6.21	6943.55	6.64	6943.44	6.78	6943.41
7.21	6943.31	7.61	6943.22	7.82	6943.17	8.21	6943.07	8.58	6942.99
8.85	6942.92	9.21	6942.84	9.89	6942.68	10.21	6942.6	10.52	6942.53

Pr RAS Input Report.txt

10.92	6942.44	11.21	6942.37	11.48	6942.31	11.96	6942.19	12.21	6942.14
12.45	6942.08	12.99	6941.95	13.21	6941.9	13.42	6941.86	14	6941.73
14.03	6941.72	14.21	6941.68	14.38	6941.65	15.08	6941.49	15.22	6941.46
15.34	6941.43	16.13	6941.26	16.22	6941.24	16.29	6941.22	17.18	6941.02
17.22	6941.02	17.25	6941.01	17.86	6940.87	18.2	6940.8	18.22	6940.8
18.24	6940.79	19.16	6940.59	19.22	6940.57	19.29	6940.55	20.11	6940.35
20.22	6940.32	20.34	6940.29	21.07	6940.11	21.22	6940.07	21.39	6940.03
22.02	6939.87	22.22	6939.82	22.44	6939.77	22.98	6939.63	23.22	6939.57
23.5	6939.5	23.93	6939.39	24.22	6939.32	24.55	6939.24	24.89	6939.16
25.23	6939.07	25.6	6938.98	25.84	6938.92	26.23	6938.82	26.65	6938.72
26.8	6938.68	27.23	6938.57	27.71	6938.45	27.75	6938.44	28.23	6938.32
28.7	6938.2	28.76	6938.19	29.23	6938.07	29.66	6937.96	29.81	6937.93
30.23	6937.82	30.61	6937.73	30.86	6937.66	31.23	6937.57	31.57	6937.49
31.91	6937.4	32.23	6937.32	32.52	6937.25	32.97	6937.14	33.23	6937.07
33.48	6937.01	34.02	6936.88	34.24	6936.83	71.67	6936.83	71.89	6936.84
72.28	6936.84	72.63	6936.93	72.95	6937.01	73.28	6937.09	73.58	6937.17
74	6937.27	74.28	6937.34	74.54	6937.4	75.05	6937.53	75.28	6937.59
75.49	6937.64	76.1	6937.79	76.28	6937.84	76.45	6937.88	77.15	6938.06
77.28	6938.09	77.4	6938.12	78.21	6938.32	78.28	6938.34	78.36	6938.36
79.26	6938.58	79.29	6938.59	79.31	6938.6	79.83	6938.72	80.27	6938.83
80.29	6938.84	80.31	6938.84	81.22	6939.07	81.29	6939.09	81.36	6939.11
82.18	6939.31	82.29	6939.34	82.41	6939.37	83.13	6939.55	83.29	6939.59
83.47	6939.63	84.08	6939.79	84.29	6939.84	84.52	6939.9	85.04	6940.03
85.29	6940.09	85.57	6940.16	85.99	6940.26	86.29	6940.34	86.95	6940.5
87.29	6940.59	87.67	6940.68	87.9	6940.74	88.3	6940.84	88.73	6940.95
88.86	6940.98	89.3	6941.09	89.78	6941.21	89.81	6941.22	90.3	6941.34
90.77	6941.46	90.83	6941.47	91.3	6941.59	91.72	6941.7	91.88	6941.74
92.3	6941.84	92.5	6941.89	92.68	6941.94	92.94	6941.99	93.3	6942.08
93.63	6942.16	93.99	6942.19	94.3	6942.27	94.59	6942.33	95.04	6942.52
95.3	6942.57	95.54	6942.62	96.09	6942.9	96.3	6942.94	96.5	6943.02
97.14	6943.3	97.31	6943.37	97.45	6943.43	98.2	6943.75	98.31	6943.79
98.41	6943.84	99.25	6944.19	99.31	6944.22	99.36	6944.24	100.3	6944.64
100.31	6944.64	100.32	6944.65	100.48	6944.72	101.27	6945.05	101.31	6945.07
101.35	6945.09	102.23	6945.46	102.31	6945.49	102.4	6945.53	103.18	6945.86
103.31	6945.92	103.46	6945.98	104.14	6946.27	104.31	6946.34	104.51	6946.43
105.09	6946.67	105.31	6946.77	105.56	6946.87	106.05	6947.08	106.32	6947.19
106.61									

Manning's n Values	num=	3
Sta	n Val	Sta n Val Sta n Val

Pr RAS Input Report.txt

-114.99 .035 14 .035 92.5 .035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	14	92.5		15.93 15.93	15.93		.3	.5
Ineffective Flow	num=		2					
Sta L	Sta R	Elev	Permanent					
-114.99	30	6945.81	T					
76	126.86	6945.81	T					

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4150

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 475

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-88.61	6944.46	-87.88	6944.46	-87.76	6944.45	-87.63	6944.45	-86.91	6944.41
-86.76	6944.4	-86.6	6944.39	-85.94	6944.36	-85.76	6944.35	-85.56	6944.34
-84.98	6944.3	-84.76	6944.29	-84.53	6944.28	-84.01	6944.21	-83.76	6944.2
-83.5	6944.17	-83.04	6944.04	-82.76	6944.02	-82.46	6943.98	-82.07	6943.9
-81.76	6943.86	-81.43	6943.81	-81.1	6943.76	-80.76	6943.71	-80.39	6943.66
-80.13	6943.62	-79.76	6943.57	-79.36	6943.51	-79.16	6943.5	-78.76	6943.44
-78.33	6943.4	-78.19	6943.4	-77.76	6943.35	-77.29	6943.32	-77.22	6943.29
-76.76	6943.26	-76.26	6943.22	-76.25	6943.2	-75.76	6943.16	-75.28	6943.1
-75.22	6943.11	-74.76	6943.05	-74.32	6943	-74.19	6942.99	-73.75	6942.94
-73.35	6942.89	-73.16	6942.86	-72.75	6942.82	-72.38	6942.79	-72.12	6942.74
-71.75	6942.72	-71.41	6942.71	-71.09	6942.7	-70.75	6942.69	-70.44	6942.69
-70.06	6942.7	-68.75	6942.7	-68.5	6942.71	-66.95	6942.71	-66.75	6942.72
-65.59	6942.72	-64.89	6942.73	-63.66	6942.73	-62.82	6942.74	-61.78	6942.74
-61.75	6942.75	-60.72	6942.75	-59.78	6942.76	-58.68	6942.76	-57.84	6942.77
-56.75	6942.77	-56.61	6942.78	-54.93	6942.78	-54.75	6942.79	-54.55	6942.81
-53.96	6942.97	-53.75	6943	-53.51	6943.06	-53	6943.19	-52.75	6943.25
-52.48	6943.29	-52.03	6943.35	-51.74	6943.39	-51.06	6943.39	-50.74	6943.4
-48.15	6943.4	-47.74	6943.41	-45.24	6943.41	-44.74	6943.42	-42.33	6943.42
-42.14	6943.43	-41.74	6943.43	-41.37	6943.39	-41.11	6943.35	-40.74	6943.31
-40.4	6943.23	-39.74	6943.07	-39.43	6942.99	-39.04	6942.96	-38.74	6942.88
-38.46	6942.88	-38	6942.89	-36.52	6942.89	-35.94	6942.9	-34.58	6942.9
-33.87	6942.91	-32.84	6942.91	-32.74	6942.92	-31.67	6942.92	-30.77	6942.93
-29.74	6942.93	-28.77	6942.94	-27.73	6942.94	-27.67	6942.95	-26.63	6942.95
-25.86	6942.96	-24.56	6942.96	-23.92	6942.97	-22.73	6942.97	-22.5	6942.98
-21.01	6942.98	-20.73	6942.99	-19.39	6942.99	-19.08	6943	-17.73	6943
-17.33	6943.01	-17.14	6941.17	-16.73	6941.21	-16.29	6940.7	-16.17	6940.69

Pr RAS Input Report.txt

-15.73	6940.17	-15.26	6940.82	-15.2	6940.22	-14.73	6940.89	-14.23	6940.96
-14.23	6940.5	-13.73	6940.56	-13.26	6940.61	-13.19	6940.98	-12.73	6941.04
-12.29	6941.1	-12.16	6941.25	-11.73	6941.31	-11.32	6941.37	-11.12	6941.17
-10.73	6941.22	-10.35	6941.35	-10.09	6941.54	-9.73	6941.67	-9.39	6943.05
-9.06	6941.76	-8.73	6943.06	-7.45	6943.06	-6.99	6943.07	-5.72	6943.07
-5.51	6943.08	-4.54	6943.08	-3.89	6943.09	-2.72	6943.09	-2.6	6943.1
-1.82	6943.12	-1.72	6943.12	-1.63	6943.13	-.78	6943.23	-.72	6943.23
-.66	6943.24	.25	6943.32	.31	6943.32	1.16	6943.4	1.28	6943.41
2.24	6943.49	2.28	6943.5	2.32	6943.5	3.21	6943.58	3.28	6943.58
3.35	6943.59	4.18	6943.66	4.28	6943.67	4.38	6943.69	4.65	6943.72
5.14	6943.79	5.28	6943.81	5.43	6943.83	6.1	6943.94	6.28	6943.97
6.48	6943.99	7.05	6944.1	7.28	6944.12	7.54	6944.12	8.01	6944.23
8.28	6944.24	8.59	6944.25	8.96	6944.27	9.29	6944.28	9.64	6944.29
9.92	6944.3	10.29	6944.31	10.69	6944.32	10.87	6944.32	11.29	6944.33
11.74	6944.35	11.83	6944.36	12.29	6944.37	12.78	6944.39	12.8	6944.39
13.29	6944.41	13.74	6944.43	13.85	6944.43	14.29	6944.45	14.69	6944.47
14.9	6944.48	15.29	6944.49	15.65	6944.51	15.95	6944.52	16.29	6944.53
16.6	6944.54	17.01	6944.56	17.29	6944.57	17.56	6944.58	18.06	6944.6
18.3	6944.61	18.51	6944.62	19.11	6944.65	19.3	6944.65	19.47	6944.66
20.16	6944.69	20.3	6944.7	20.42	6944.71	21.21	6944.74	21.3	6944.75
21.38	6944.74	22.27	6944.53	22.3	6944.53	22.33	6944.52	22.97	6944.4
23.29	6944.34	23.3	6944.34	23.32	6944.33	24.24	6944.2	24.3	6944.19
24.37	6944.18	25.2	6944.07	25.3	6944.05	25.42	6944.03	26.15	6943.93
26.3	6943.91	26.47	6943.88	27.11	6943.79	27.31	6943.77	27.53	6943.73
28.06	6943.66	28.31	6943.62	28.58	6943.58	29.01	6943.52	29.31	6943.48
29.63	6943.43	29.97	6943.38	30.31	6943.34	30.68	6943.28	30.92	6943.25
31.31	6943.19	31.73	6943.13	31.88	6943.11	32.31	6943.05	32.79	6942.98
32.83	6942.98	33.31	6942.91	33.79	6942.84	33.84	6942.83	34.31	6942.76
34.74	6942.7	34.89	6942.68	35.31	6942.62	35.7	6942.57	35.94	6942.53
36.32	6942.48	36.65	6942.43	37	6942.38	37.32	6942.34	37.61	6942.29
38.05	6942.23	38.32	6942.19	38.56	6942.16	39.1	6942.08	39.32	6942.05
39.52	6942.02	40.15	6941.93	40.32	6941.91	40.47	6941.89	41.2	6941.85
41.32	6941.83	41.43	6941.84	42.26	6941.85	42.38	6941.85	43.31	6941.9
43.34	6941.9	43.63	6941.94	44.29	6942.02	44.32	6942.03	44.36	6942.03
45.25	6942.14	45.33	6942.15	45.41	6942.16	46.2	6942.26	46.33	6942.28
46.46	6942.29	47.16	6942.38	47.33	6942.4	47.52	6942.43	48.11	6942.5
48.33	6942.53	48.57	6942.56	49.07	6942.62	49.33	6942.65	49.62	6942.69
50.02	6942.74	50.33	6942.78	50.67	6942.82	50.98	6942.86	51.33	6942.9
51.72	6942.95	51.93	6942.98	52.33	6943.03	52.78	6943.08	52.89	6942.76
53.33	6942.83	53.83	6942.55	53.84	6940.39	54.34	6940.21	54.8	6940.2
54.88	6937.45	55.34	6937.33	55.75	6937.23	55.93	6937.18	56.12	6937.13
56.34	6937.08	56.7	6936.99	56.98	6936.92	57.34	6936.83	57.66	6936.81
58.04	6936.8	58.34	6936.78	95.38	6936.78	95.85	6936.87	95.91	6936.89
96.38	6936.99	96.81	6937.09	96.96	6937.13	97.38	6937.24	97.76	6937.33
97.9	6939.55	98.02	6941.45	98.38	6941.66	98.72	6943.21	99.07	6941.62
99.38	6943.02	99.67	6943.48	100.12	6942.82	100.39	6943.22	100.63	6943.1
101.17	6943.16	101.39	6943.06	101.58	6943.05	102.23	6943.01	102.39	6943.01
102.54	6943	103.28	6942.95	103.39	6942.95	103.49	6942.94	104.33	6942.9

Pr RAS Input Report.txt

104.39	6942.89	104.45	6942.89	105.38	6942.84	105.4	6942.84	105.59	6942.83
106.36	6942.78	106.43	6942.78	107.31	6942.73	107.39	6942.72	107.49	6942.72
108.27	6942.68	108.39	6942.67	108.54	6942.66	109.22	6942.62	109.4	6942.61
109.59	6942.6	110.17	6942.57	110.4	6942.56	110.64	6942.54	111.13	6942.52
111.4	6942.5	111.69	6942.48	112.08	6942.46	112.4	6942.44	112.75	6942.42
113.04	6942.41	113.4	6942.39	113.8	6942.37	113.99	6942.35	114.4	6942.33
114.85	6942.4	114.95	6942.53	115.4	6942.6	116.4	6943.02	116.86	6943.21
116.95	6943.25	117.4	6943.44	117.81	6943.61	118.01	6943.69	118.41	6943.86
118.77	6944.01	119.06	6944.13	119.41	6944.28	119.72	6944.41	120.11	6944.58
120.41	6944.7	120.68	6944.81	121.16	6945.02	121.41	6945.12	121.63	6945.22
122.21	6945.46	122.41	6945.54	122.59	6945.62	123.27	6945.9	123.41	6945.96
123.54	6946.02	124.32	6946.34	124.5	6946.42	125.37	6946.78	125.41	6946.8
125.45	6946.82	126.25	6947.13	126.41	6947.19	126.41	6947.2	127.36	6947.24
127.48	6947.24	128.32	6947.26	128.42	6947.26	128.53	6947.27	129.27	6947.29
129.42	6947.29	129.58	6947.3	130.23	6947.31	130.42	6947.32	130.63	6947.32
131.18	6947.33	131.68	6947.33	132.14	6947.34	132.74	6947.34	133.09	6947.35
134.05	6947.35	134.42	6947.36	135	6947.36	135.42	6947.37	136.43	6947.37
136.91	6947.38	137.43	6947.38	137.86	6947.39	138.82	6947.39	139.05	6947.4
140.1	6947.4	140.43	6947.41	141.43	6947.41	141.68	6947.42	142.64	6947.42
143.26	6947.43	143.59	6947.43	144.31	6947.44	145.5	6947.44	146.41	6947.45
146.9	6947.45	147.41	6947.46	147.47	6947.46	148.37	6947.47	150	6947.47

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-88.61	.035	54.88	.013	97.76	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	54.88	97.76		125.43	125.43		.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-88.61	52.34	6945.81	T
98.18	150	6945.81	T

CULVERT

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 4073

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Distance from Upstream XS = 39.21

Deck/Roadway Width = 47.87

Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

Pr RAS Input Report.txt

num= 116

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
-133.85	6948.14		0		-130.68	6948.06		0		-130.54	6948.05		0	
-130.4	6948.05		0		-123.71	6947.88		0		-123.55	6947.87		0	
-123.54	6947.87		0		-123.14	6947.86		0		-123.07	6947.86		0	
-120.28	6947.79		0		-116.65	6947.7		0		-116.55	6947.7		0	
-116.54	6947.7		0		-115.88	6947.68		0		-109.7	6947.53		0	
-109.56	6947.53		0		-105.51	6947.44		0		-105.42	6947.43		0	
-102.62	6947.37		0		-102.56	6947.37		0		-102.47	6947.37		0	
-98.56	6947.28		0		-95.61	6947.22		0		-95.56	6947.22		0	
-88.68	6947.07		0		-88.56	6947.07		0		-81.67	6946.93		0	
-81.55	6946.93		0		-74.65	6946.8		0		-74.55	6946.8		0	
-73.57	6946.78		0		-73.55	6946.78		0		-67.63	6946.68		0	
-67.55	6946.68		0		-60.63	6946.57		0		-60.55	6946.56		0	
-53.61	6946.46		0		-53.55	6946.46		0		-53.51	6946.46		0	
-48.55	6946.39		0		-46.57	6946.36		0		-46.55	6946.36		0	
-39.59	6946.27		0		-39.55	6946.27		0		-32.57	6946.18		0	
-32.55	6946.18		0		-25.56	6946.11		0		-25.55	6946.11		0	
-23.55	6946.08		0		-21.69	6946.07		0		-18.56	6946.04		0	
-18.55	6946.04		0		-11.55	6945.97		0		-11.53	6945.97		0	
-4.55	6945.92		0		-4.53	6945.92		0		1.45	6945.88		0	
2.45	6945.87		0		2.49	6945.87		0		9.45	6945.83		0	
9.5	6945.83		0		16.45	6945.8		0		16.52	6945.8		0	
23.45	6945.77		0		23.48	6945.77		0		26.45	6945.76		0	
30.39	6945.76		0		30.45	6945.76		0		30.54	6945.76		0	
37.45	6945.75		0		41.66	6945.74		0		41.73	6945.74		0	
41.78	6945.74		0		44.45	6945.74		0		44.57	6945.74		0	
51.45	6945.75		0		51.58	6945.75		0		58.45	6945.76		0	
58.6	6945.76		0		65.45	6945.79		0		65.61	6945.79		0	
72.45	6945.81		0		72.55	6945.82		0		76.45	6945.83		0	
79.37	6945.85		0		79.45	6945.85		0		79.64	6945.85		0	
81.02	6945.86		0		86.45	6945.9		0		86.64	6945.9		0	
93.45	6945.95		0		93.64	6945.95		0		100.45	6946.01		0	
100.47	6946.01		0		101.45	6946.02		0		101.55	6946.02		0	
105.26	6946.06		0		105.82	6946.06		0		126.45	6946.27		0	
127.09	6946.27		0		151.45	6946.51		0		152.06	6946.52		0	
176.45	6946.76		0		177.04	6946.77		0		201.45	6947.01		0	
202.02	6947.02		0		213.4	6947.13		0		226.45	6947.26		0	
226.99	6947.27		0		251.45	6947.51		0		251.95	6947.51		0	
276.45	6947.76		0		276.9	6947.76		0		301.45	6948.01		0	
301.86	6948.01		0		309.04	6948.08		0						

Upstream Bridge Cross Section Data

Station Elevation Data num= 475

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-88.61	6944.46	-87.88	6944.46	-87.76	6944.45	-87.63	6944.45	-86.91	6944.41
-86.76	6944.4	-86.6	6944.39	-85.94	6944.36	-85.76	6944.35	-85.56	6944.34
-84.98	6944.3	-84.76	6944.29	-84.53	6944.28	-84.01	6944.21	-83.76	6944.2

Pr RAS Input Report.txt

-83.5	6944.17	-83.04	6944.04	-82.76	6944.02	-82.46	6943.98	-82.07	6943.9
-81.76	6943.86	-81.43	6943.81	-81.1	6943.76	-80.76	6943.71	-80.39	6943.66
-80.13	6943.62	-79.76	6943.57	-79.36	6943.51	-79.16	6943.5	-78.76	6943.44
-78.33	6943.4	-78.19	6943.4	-77.76	6943.35	-77.29	6943.32	-77.22	6943.29
-76.76	6943.26	-76.26	6943.22	-76.25	6943.2	-75.76	6943.16	-75.28	6943.1
-75.22	6943.11	-74.76	6943.05	-74.32	6943	-74.19	6942.99	-73.75	6942.94
-73.35	6942.89	-73.16	6942.86	-72.75	6942.82	-72.38	6942.79	-72.12	6942.74
-71.75	6942.72	-71.41	6942.71	-71.09	6942.7	-70.75	6942.69	-70.44	6942.69
-70.06	6942.7	-68.75	6942.7	-68.5	6942.71	-66.95	6942.71	-66.75	6942.72
-65.59	6942.72	-64.89	6942.73	-63.66	6942.73	-62.82	6942.74	-61.78	6942.74
-61.75	6942.75	-60.72	6942.75	-59.78	6942.76	-58.68	6942.76	-57.84	6942.77
-56.75	6942.77	-56.61	6942.78	-54.93	6942.78	-54.75	6942.79	-54.55	6942.81
-53.96	6942.97	-53.75	6943	-53.51	6943.06	-53	6943.19	-52.75	6943.25
-52.48	6943.29	-52.03	6943.35	-51.74	6943.39	-51.06	6943.39	-50.74	6943.4
-48.15	6943.4	-47.74	6943.41	-45.24	6943.41	-44.74	6943.42	-42.33	6943.42
-42.14	6943.43	-41.74	6943.43	-41.37	6943.39	-41.11	6943.35	-40.74	6943.31
-40.4	6943.23	-39.74	6943.07	-39.43	6942.99	-39.04	6942.96	-38.74	6942.88
-38.46	6942.88	-38	6942.89	-36.52	6942.89	-35.94	6942.9	-34.58	6942.9
-33.87	6942.91	-32.84	6942.91	-32.74	6942.92	-31.67	6942.92	-30.77	6942.93
-29.74	6942.93	-28.77	6942.94	-27.73	6942.94	-27.67	6942.95	-26.63	6942.95
-25.86	6942.96	-24.56	6942.96	-23.92	6942.97	-22.73	6942.97	-22.5	6942.98
-21.01	6942.98	-20.73	6942.99	-19.39	6942.99	-19.08	6943	-17.73	6943
-17.33	6943.01	-17.14	6941.17	-16.73	6941.21	-16.29	6940.7	-16.17	6940.69
-15.73	6940.17	-15.26	6940.82	-15.2	6940.22	-14.73	6940.89	-14.23	6940.96
-14.23	6940.5	-13.73	6940.56	-13.26	6940.61	-13.19	6940.98	-12.73	6941.04
-12.29	6941.1	-12.16	6941.25	-11.73	6941.31	-11.32	6941.37	-11.12	6941.17
-10.73	6941.22	-10.35	6941.35	-10.09	6941.54	-9.73	6941.67	-9.39	6943.05
-9.06	6941.76	-8.73	6943.06	-7.45	6943.06	-6.99	6943.07	-5.72	6943.07
-5.51	6943.08	-4.54	6943.08	-3.89	6943.09	-2.72	6943.09	-2.6	6943.1
-1.82	6943.12	-1.72	6943.12	-1.63	6943.13	-.78	6943.23	-.72	6943.23
-.66	6943.24	.25	6943.32	.31	6943.32	1.16	6943.4	1.28	6943.41
2.24	6943.49	2.28	6943.5	2.32	6943.5	3.21	6943.58	3.28	6943.58
3.35	6943.59	4.18	6943.66	4.28	6943.67	4.38	6943.69	4.65	6943.72
5.14	6943.79	5.28	6943.81	5.43	6943.83	6.1	6943.94	6.28	6943.97
6.48	6943.99	7.05	6944.1	7.28	6944.12	7.54	6944.12	8.01	6944.23
8.28	6944.24	8.59	6944.25	8.96	6944.27	9.29	6944.28	9.64	6944.29
9.92	6944.3	10.29	6944.31	10.69	6944.32	10.87	6944.32	11.29	6944.33
11.74	6944.35	11.83	6944.36	12.29	6944.37	12.78	6944.39	12.8	6944.39
13.29	6944.41	13.74	6944.43	13.85	6944.43	14.29	6944.45	14.69	6944.47
14.9	6944.48	15.29	6944.49	15.65	6944.51	15.95	6944.52	16.29	6944.53
16.6	6944.54	17.01	6944.56	17.29	6944.57	17.56	6944.58	18.06	6944.6
18.3	6944.61	18.51	6944.62	19.11	6944.65	19.3	6944.65	19.47	6944.66
20.16	6944.69	20.3	6944.7	20.42	6944.71	21.21	6944.74	21.3	6944.75
21.38	6944.74	22.27	6944.53	22.3	6944.53	22.33	6944.52	22.97	6944.4
23.29	6944.34	23.3	6944.34	23.32	6944.33	24.24	6944.2	24.3	6944.19
24.37	6944.18	25.2	6944.07	25.3	6944.05	25.42	6944.03	26.15	6943.93
26.3	6943.91	26.47	6943.88	27.11	6943.79	27.31	6943.77	27.53	6943.73
28.06	6943.66	28.31	6943.62	28.58	6943.58	29.01	6943.52	29.31	6943.48

Pr RAS Input Report.txt

29.63	6943.43	29.97	6943.38	30.31	6943.34	30.68	6943.28	30.92	6943.25
31.31	6943.19	31.73	6943.13	31.88	6943.11	32.31	6943.05	32.79	6942.98
32.83	6942.98	33.31	6942.91	33.79	6942.84	33.84	6942.83	34.31	6942.76
34.74	6942.7	34.89	6942.68	35.31	6942.62	35.7	6942.57	35.94	6942.53
36.32	6942.48	36.65	6942.43	37	6942.38	37.32	6942.34	37.61	6942.29
38.05	6942.23	38.32	6942.19	38.56	6942.16	39.1	6942.08	39.32	6942.05
39.52	6942.02	40.15	6941.93	40.32	6941.91	40.47	6941.89	41.2	6941.85
41.32	6941.83	41.43	6941.84	42.26	6941.85	42.38	6941.85	43.31	6941.9
43.34	6941.9	43.63	6941.94	44.29	6942.02	44.32	6942.03	44.36	6942.03
45.25	6942.14	45.33	6942.15	45.41	6942.16	46.2	6942.26	46.33	6942.28
46.46	6942.29	47.16	6942.38	47.33	6942.4	47.52	6942.43	48.11	6942.5
48.33	6942.53	48.57	6942.56	49.07	6942.62	49.33	6942.65	49.62	6942.69
50.02	6942.74	50.33	6942.78	50.67	6942.82	50.98	6942.86	51.33	6942.9
51.72	6942.95	51.93	6942.98	52.33	6943.03	52.78	6943.08	52.89	6942.76
53.33	6942.83	53.83	6942.55	53.84	6940.39	54.34	6940.21	54.8	6940.2
54.88	6937.45	55.34	6937.33	55.75	6937.23	55.93	6937.18	56.12	6937.13
56.34	6937.08	56.7	6936.99	56.98	6936.92	57.34	6936.83	57.66	6936.81
58.04	6936.8	58.34	6936.78	95.38	6936.78	95.85	6936.87	95.91	6936.89
96.38	6936.99	96.81	6937.09	96.96	6937.13	97.38	6937.24	97.76	6937.33
97.9	6939.55	98.02	6941.45	98.38	6941.66	98.72	6943.21	99.07	6941.62
99.38	6943.02	99.67	6943.48	100.12	6942.82	100.39	6943.22	100.63	6943.1
101.17	6943.16	101.39	6943.06	101.58	6943.05	102.23	6943.01	102.39	6943.01
102.54	6943	103.28	6942.95	103.39	6942.95	103.49	6942.94	104.33	6942.9
104.39	6942.89	104.45	6942.89	105.38	6942.84	105.4	6942.84	105.59	6942.83
106.36	6942.78	106.43	6942.78	107.31	6942.73	107.39	6942.72	107.49	6942.72
108.27	6942.68	108.39	6942.67	108.54	6942.66	109.22	6942.62	109.4	6942.61
109.59	6942.6	110.17	6942.57	110.4	6942.56	110.64	6942.54	111.13	6942.52
111.4	6942.5	111.69	6942.48	112.08	6942.46	112.4	6942.44	112.75	6942.42
113.04	6942.41	113.4	6942.39	113.8	6942.37	113.99	6942.35	114.4	6942.33
114.85	6942.4	114.95	6942.53	115.4	6942.6	116.4	6943.02	116.86	6943.21
116.95	6943.25	117.4	6943.44	117.81	6943.61	118.01	6943.69	118.41	6943.86
118.77	6944.01	119.06	6944.13	119.41	6944.28	119.72	6944.41	120.11	6944.58
120.41	6944.7	120.68	6944.81	121.16	6945.02	121.41	6945.12	121.63	6945.22
122.21	6945.46	122.41	6945.54	122.59	6945.62	123.27	6945.9	123.41	6945.96
123.54	6946.02	124.32	6946.34	124.5	6946.42	125.37	6946.78	125.41	6946.8
125.45	6946.82	126.25	6947.13	126.41	6947.19	126.41	6947.2	127.36	6947.24
127.48	6947.24	128.32	6947.26	128.42	6947.26	128.53	6947.27	129.27	6947.29
129.42	6947.29	129.58	6947.3	130.23	6947.31	130.42	6947.32	130.63	6947.32
131.18	6947.33	131.68	6947.33	132.14	6947.34	132.74	6947.34	133.09	6947.35
134.05	6947.35	134.42	6947.36	135	6947.36	135.42	6947.37	136.43	6947.37
136.91	6947.38	137.43	6947.38	137.86	6947.39	138.82	6947.39	139.05	6947.4
140.1	6947.4	140.43	6947.41	141.43	6947.41	141.68	6947.42	142.64	6947.42
143.26	6947.43	143.59	6947.43	144.31	6947.44	145.5	6947.44	146.41	6947.45
146.9	6947.45	147.41	6947.46	147.47	6947.46	148.37	6947.47	150	6947.47

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-88.61	.035	54.88	.013	97.76	.035

Pr RAS Input Report.txt

Bank Sta: Left Right Coeff Contr. Expan.
54.88 97.76 .3 .5

Ineffective Flow num= 2
Sta L Sta R Elev Permanent
-88.61 52.34 6945.81 T
98.18 150 6945.81 T

Downstream Deck/Roadway Coordinates

num= 116

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
-134.4	6948.14	0	-131.23	6948.06	0	-131.09	6948.05	0						
-130.95	6948.05	0	-124.26	6947.88	0	-124.1	6947.87	0						
-124.09	6947.87	0	-123.69	6947.86	0	-123.62	6947.86	0						
-120.83	6947.79	0	-117.2	6947.7	0	-117.1	6947.7	0						
-117.09	6947.7	0	-116.43	6947.68	0	-110.25	6947.53	0						
-110.11	6947.53	0	-106.06	6947.44	0	-105.97	6947.43	0						
-103.17	6947.37	0	-103.11	6947.37	0	-103.02	6947.37	0						
-99.11	6947.28	0	-96.16	6947.22	0	-96.11	6947.22	0						
-89.23	6947.07	0	-89.11	6947.07	0	-82.22	6946.93	0						
-82.1	6946.93	0	-75.2	6946.8	0	-75.1	6946.8	0						
-74.12	6946.78	0	-74.1	6946.78	0	-68.18	6946.68	0						
-68.1	6946.68	0	-61.18	6946.57	0	-61.1	6946.56	0						
-54.16	6946.46	0	-54.1	6946.46	0	-54.06	6946.46	0						
-49.1	6946.39	0	-47.12	6946.36	0	-47.1	6946.36	0						
-40.14	6946.27	0	-40.1	6946.27	0	-33.12	6946.18	0						
-33.1	6946.18	0	-26.11	6946.11	0	-26.1	6946.11	0						
-24.1	6946.08	0	-22.24	6946.07	0	-19.11	6946.04	0						
-19.1	6946.04	0	-12.1	6945.97	0	-12.08	6945.97	0						
-5.1	6945.92	0	-5.08	6945.92	0	.9	6945.88	0						
1.9	6945.87	0	1.94	6945.87	0	8.9	6945.83	0						
8.95	6945.83	0	15.9	6945.8	0	15.97	6945.8	0						
22.9	6945.77	0	22.93	6945.77	0	25.9	6945.76	0						
29.84	6945.76	0	29.9	6945.76	0	29.99	6945.76	0						
36.9	6945.75	0	41.11	6945.74	0	41.18	6945.74	0						
41.23	6945.74	0	43.9	6945.74	0	44.02	6945.74	0						
50.9	6945.75	0	51.03	6945.75	0	57.9	6945.76	0						
58.05	6945.76	0	64.9	6945.79	0	65.06	6945.79	0						
71.9	6945.81	0	72	6945.82	0	75.9	6945.83	0						
78.82	6945.85	0	78.9	6945.85	0	79.09	6945.85	0						
80.47	6945.86	0	85.9	6945.9	0	86.09	6945.9	0						
92.9	6945.95	0	93.09	6945.95	0	99.9	6946.01	0						
99.92	6946.01	0	100.9	6946.02	0	101	6946.02	0						
104.71	6946.06	0	105.27	6946.06	0	125.9	6946.27	0						
126.54	6946.27	0	150.9	6946.51	0	151.51	6946.52	0						
175.9	6946.76	0	176.49	6946.77	0	200.9	6947.01	0						
201.47	6947.02	0	212.85	6947.13	0	225.9	6947.26	0						
226.44	6947.27	0	250.9	6947.51	0	251.4	6947.51	0						

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275.9 6947.76	0	276.35 6947.76	0	300.9 6948.01	0
301.31 6948.01	0	308.49 6948.08	0		

Downstream Bridge Cross Section Data

Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6945.08	1.53	6945.06	2.48	6944.97	7.41	6944.75	7.51	6944.75
12.38	6944.53	12.48	6944.52	12.61	6944.51	17.31	6944.29	21.85	6944.13
26.23	6943.62	29.4	6943.25	31.77	6942.61	33.63	6942.27	53.17	6942.94
53.28	6943.41	53.31	6943.51	53.54	6943.55	54.44	6943.69	54.56	6937.03
54.58	6936.94	54.94	6936.85	56.79	6936.4	58.88	6936.4	74.51	6936.4
75.79	6936.4	78.86	6936.4	94.79	6936.4	96.62	6936.85	96.98	6936.94
97	6937.03	97.12	6943.7	97.32	6943.66	98.25	6943.52	98.28	6943.41
98.4	6942.94	122.18	6943.21	124.52	6943.84	125.96	6943.87	127.43	6943.87
129.25	6943.86	135.98	6944.11	140.37	6944.08	143.66	6944.1	147.99	6944.08
150	6944.06								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	54.94	.013	96.62	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	54.94	96.62		.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	54.39	6945.81	F
96.9	150	6945.81	F

Upstream Embankment side slope	=	3 horiz. to 1.0 vertical
Downstream Embankment side slope	=	3 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.98
Elevation at which weir flow begins	=	
Energy head used in spillway design	=	
Spillway height used in design	=	
Weir crest shape	=	Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span
Culvert #1	Box	6	16

FHWA Chart # 8 - flared wingwalls

FHWA Scale # 1 - Wingwall flared 30 to 75 deg.

Solution Criteria = Highest U.S. EG

Culvert Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef
Exit Loss Coef					

1	120	.011	.011	0	.5
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Number of Barrels = 2

Pr RAS Input Report.txt

Upstream Elevation = 6936.77

Centerline Stations

Sta. Sta.
67 85.5

Downstream Elevation = 6936.41

Centerline Stations

Sta. Sta.
67 85.5

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4040

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6945.08	1.53	6945.06	2.48	6944.97	7.41	6944.75	7.51	6944.75
12.38	6944.53	12.48	6944.52	12.61	6944.51	17.31	6944.29	21.85	6944.13
26.23	6943.62	29.4	6943.25	31.77	6942.61	33.63	6942.27	53.17	6942.94
53.28	6943.41	53.31	6943.51	53.54	6943.55	54.44	6943.69	54.56	6937.03
54.58	6936.94	54.94	6936.85	56.79	6936.4	58.88	6936.4	74.51	6936.4
75.79	6936.4	78.86	6936.4	94.79	6936.4	96.62	6936.85	96.98	6936.94
97	6937.03	97.12	6943.7	97.32	6943.66	98.25	6943.52	98.28	6943.41
98.4	6942.94	122.18	6943.21	124.52	6943.84	125.96	6943.87	127.43	6943.87
129.25	6943.86	135.98	6944.11	140.37	6944.08	143.66	6944.1	147.99	6944.08
150	6944.06								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	54.94	.013	96.62	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	54.94	96.62		8.99	8.99	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	54.39	6945.81	F
96.9	150	6945.81	F

CROSS SECTION

RIVER: UT_BSC2

Pr RAS Input Report.txt

REACH: NCONFL-BGM

RS: 4030

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6945.21	3.74	6945.15	11.79	6944.39	13.92	6944.3	14.57	6944.27
17.27	6944.15	17.81	6944.09	18.55	6944.01	20.88	6943.9	23.14	6943.83
25.31	6943.57	26.89	6943.39	38.91	6940.17	39.21	6940.11	42.35	6940.22
42.37	6940.3	42.49	6940.73	43.44	6940.88	43.63	6940.91	43.65	6939.56
43.77	6939.11	44.02	6939.05	54.92	6936.38	65.53	6936.38	72.11	6936.38
73.92	6936.38	89.52	6936.38	92.92	6936.38	103.83	6939.05	104.07	6939.11
104.19	6939.55	104.21	6940.91	105.19	6940.76	105.35	6940.74	105.47	6940.3
105.49	6940.22	109.33	6940.27	121.26	6943.46	124.17	6943.53	126.92	6943.52
130.05	6943.5	133.09	6943.49	136.04	6943.48	138.91	6943.46	141.7	6943.45
150	6943.42								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	44.02	.04	103.83	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	44.02	103.83		39.8 30.2	21.92		.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	43.92	6945.81	F
104.02	150	6945.81	F

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 4000

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 456

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6944.51	.13	6944.51	.51	6944.49	.8	6944.47	1.01	6944.46
1.7	6944.43	1.81	6944.43	1.89	6944.42	2.47	6944.39	2.77	6944.38
2.88	6944.38	3.66	6944.34	3.83	6944.33	4.06	6944.32	4.54	6944.3
4.84	6944.28	5.24	6944.26	5.42	6944.25	5.85	6944.23	6.3	6944.21

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6.42	6944.21	6.86	6944.19	7.19	6944.17	7.6	6944.15	7.87	6944.14
8.07	6944.13	8.79	6944.09	8.95	6944.09	9.44	6944.07	9.83	6944.05
9.89	6944.05	9.97	6944.04	10.72	6944.02	10.9	6944.01	11.15	6944
11.6	6943.99	11.91	6943.97	12.33	6943.96	12.48	6943.95	12.92	6943.93
13.36	6943.92	13.51	6943.91	13.93	6943.9	14.25	6943.89	14.69	6943.87
14.94	6943.86	15.13	6943.86	15.88	6943.83	15.95	6943.83	16.01	6943.82
16.41	6943.8	16.89	6943.78	16.96	6943.78	17.06	6943.77	17.78	6943.72
17.97	6943.7	18.24	6943.68	18.66	6943.65	18.98	6943.63	19.42	6943.59
19.54	6943.59	19.99	6943.55	20.42	6943.52	20.6	6943.51	21.01	6943.47
21.31	6943.45	21.78	6943.42	22.02	6943.4	22.19	6943.38	22.97	6943.25
23.03	6943.25	23.07	6943.24	23.38	6943.16	23.95	6943.02	24.04	6943
24.15	6942.97	24.84	6942.8	25.05	6942.74	25.33	6942.67	25.72	6942.58
26.06	6942.49	26.51	6942.38	26.6	6942.36	27.07	6942.24	27.48	6942.13
27.69	6942.08	28.08	6941.99	28.37	6941.91	28.87	6941.79	29.09	6941.73
29.25	6941.69	30.05	6941.49	30.1	6941.48	30.13	6941.47	30.36	6941.42
31.01	6941.25	31.11	6941.23	31.24	6941.2	31.9	6941.03	32.12	6940.98
32.42	6940.9	32.78	6940.81	33.13	6940.73	33.6	6940.61	33.66	6940.59
34.14	6940.47	34.54	6940.37	34.78	6940.31	35.15	6940.22	35.37	6940.16
35.43	6940.15	35.96	6940.02	36.16	6939.97	36.31	6939.93	37.14	6939.72
37.17	6939.72	37.19	6939.71	37.33	6939.68	38.07	6939.49	38.18	6939.46
38.33	6939.43	38.96	6939.27	39.19	6939.21	39.51	6939.13	39.84	6939.05
40.2	6938.96	40.69	6938.84	40.72	6938.83	41.21	6938.71	41.6	6938.61
41.87	6938.55	42.22	6938.46	42.49	6938.39	43.05	6938.25	43.23	6938.21
43.37	6938.17	44.23	6937.96	44.24	6937.95	44.25	6937.95	44.3	6937.94
45.13	6937.73	45.25	6937.7	45.42	6937.66	46.02	6937.51	46.26	6937.45
46.6	6937.37	46.9	6937.29	47.27	6937.2	47.78	6937.07	48.29	6936.95
48.66	6936.85	48.96	6936.78	49.3	6936.7	49.55	6936.63	50.14	6936.48
50.31	6936.44	50.43	6936.42	51.27	6936.29	51.31	6936.28	63.67	6936.28
64.32	6936.29	88.7	6936.29	89.13	6936.37	89.26	6936.38	89.71	6936.46
90.14	6936.56	90.32	6936.61	90.72	6936.71	91.02	6936.78	91.5	6936.9
91.73	6936.96	91.91	6937	92.68	6937.2	92.74	6937.21	92.79	6937.22
93.11	6937.3	93.67	6937.44	93.75	6937.46	93.86	6937.49	94.55	6937.66
94.76	6937.72	95.04	6937.79	95.44	6937.88	95.77	6937.97	96.22	6938.08
96.32	6938.1	96.78	6938.22	97.2	6938.32	97.41	6938.38	97.79	6938.47
98.08	6938.54	98.59	6938.67	98.8	6938.72	98.97	6938.76	99.77	6938.96
99.81	6938.98	99.85	6938.98	100.08	6939.04	100.73	6939.2	100.82	6939.23
100.95	6939.26	101.61	6939.43	101.84	6939.48	102.13	6939.55	102.5	6939.65
102.85	6939.73	103.31	6939.85	103.38	6939.87	103.86	6939.99	104.26	6940.09
104.5	6940.15	104.87	6940.24	105.14	6940.31	105.68	6940.44	105.88	6940.49
106.03	6940.53	106.86	6940.74	106.89	6940.74	106.91	6940.75	107.05	6940.78
107.79	6940.97	107.9	6940.99	108.04	6941.03	108.67	6941.19	108.91	6941.25
109.22	6941.33	109.56	6941.41	109.92	6941.5	110.4	6941.62	110.44	6941.63
110.82	6941.72	110.93	6941.75	111.32	6941.85	111.59	6941.92	111.94	6942
112.2	6942.07	112.77	6942.21	112.95	6942.26	113.09	6942.29	113.95	6942.51
113.96	6942.51	114.03	6942.52	114.85	6942.73	114.97	6942.76	115.13	6942.77
115.73	6942.82	115.98	6942.84	116.31	6942.83	118.67	6942.83	119.01	6942.82
121.03	6942.82	121.91	6942.81	123.68	6942.81	124.06	6942.8	124.56	6942.8
124.58	6942.81	125.07	6942.8	125.44	6942.8	125.76	6942.81	125.91	6942.8

Pr RAS Input Report.txt

126.67	6942.8	127.15	6942.79	128.21	6942.79	128.3	6942.78	129.27	6942.78
129.74	6942.77	130.52	6942.77	131.09	6942.76	131.55	6942.76	132.1	6942.75
132.45	6942.75	132.88	6942.74	133.67	6942.74	134.13	6942.73	134.8	6942.73
135.24	6942.72	136.02	6942.72	136.42	6942.71	137.17	6942.71	137.59	6942.7
138.38	6942.7	138.8	6942.69	139.67	6942.69	139.86	6942.68	140.92	6942.68
141.3	6942.67	141.98	6942.67	142.3	6942.66	143.24	6942.66	143.87	6942.65
144.09	6942.65	144.55	6942.64	145.44	6942.64	146.17	6942.63	146.28	6942.63
147.02	6942.62	147.8	6942.62	148.33	6942.61	148.59	6942.61	149.32	6942.6
150.16	6942.6	150.45	6942.59	151.05	6942.59	151.51	6942.58	152.51	6942.58
152.57	6942.57	152.67	6942.55	153.3	6942.51	153.62	6942.43	154.08	6942.32
154.3	6942.27	154.68	6942.18	154.87	6942.13	155.4	6942	155.65	6941.94
155.74	6941.92	155.92	6941.88	156.44	6941.75	156.8	6941.66	157.22	6941.56
157.55	6941.48	157.86	6941.41	158.01	6941.37	158.44	6941.27	158.79	6941.18
158.92	6941.15	159.18	6941.09	159.58	6940.99	159.98	6940.9	160.36	6940.8
160.8	6940.7	161.04	6940.64	161.15	6940.61	161.48	6940.53	161.94	6940.43
162.1	6940.39	162.43	6940.32	162.72	6940.25	163.15	6940.15	163.51	6940.07
164.05	6939.93	164.21	6939.9	164.29	6939.88	164.52	6939.82	165.08	6939.7
165.27	6939.66	165.68	6939.57	165.86	6939.53	166.33	6939.43	166.65	6939.36
167.3	6939.21	167.39	6939.2	167.43	6939.19	167.55	6939.16	168.22	6939.01
168.45	6938.96	168.93	6938.87	169	6938.84	169.51	6938.74	169.79	6938.72
170.55	6938.71	170.59	6938.71	171.36	6938.69	171.63	6938.68	172.14	6938.67
172.18	6938.67	172.68	6938.66	172.93	6938.65	173.63	6938.64	173.8	6938.64
174.5	6938.62	174.8	6938.61	175.28	6938.6	175.43	6938.6	175.86	6938.59
176.07	6938.59	176.67	6938.65	176.86	6938.66	176.92	6938.67	177.05	6938.7
177.64	6938.84	177.98	6938.92	178.43	6939.03	178.68	6939.09	179.04	6939.18
179.21	6939.23	179.71	6939.35	180	6939.42	180.1	6939.45	180.3	6939.5
180.78	6939.62	181.16	6939.71	181.57	6939.82	181.93	6939.91	182.21	6939.98
182.35	6940.01	182.75	6940.11	183.14	6940.21	183.27	6940.24	183.55	6940.31
183.92	6940.41	184.33	6940.51	184.71	6940.6	185.18	6940.72	185.39	6940.78
185.49	6940.8	185.79	6940.87	186.28	6941	186.45	6941.04	186.8	6941.13
187.06	6941.19	187.51	6941.31	187.85	6941.39	188.43	6941.54	188.57	6941.57
188.63	6941.59	188.83	6941.64	189.42	6941.79	189.63	6941.84	190.05	6941.95
190.2	6941.98	190.69	6942.1	190.99	6942.18	191.68	6942.35	191.74	6942.37
191.78	6942.38	191.86	6942.4	192.56	6942.57	192.8	6942.62	193.31	6942.63
193.35	6942.63	193.86	6942.64	194.13	6942.65	194.9	6942.66	194.93	6942.66
195.7	6942.68	195.98	6942.68	196.49	6942.69	196.56	6942.7	197.04	6942.71
197.27	6942.71	197.94	6942.73	198.18	6942.73	198.84	6942.74	199.16	6942.75
199.63	6942.76	199.81	6942.76	200.22	6942.77	200.41	6942.78	200.98	6942.79
201.2	6942.79	201.27	6942.8	201.43	6942.8	201.98	6942.81	202.33	6942.82
202.62	6942.82								

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
0	.035	35.37	.035
		110.82	.035

Bank	Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
	35.37	110.82	85.66	85.66	85.66		.1	.3
Ineffective Flow			num=	1				

Pr RAS Input Report.txt

Sta L	Sta R	Elev	Permanent
152.39	202.62	6942.6	T

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3900

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6943.2	2.46	6943.22	33.41	6939.86	35.37	6939.67	36.6	6939.52
39.71	6939.33	45.47	6939.13	52.98	6938.93	58.14	6937.65	64.68	6936.04
71.55	6936.03	73.66	6936.03	79.41	6936.03	80.98	6936.03	83.75	6936.03
87.1	6936.03	90.85	6936.03	92.74	6936.02	103.06	6936.02	105.91	6936.73
107.03	6937.01	109.59	6937.64	112.81	6937.65	113.66	6937.66	114.33	6937.66
129.2	6937.61	148.46	6937.5	151.59	6937.21	153.38	6937.13	156.56	6937.91
171.58	6942.04	176.24	6942.19	190.37	6942.59				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	52.98	.035	156.56	.035

Bank	Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
	52.98	156.56		35.1	50.3	65.88	.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3850

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6942.16	3.34	6941.79	16.12	6941.2	44.4	6939.51	45.87	6939.43
46.22	6939.41	47.38	6939.35	48.21	6939.3	56.35	6937.27	61.02	6936.11
61.91	6935.89	75.41	6935.88	79.35	6935.88	79.69	6935.88	80.96	6935.88
82.4	6935.88	82.99	6935.88	90.23	6935.88	100.05	6935.88	104.3	6936.94

Pr RAS Input Report.txt

105.69	6937.29	105.87	6937.35	108.18	6937.39	123.96	6937.2	133.88	6935.31
149.05	6939.25	156.89	6941.24	161.79	6941.36				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	48.21	.035	149.05	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	48.21	149.05		37.4 50.43	64.11	.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM RS: 3800

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6940.08	23.83	6938.59	26.75	6938.1	27.41	6938.02	31.79	6937.43
34.91	6936.64	39.02	6935.9	41.7	6935.42	43.32	6935.41	58.12	6935
58.22	6934.99	63.76	6934.44	64.69	6934.35	66.28	6934.68	67.06	6935
71.73	6935.38	75.33	6935.53	83.44	6937.16	88.43	6937.54	90.78	6938.12
90.82	6938.12	93.1	6937.56	107.51	6934.66	127	6938.71	132.8	6939.83
140	6940.13								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	23.83	.035	132.8	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	23.83	132.8		105.51 105.75	101.97	.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM RS: 3694

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Pr RAS Input Report.txt

Station Elevation Data		num=		72					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6940.88	.22	6940.88	.38	6940.88	1.74	6940.88	3.43	6940.88
5.58	6940.88	8.48	6940.89	12.64	6940.89	19.24	6940.9	25.41	6940.92
26.35	6940.89	28.07	6940.83	29.17	6940.8	33.34	6940.67	33.38	6940.67
34.69	6940.19	34.79	6940.16	35.87	6940.23	36.02	6940.24	43.86	6940.31
51.84	6940.38	53.01	6940.34	54.76	6940.29	67.57	6939.93	68.11	6939.88
68.8	6939.82	69.34	6940.01	70.19	6940.31	74.39	6940.35	75.42	6940.36
77.88	6940.39	78.04	6940.39	95.74	6941.4	97.19	6941.48	98.79	6941.54
102.02	6941.54	117.91	6940.64	148.27	6940.6	170.62	6940.45	189.38	6940.33
192.77	6940.15	194.41	6940.08	209.54	6939.46	212.94	6939.43	215.23	6939.41
216.13	6939.4	216.61	6939.4	218.04	6939.38	224.16	6939.37	224.8	6939.39
230.17	6939.34	283.17	6938.28	321.32	6932.99	329.85	6931.81	330.75	6931.92
335.9	6932.51	345.72	6933.69	350.66	6934.1	352.53	6934.05	367.38	6933.83
391.71	6933.51	405.62	6933.21	419.98	6935.82	438.03	6938.72	493.39	6940.01
515.83	6940.54	519.02	6940.59	553.64	6940.73	565.72	6940.78	567.7	6940.79
567.83	6940.79	580.54	6940.92						

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.05	283.17	.035	438.03	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	283.17	438.03		94.09	94.09		.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3600

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		17					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6937.62	3.4	6937.62	12.79	6937.38	31.35	6936.43	41.1	6935.11
72.3	6930.64	72.71	6930.58	85.12	6931.53	99.12	6932.37	109.14	6933.33
125.17	6934.55	145.22	6931.88	153.89	6930.85	173.12	6935.35	181.06	6937.1
185.24	6937.26	194.98	6937.42						

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.05	12.79	.035	181.06	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
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Pr RAS Input Report.txt

12.79 181.06 106.69 100.23 101.74 .1 .3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM RS: 3500

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6935.09	15.01	6935.25	28.58	6934.15	35.27	6933.7	49.03	6931.78
74.87	6928.8	75.13	6928.82	88.97	6930.15	92.89	6930.24	97.98	6929.93
111.92	6929.62	120.37	6928.86	136.63	6932.23	146.26	6934.93	150	6934.42

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	15.01	.035	146.26	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	15.01	146.26		39.01	50.1	61.55	.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM RS: 3450

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6934.04	12.09	6933.79	12.83	6933.78	16.91	6933.02	34.95	6931.31
65.27	6928.75	75.11	6928.49	78.87	6928.39	88.93	6927.99	98.97	6930.78
107.19	6932.75	109.55	6932.86	114.68	6933.1	140.81	6933.36	150	6933.46

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	12.09	.035	109.55	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.

Pr RAS Input Report.txt

12.09 109.55 73.26 100.11 126.77 .1 .3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM RS: 3350

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6932.77	3.8	6932.72	5.77	6932.69	7.36	6932.6	35.04	6931.32
58.71	6927.57	67.53	6926.42	69.95	6926.44	73.15	6926.54	81.57	6926.79
98.39	6928.03	119.22	6929.56	143.64	6930.24	162.24	6930.68	169.23	6930.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	35.04	.035	162.24	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	35.04	162.24		69.29	50.21		.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM RS: 3300

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6931.17	1.46	6931.16	44.98	6930.18	48.76	6929.8	64.02	6925.77
69.23	6924.78	72.51	6924.96	73.78	6925.03	84.98	6925.91	105.49	6927.36
128.8	6929.31	141.49	6929.55	185.07	6931.08	185.49	6931.08	192	6931.06

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	44.98	.035	128.8	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.

Pr RAS Input Report.txt

44.98 128.8 65.29 49.89 27.72 .1 .3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3250

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6929.55	4.97	6929.53	22.77	6929.02	50.59	6928.45	55.37	6927.16
70.4	6923.75	74.08	6924.06	77.53	6924.34	81.44	6924.74	88.07	6925.55
122.82	6929.1	123.27	6929.11	155.02	6929.73	171.66	6930.38	173.05	6930.4

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	50.59	.035	122.82	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	50.59	122.82		50.17	50.17		.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3200

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6928.69	16.79	6928.61	37.89	6927.96	47.88	6927.46	61.58	6925.2
70.66	6923.44	75.17	6923.29	75.47	6923.28	79.54	6923.32	108.39	6927.73
109.33	6927.91	114.48	6928.1	140.39	6929.05	150	6929.31		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	47.88	.035	109.33	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.

Pr RAS Input Report.txt

47.88 109.33 50.08 50.08 50.08 .1 .3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM RS: 3150

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6927.49	22.24	6926.88	45.77	6926.19	52.94	6924.92	62.61	6923.15
75.17	6923.39	82.58	6923.53	93.8	6923.61	101.67	6925.21	106.55	6926.24
133.38	6928.12	144.02	6928.52	150	6928.6				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	45.77	.035	106.55	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	45.77	106.55		40.98 49.96	61.22	.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM RS: 3100

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6928.05	38.05	6927.43	43.4	6927.16	93.94	6925.45	95.21	6925.41
96.15	6925.26	113.08	6921.99	125.32	6922.51	127.87	6922.54	149.07	6922.79
160.41	6924.83	162.73	6925.31	174.68	6926.23	189.47	6927.42	191.56	6927.56
191.58	6927.56	193.94	6927.59	200.66	6927.61				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	95.21	.035	162.73	.05

Pr RAS Input Report.txt

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
95.21	162.73	33.13	33.13	33.13	.1	.3	

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3050

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 418

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-3.6	6927.2	-3.5	6927.2	-3.11	6927.18	-2.56	6927.15	-2.48	6927.15
-1.62	6927.1	-1.52	6927.1	-1.41	6927.09	-.68	6927.06	-.52	6927.05
-.34	6927.04	.26	6927.02	.48	6927.01	.73	6927	1.2	6926.99
1.48	6926.98	1.8	6926.97	2.14	6926.96	2.49	6926.95	2.88	6926.93
3.08	6926.92	3.49	6926.91	3.95	6926.9	4.02	6926.89	4.49	6926.88
4.96	6926.86	5.02	6926.86	5.34	6926.85	5.49	6926.84	5.93	6926.83
6.05	6926.83	6.49	6926.81	6.91	6926.8	7.07	6926.79	7.49	6926.78
7.89	6926.77	8.09	6926.76	8.49	6926.75	8.87	6926.73	9.11	6926.73
9.49	6926.71	9.85	6926.7	10.13	6926.69	10.49	6926.68	10.84	6926.67
11.15	6926.66	11.49	6926.65	11.82	6926.64	12.17	6926.62	12.49	6926.61
12.8	6926.6	13.19	6926.59	13.49	6926.58	13.78	6926.57	14.21	6926.56
14.49	6926.55	14.76	6926.54	15.23	6926.52	15.49	6926.52	15.75	6926.51
16.24	6926.49	16.49	6926.48	16.75	6926.47	17.24	6926.46	17.49	6926.45
17.75	6926.44	18.24	6926.43	18.49	6926.42	18.75	6926.41	19.24	6926.39
19.49	6926.39	19.75	6926.38	20.24	6926.36	20.49	6926.35	20.75	6926.34
21.24	6926.33	21.49	6926.32	21.63	6926.32	21.74	6926.31	22.26	6926.3
22.49	6926.29	22.71	6926.28	23.29	6926.26	23.49	6926.25	23.68	6926.25
24.32	6926.23	24.49	6926.22	24.65	6926.22	25.36	6926.19	25.49	6926.19
25.62	6926.18	26.39	6926.16	26.49	6926.15	26.59	6926.15	29.49	6926.06
29.5	6926.06	30.46	6926.02	30.53	6926.02	31.43	6925.99	31.57	6925.99
32.4	6925.96	32.5	6925.96	32.6	6925.95	33.37	6925.93	33.47	6925.92
33.5	6925.92	33.96	6925.91	34.12	6925.9	34.68	6925.88	34.85	6925.87
35.12	6925.86	35.57	6925.85	35.85	6925.84	36.3	6925.82	37.02	6925.79
37.04	6925.79	37.75	6925.75	38.21	6925.72	38.47	6925.71	38.86	6925.69
39.19	6925.67	39.42	6925.66	39.92	6925.63	41.36	6925.55	41.82	6925.53
42.08	6925.52	42.46	6925.49	42.8	6925.48	43.02	6925.46	43.52	6925.44
44.96	6925.36	45.43	6925.34	45.68	6925.32	46.06	6925.3	46.4	6925.28
46.63	6925.27	47.13	6925.24	48.57	6925.17	48.62	6925.17	49.04	6925.14
49.29	6925.12	49.66	6925.06	50.01	6925.01	50.24	6924.96	50.73	6924.85
52.17	6924.54	52.64	6924.44	52.89	6924.39	53.26	6924.31	53.61	6924.23
53.85	6924.18	54.33	6924.07	55.78	6923.76	56.25	6923.66	56.5	6923.61
56.86	6923.53	57.22	6923.45	57.46	6923.4	57.94	6923.3	59.38	6922.98

Pr RAS Input Report.txt

59.86	6922.89	60.1	6922.84	60.46	6922.77	60.82	6922.7	61.06	6922.65
61.54	6922.56	62.26	6922.42	62.27	6922.42	62.99	6922.28	63.47	6922.19
63.71	6922.14	64.06	6922.07	64.43	6922	64.67	6921.96	65.15	6921.86
65.86	6921.73	65.87	6921.73	65.87	6921.72	65.89	6921.72	66.59	6921.59
67.08	6921.49	67.31	6921.45	67.66	6921.42	68.03	6921.38	68.75	6921.38
69.46	6921.39	69.51	6921.39	70.19	6921.4	70.68	6921.4	70.92	6921.41
71.64	6921.41	71.89	6921.42	72.36	6921.42	73.06	6921.43	73.14	6921.43
73.8	6921.44	74.52	6921.44	74.86	6921.45	75.49	6921.45	75.96	6921.46
76.66	6921.46	76.68	6921.47	77.4	6921.47	77.9	6921.48	78.46	6921.48
78.85	6921.49	79.57	6921.49	80.26	6921.5	80.38	6921.5	81.01	6921.51
81.51	6921.51	81.73	6921.52	82.45	6921.52	82.71	6921.53	83.17	6921.53
83.86	6921.54	84.01	6921.54	84.61	6921.55	85.33	6921.55	85.66	6921.56
86.32	6921.56	86.78	6921.57	87.46	6921.58	88.22	6921.58	88.72	6921.59
89.26	6921.59	89.66	6921.6	90.38	6921.6	91.06	6921.61	91.25	6921.61
91.82	6921.62	92.33	6921.62	92.54	6921.63	93.26	6921.63	93.53	6921.64
93.99	6921.64	94.66	6921.65	94.87	6921.65	95.43	6921.66	95.94	6921.66
96.15	6921.67	96.46	6921.67	96.87	6921.68	97.14	6921.68	97.59	6921.7
98.26	6921.71	98.5	6921.71	99.03	6921.73	99.54	6921.74	99.75	6921.74
100.06	6921.75	100.47	6921.76	100.75	6921.77	101.19	6921.78	101.86	6921.8
101.95	6921.8	102.12	6921.81	102.64	6921.82	103.15	6921.83	103.36	6921.84
103.66	6921.85	104.08	6921.86	104.35	6921.89	104.8	6921.98	105.46	6922.1
105.52	6922.11	105.56	6922.12	105.74	6922.15	106.24	6922.23	106.67	6922.3
107.04	6922.37	107.34	6922.42	107.68	6922.47	107.96	6922.52	108.45	6922.6
108.68	6922.64	108.88	6922.67	109.55	6922.78	109.69	6922.81	109.8	6922.83
110.66	6922.97	110.69	6922.97	110.72	6922.98	111.04	6923.03	111.64	6923.13
111.69	6923.14	111.76	6923.15	112.56	6923.28	112.7	6923.31	112.86	6923.34
113.48	6923.44	113.7	6923.47	113.97	6923.52	114.4	6923.59	114.71	6923.64
115.07	6923.7	115.32	6923.74	115.71	6923.81	116.18	6923.89	116.24	6923.9
116.71	6923.98	117.16	6924.05	117.28	6924.07	117.72	6924.14	118.08	6924.2
118.38	6924.25	118.72	6924.31	119.01	6924.36	119.49	6924.44	119.73	6924.48
119.93	6924.51	120.59	6924.62	120.73	6924.64	120.85	6924.66	121.7	6924.77
121.73	6924.77	121.77	6924.78	122.12	6924.8	122.13	6924.8	122.69	6924.84
122.8	6924.84	123.61	6924.9	123.74	6924.91	123.9	6924.92	124.53	6924.96
124.75	6924.97	125.01	6924.99	125.45	6925.02	125.75	6925.04	126.11	6925.07
126.37	6925.08	126.75	6925.11	127.22	6925.14	127.29	6925.15	127.76	6925.18
128.21	6925.21	128.32	6925.21	128.76	6925.24	129.13	6925.27	129.42	6925.29
129.77	6925.31	130.05	6925.33	130.53	6925.36	130.77	6925.38	130.97	6925.39
131.63	6925.44	131.78	6925.44	131.89	6925.45	132.74	6925.51	132.81	6925.51
133.21	6925.54	133.74	6925.58	133.84	6925.58	134.66	6925.64	134.79	6925.65
134.94	6925.66	135.58	6925.7	135.79	6925.71	136.05	6925.73	136.5	6925.76
136.8	6925.78	137.15	6925.8	137.42	6925.82	137.8	6925.85	138.26	6925.88
138.34	6925.88	138.8	6925.91	139.26	6925.94	139.36	6925.95	139.81	6925.98
140.18	6926.01	140.46	6926.03	140.81	6926.05	141.1	6926.07	141.57	6926.1
141.82	6926.12	142.02	6926.13	142.67	6926.17	142.82	6926.18	142.94	6926.19
143.78	6926.25	143.86	6926.25	144.29	6926.28	144.78	6926.31	144.83	6926.32
144.88	6926.32	145.7	6926.38	145.83	6926.38	145.99	6926.39	146.62	6926.44
146.84	6926.45	147.09	6926.47	147.54	6926.5	147.84	6926.52	148.19	6926.54
148.47	6926.56	148.84	6926.59	149.3	6926.62	149.39	6926.62	149.85	6926.65

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150.31	6926.66	150.4	6926.67	150.85	6926.67	151.23	6926.68	151.51	6926.68
151.86	6926.69	152.15	6926.7	152.61	6926.7	152.86	6926.71	153.07	6926.71
153.71	6926.72	153.86	6926.72	153.99	6926.73	154.82	6926.74	154.91	6926.74
155.37	6926.75	155.83	6926.76	156.25	6926.76				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-3.6	.035	48.62	.035	122.13	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	48.62	122.13		75.27 75.27	75.27	.1	.3

CROSS SECTION

RIVER: UT_BSC2

REACH: NCONFL-BGM

RS: 3000

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		492					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-86.1	6927.39	-84.34	6927.39	-83.81	6927.4	-81.57	6927.4	-81.28	6927.41
-79.24	6927.41	-78.91	6927.42	-76.57	6927.42	-76.18	6927.38	-75.97	6927.43
-75.57	6927.38	-69.57	6927.38	-69.1	6927.39	-69.04	6927.38	-68.57	6927.39
-68.12	6927.42	-68.02	6927.38	-67.57	6927.41	-67.14	6927.42	-67	6927.41
-66.57	6927.42	-65.98	6927.42	-65.57	6927.41	-64.2	6927.41	-63.94	6927.4
-62.57	6927.4	-62.23	6927.39	-60.88	6927.39	-60.57	6927.38	-59.29	6927.38
-58.84	6927.37	-57.82	6927.37	-57.57	6927.36	-56.57	6927.36	-56.35	6927.35
-55.37	6927.35	-54.76	6927.34	-53.74	6927.34	-53.57	6927.33	-52.43	6927.33
-50.68	6927.31	-49.57	6927.31	-49.48	6927.3	-48.5	6927.3	-46.6	6927.28
-45.56	6927.28	-45.06	6927.27	-44.56	6927.27	-42.62	6927.25	-41.64	6927.25
-41.57	6927.24	-40.65	6927.24	-40.57	6927.23	-39.67	6927.23	-39.57	6927.22
-38.69	6927.22	-38.57	6927.21	-37.71	6927.21	-37.57	6927.2	-36.73	6927.2
-36.57	6927.19	-35.75	6927.19	-35.57	6927.18	-34.77	6927.18	-34.57	6927.17
-33.79	6927.17	-33.57	6927.16	-32.81	6927.16	-32.57	6927.15	-31.83	6927.15
-31.57	6927.14	-30.85	6927.14	-30.57	6927.13	-29.87	6927.13	-29.57	6927.12
-28.88	6927.12	-28.57	6927.11	-27.9	6927.11	-27.57	6927.1	-26.92	6927.1
-26.57	6927.09	-25.94	6927.09	-25.57	6927.08	-24.96	6927.08	-24.57	6927.07
-23.98	6927.07	-23.57	6927.06	-23	6927.06	-22.57	6927.05	-22.02	6927.05
-21.57	6927.04	-21.04	6927.04	-20.57	6927.03	-20.06	6927.03	-19.57	6927.02
-19.06	6927.02	-18.57	6927.01	-18.04	6927.01	-17.57	6927	-17.01	6927
-16.57	6926.99	-15.99	6926.99	-15.57	6926.98	-14.97	6926.98	-14.57	6926.97
-13.95	6926.97	-13.56	6926.96	-12.93	6926.96	-12.56	6926.95	-11.91	6926.95
-11.56	6926.94	-10.89	6926.94	-10.56	6926.93	-9.87	6926.93	-9.56	6926.92

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-8.85	6926.92	-8.56	6926.91	-7.83	6926.91	-7.56	6926.9	-6.81	6926.9
-6.56	6926.89	-5.79	6926.89	-5.56	6926.88	-4.77	6926.88	-4.56	6926.87
-3.75	6926.87	-3.56	6926.86	-2.73	6926.86	-2.4	6926.85	2.37	6926.8
2.5	6926.79	3.39	6926.79	3.44	6926.78	4.44	6926.77	4.47	6926.76
5.43	6926.67	5.89	6926.62	6.31	6926.59	6.49	6926.6	7.02	6926.59
7.06	6926.58	7.6	6926.58	8.24	6926.57	8.56	6926.53	9.14	6926.48
9.82	6926.41	10.56	6926.35	12.03	6926.2	12.31	6926.18	13.39	6926.07
13.81	6926.04	14.25	6925.99	14.56	6925.97	15.36	6925.88	16.06	6925.83
17.52	6925.69	18.31	6925.62	19.06	6925.56	20.9	6925.4	22.01	6925.3
22.15	6925.28	22.81	6925.23	24.22	6925.1	25.06	6925.03	25.33	6925
26.12	6924.93	26.56	6924.9	26.79	6924.87	28.24	6924.75	30.3	6924.56
31.05	6924.5	31.43	6924.46	31.98	6924.42	34.2	6924.22	34.8	6924.17
36.41	6924.02	36.73	6924	37.34	6923.94	37.8	6923.9	38.63	6923.83
40.05	6923.7	42.3	6923.46	43.03	6923.39	43.8	6923.3	44.17	6923.27
45.22	6923.16	45.35	6923.14	46.05	6923.07	47.34	6922.93	47.5	6922.92
48.3	6922.83	49.05	6922.76	49.46	6922.71	49.99	6922.66	50.82	6922.55
51.3	6922.5	51.93	6922.41	52.8	6922.3	53.04	6922.26	54.3	6922.09
55.25	6921.95	56.55	6921.77	58.05	6921.57	58.58	6921.49	60.07	6921.29
60.8	6921.18	61.59	6921.08	61.9	6921.03	63.3	6920.84	64.12	6920.72
64.32	6920.71	64.8	6920.66	65.55	6920.64	66.22	6920.61	66.44	6920.61
67.05	6920.58	67.8	6920.56	69.3	6920.5	70.68	6920.46	71.55	6920.43
71.88	6920.43	72.8	6920.41	72.99	6920.4	73.8	6920.39	74.93	6920.36
75.3	6920.36	76.05	6920.48	78.53	6921.04	79.17	6921.19	80.14	6921.4
80.55	6921.5	82.05	6921.83	82.46	6921.93	82.8	6922	84.07	6922.29
85.54	6922.62	86.28	6922.79	87.1	6922.97	87.39	6923.04	88.05	6923.18
89.78	6923.57	90.3	6923.67	91.05	6923.83	91.8	6923.91	92.55	6923.92
93.23	6923.94	93.3	6923.94	95.55	6923.97	97.37	6924.01	97.8	6924.01
98.7	6924.03	99.58	6924.04	100.39	6924.06	100.69	6924.06	101.55	6924.08
102.3	6924.09	102.51	6924.1	103.34	6924.11	105.12	6924.14	107.34	6924.18
108.3	6924.2	110.29	6924.23	110.54	6924.24	111	6924.24	111.77	6924.26
112.04	6924.26	113.99	6924.3	114.93	6924.31	115.79	6924.33	117.37	6924.35
118.04	6924.37	119.57	6924.39	120.29	6924.41	120.64	6924.41	121.61	6924.43
122.54	6924.44	123.29	6924.46	123.96	6924.47	124.79	6924.48	125.54	6924.5
126.53	6924.51	127.29	6924.53	128.4	6924.55	128.85	6924.55	129.5	6924.57
130.04	6924.57	130.1	6924.58	130.61	6924.58	132.83	6924.62	133.04	6924.63
133.49	6924.63	133.79	6924.64	134.54	6924.65	135.29	6924.67	135.81	6924.67
136.47	6924.69	136.79	6924.69	138.13	6924.72	138.59	6924.72	139.48	6924.74
139.79	6924.74	140.45	6924.76	140.71	6924.76	141.69	6924.78	142.04	6924.78
142.77	6924.8	144.96	6924.83	145.09	6924.84	146.13	6924.85	147.08	6924.87
147.41	6924.87	148.35	6924.89	148.79	6924.89	149.68	6924.91	150.57	6924.92
151.43	6924.94	151.95	6924.94	152.8	6924.96	153.27	6924.96	153.92	6924.98
155.81	6925	156.49	6925.02	157.01	6925.02	157.75	6925.04	158.37	6925.04
159.25	6925.06	160.18	6925.07	161.03	6925.09	161.49	6925.09	162.24	6925.11
162.83	6925.11	165.57	6925.16	165.97	6925.16	166.72	6925.18	167.28	6925.18
169.51	6925.22	170.72	6925.23	183.51	6925.1	184.12	6925.1	184.52	6925.09
186.49	6925.07	187.47	6925.07	187.52	6925.06	188.52	6925.06	188.59	6925.05
189.52	6925.05	189.6	6925.04	190.52	6925.04	190.62	6925.03	191.52	6925.03
191.63	6925.02	192.52	6925.02	192.65	6925.01	193.52	6925.01	193.66	6925

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194.68	6925	195.69	6924.99	196.71	6924.97	197.72	6924.97	200.29	6924.94
200.76	6924.94	201.28	6924.93	201.78	6924.93	202.26	6924.92	202.79	6924.92
203.25	6924.91	203.81	6924.91	204.23	6924.9	204.82	6924.9	205.22	6924.89
205.84	6924.89	206.2	6924.88	206.85	6924.88	207.19	6924.87	207.87	6924.87
208.18	6924.86	208.88	6924.86	209.16	6924.85	209.9	6924.85	210.15	6924.84
210.91	6924.84	211.13	6924.83	211.93	6924.83	212.12	6924.82	212.94	6924.82
213.1	6924.81	213.96	6924.81	214.09	6924.8	215.08	6924.8	215.52	6924.79
216.06	6924.79	216.52	6924.78	217.05	6924.78	218.02	6924.76	218.03	6924.77
219.02	6924.75	219.52	6924.75	220.52	6924.64	221.06	6924.54	221.52	6924.44
221.98	6924.36	222.96	6924.16	223.95	6923.97	224.52	6923.85	225.12	6923.74
226.13	6923.54	226.9	6923.38	227.15	6923.34	228.16	6923.13	229.52	6922.86
231.83	6922.41	233.52	6922.07	233.81	6922.02	234.52	6921.88	234.79	6921.82
235.52	6921.68	236.28	6921.76	236.53	6921.78	237.75	6922.1	239.32	6922.5
239.72	6922.61	240.71	6922.85	242.37	6923.24	243.38	6923.48	244.53	6923.74
246.43	6924.19	247.44	6924.41	247.61	6924.43	248.46	6924.45	248.59	6924.46
249.58	6924.48	253.15	6924.59	253.53	6924.6	257.46	6924.72	258.45	6924.74
258.6	6924.75	259.43	6924.77	267.32	6925.01	267.53	6925.01	268.31	6925.04
268.53	6925.04	269.29	6925.07	269.53	6925.07	270.28	6925.1	270.53	6925.1
271.26	6925.13	271.53	6925.13	272.25	6925.16	272.53	6925.16	273.24	6925.19
273.53	6925.19	274.22	6925.22	274.53	6925.22	275.21	6925.25	275.86	6925.26
276.19	6925.28	276.87	6925.3	277.18	6925.3	277.53	6925.32	278.16	6925.33
278.53	6925.35	279.15	6925.36	279.53	6925.38	280.14	6925.39	280.53	6925.41
281.12	6925.42	281.53	6925.44	282.11	6925.45	282.53	6925.47	283.09	6925.48
284.08	6925.52	284.53	6925.53	287.53	6925.65	288.03	6925.66	289.99	6925.74
291.08	6925.78	292.09	6925.81	292.95	6925.85	294.53	6925.9	295.14	6925.93
295.91	6925.96	296.15	6925.96	296.53	6925.98	297.16	6926	297.53	6926.02
298.86	6926.06	299.19	6926.08	300.21	6926.11	300.53	6926.13	301.82	6926.17
302.24	6926.19	303.34	6926.23						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-86.1	.035	37.34	.035	93.23	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	37.34	93.23		92.31	92.31		.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
176.3	303.34	6925.25	F

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 2900

INPUT
 Description: Source: Revised Condition Topo
 Datum: NGVD29

Pr RAS Input Report.txt

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6925.25	.28	6925.24	.56	6925.24	.94	6925.23	1.31	6925.23
2.34	6925.21	2.61	6925.21	3.37	6925.2	3.44	6925.19	3.75	6925.19
4.27	6925.18	4.59	6925.18	5.93	6925.15	6.45	6925.15	7.28	6925.13
7.6	6925.13	8.43	6925.11	9.26	6925.1	9.53	6925.1	10.09	6925.09
10.92	6925.07	11.3	6925.07	11.76	6925.06	12.65	6925.05	13.42	6925.03
13.99	6925.03	14.66	6925.01	15.08	6925.01	15.33	6925	15.69	6925
15.91	6924.99	16.67	6924.98	17.75	6924.97	18.41	6924.95	18.77	6924.95
19.8	6924.93	20.07	6924.93	20.83	6924.92	20.9	6924.91	21.23	6924.91
21.74	6924.9	21.85	6924.89	22.88	6924.83	23.39	6924.79	24.23	6924.74
24.73	6924.7	25.6	6924.65	26.73	6924.58	26.99	6924.56	27.42	6924.54
28.02	6924.5	28.76	6924.46	30.1	6924.37	30.89	6924.33	31.1	6924.31
31.72	6924.27	32.13	6924.25	32.55	6924.22	33.15	6924.19	33.38	6924.17
34.13	6924.13	34.34	6924.11	35.21	6924.06	35.47	6924.04	36.24	6924
37.26	6923.93	37.54	6923.92	38.16	6923.88	39.2	6923.82	40.03	6923.76
40.34	6923.75	40.85	6923.71	41.37	6923.68	41.7	6923.61	41.82	6923.58
42.53	6923.42	43.08	6923.3	43.36	6923.23	43.53	6923.2	44.45	6922.99
44.87	6922.9	45.02	6922.86	45.86	6922.68	46.51	6922.53	47.45	6922.32
47.56	6922.3	48.56	6922.07	49.18	6921.94	49.59	6921.84	50.62	6921.62
50.85	6921.56	51.82	6921.35	52.51	6921.19	53.7	6920.93	54.17	6920.82
55	6920.64	56.19	6920.37	56.67	6920.27	56.78	6920.24	58.3	6919.9
58.33	6919.9	58.83	6919.79	59.64	6919.62	59.99	6919.54	60.57	6919.42
60.83	6919.36	60.99	6919.35	61.66	6919.34	63.97	6919.34	64.15	6919.35
66.65	6919.35	67.05	6919.34	73.68	6919.34	74.13	6919.33	80.4	6919.33
80.79	6919.32	81.43	6919.32	81.62	6919.33	82.47	6919.36	83.28	6919.48
83.49	6919.5	83.81	6919.55	85.16	6919.74	85.78	6919.82	86.5	6919.93
86.57	6919.93	86.79	6919.97	87.44	6920.06	87.84	6920.11	88.27	6920.17
89.65	6920.37	90.68	6920.51	91.87	6920.68	92.43	6920.75	92.73	6920.8
93.21	6920.86	94.09	6920.99	94.56	6921.03	94.78	6921.07	94.93	6921.08
95.53	6921.15	96.59	6921.26	97.87	6921.4	98.58	6921.45	98.89	6921.48
99	6921.48	99.08	6921.48	100.75	6921.52	101.27	6921.54	101.58	6921.54
102.41	6921.56	103	6921.58	103.24	6921.58	104.27	6921.61	105.06	6921.62
105.3	6921.63	106.08	6921.65	107.11	6921.67	107.4	6921.68	107.98	6921.69
108.23	6921.7	109.06	6921.72	109.33	6921.73	109.9	6921.74	110.19	6921.75
111.22	6921.77	112.39	6921.8	113.01	6921.81	114.05	6921.84	114.3	6921.84
114.89	6921.86	115.72	6921.88	116.04	6921.88	116.55	6921.9	118.21	6921.94
118.41	6921.94	119.05	6921.96	119.44	6921.96	119.88	6921.97	120.46	6921.99
120.71	6921.99	121.75	6922.02	122.37	6922.03	123.55	6922.06	124.1	6922.07
124.57	6922.09	124.87	6922.09	125.44	6922.11	125.7	6922.11	126.53	6922.13
126.78	6922.14	127.36	6922.15	127.65	6922.16	128.68	6922.18	129.86	6922.21
130.49	6922.23	130.81	6922.23	131.76	6922.26	132.15	6922.26	132.35	6922.27
133.5	6922.3	133.82	6922.3	134.02	6922.31	135.68	6922.35	135.87	6922.35
136.51	6922.37	137.34	6922.39	137.53	6922.39	138.17	6922.41	138.87	6922.42
138.95	6922.43	139.23	6922.43	139.84	6922.45	140.21	6922.45	140.67	6922.47
141.01	6922.47	141.5	6922.49	142.03	6922.5	142.33	6922.5	142.9	6922.52

Pr RAS Input Report.txt

143.16	6922.52	144	6922.54	144.24	6922.55	144.83	6922.56	145.12	6922.57
146.14	6922.59	147.32	6922.62	148.27	6922.65	148.99	6922.66	149.61	6922.68
149.82	6922.68	150.65	6922.7	151.28	6922.72	151.48	6922.72	153.14	6922.76
153.33	6922.76	153.98	6922.78	154.81	6922.8	154.98	6922.8	156.32	6922.84
156.71	6922.84	157.3	6922.86	158.47	6922.89	159.5	6922.91	159.8	6922.92
160.35	6922.93	160.63	6922.94	161.46	6922.96	161.7	6922.96	162.29	6922.98
162.58	6922.98	163.04	6922.99	163.13	6923	164.79	6923.04	165.62	6923.05
165.66	6923.06	166.45	6923.07	167.07	6923.09	167.28	6923.09	168.12	6923.11
168.74	6923.13	168.95	6923.13	170.61	6923.17	170.8	6923.18	171.1	6923.18
172.27	6923.21	172.85	6923.23	173.11	6923.23	174.19	6923.26	174.77	6923.27
175.93	6923.3	176.96	6923.32	177.81	6923.34	178.1	6923.35	178.93	6923.37
179.15	6923.37	179.76	6923.39	180.04	6923.39	180.5	6923.41	181.07	6923.42
181.84	6923.44	182.25	6923.45	182.93	6923.46	183.09	6923.47	183.37	6923.47
184.03	6923.49	184.22	6923.5	185.04	6923.52	185.21	6923.53	186.05	6923.55
186.21	6923.56	187.06	6923.58	187.2	6923.59	188.06	6923.61	188.19	6923.62
189.07	6923.64	189.18	6923.65	190.18	6923.67	191.09	6923.7	192.16	6923.71
194.11	6923.69	195.14	6923.69	196.12	6923.68	196.68	6923.68	197.12	6923.67
198.14	6923.67	199.11	6923.66	200.15	6923.66	202.09	6923.64	203.18	6923.64
205.06	6923.62	206.2	6923.62	208.04	6923.6	209.22	6923.6	210.03	6923.59
211.02	6923.59	211.13	6923.58	212.24	6923.58	213	6923.57	214	6923.57
214.13	6923.56	215.27	6923.56	215.98	6923.55	217.13	6923.55	217.28	6923.54
218.29	6923.54	218.96	6923.53	220.13	6923.53	220.31	6923.52	221.31	6923.52
221.94	6923.51	223.13	6923.51	223.33	6923.5	224.34	6923.5	224.91	6923.49
226.35	6923.49	226.9	6923.48	227.89	6923.48	228.13	6923.47	229.37	6923.47
229.88	6923.46	230.87	6923.46	231.13	6923.45	232.4	6923.45	232.85	6923.44
233.85	6923.44	234.13	6923.43	235.42	6923.43	235.83	6923.42	237.13	6923.42
237.43	6923.41	238.44	6923.41	238.81	6923.4	240.13	6923.4	240.46	6923.39
241.13	6923.39	241.79	6923.27	242.13	6923.2	242.78	6923.08	243.48	6922.96
243.77	6922.9	244.13	6922.84	245.49	6922.58	245.76	6922.54	246.75	6922.35
247.51	6922.21	248.52	6922.03	249.13	6921.91	249.52	6921.84	249.73	6921.81
250.13	6921.73	251.71	6921.46	252.13	6921.38	252.7	6921.28	253.55	6921.14
254.13	6921.04	255.57	6920.78	255.68	6920.77	257.13	6920.51	257.58	6920.59
257.67	6920.62	258.13	6920.7	259.6	6921.14	259.65	6921.15	261.13	6921.58
261.61	6921.73	261.64	6921.73	262.13	6921.88	262.63	6922.02	263.62	6922.32
264.13	6922.46	264.61	6922.61	264.64	6922.61	265.13	6922.76	266.13	6923.05
266.65	6923.21	267.13	6923.34	268.12	6923.64	268.67	6923.8	269.58	6924.06
270.57	6924.35	270.68	6924.39	271.56	6924.65	271.69	6924.68	272.55	6924.94
273.12	6925.1	273.55	6925.23	273.71	6925.27	274.12	6925.4	274.54	6925.52
275.53	6925.81	275.72	6925.87	276.12	6925.98	276.52	6926.12	276.73	6926.16
277.12	6926.29	277.52	6926.44	277.74	6926.46	278.12	6926.6	278.51	6926.61
278.74	6926.57	279.12	6926.57	279.75	6926.54	280.12	6926.51	280.76	6926.48
281.48	6926.44	281.77	6926.42	282.48	6926.38	282.77	6926.36	284.46	6926.26
284.79	6926.25	288.12	6926.05	288.43	6926.04	288.82	6926.01	289.12	6926
290.42	6925.91	290.83	6925.89	292.4	6925.78	292.85	6925.76	294.12	6925.67
294.39	6925.66	294.86	6925.62	295.12	6925.61	295.87	6925.56	296.12	6925.54
296.37	6925.53	296.88	6925.49	297.89	6925.43	298.12	6925.41	298.36	6925.4
298.89	6925.36	299.35	6925.33	299.9	6925.3	301.33	6925.2	301.92	6925.17
302.92	6925.1	303.32	6925.08	303.93	6925.04	304.12	6925.02	305.3	6924.95

Pr RAS Input Report.txt

305.95	6924.9	307.29	6924.82	307.96	6924.77	308.97	6924.71	310.12	6924.63
310.27	6924.63	311.12	6924.57	311.26	6924.57	311.99	6924.54	312.25	6924.54
313	6924.52	313.24	6924.51	314.01	6924.49	314.24	6924.48	315.02	6924.5
315.23	6924.49	316.02	6924.53	316.22	6924.53	317.03	6924.56	317.21	6924.56
318.04	6924.6	318.21	6924.6	319.05	6924.63	319.2	6924.64	320.05	6924.67
320.19	6924.68	321.06	6924.71	321.18	6924.72	322.07	6924.75	322.18	6924.76
323.08	6924.8	323.32	6924.8						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	41.82	.035	99	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

41.82	99	110.37	99.71	68.37	.1	.3
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
190.81	323.32	6923.73	F

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 2800

INPUT

Description: Source: Revised Condition Topo
 Datum: NGVD29
 Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6922.59	.13	6922.59	.93	6922.57	1.04	6922.57	1.94	6922.55
2.07	6922.54	2.84	6922.52	3.2	6922.52	3.74	6922.5	4.34	6922.49
4.65	6922.48	5.48	6922.46	5.82	6922.45	6.45	6922.44	6.62	6922.43
7.35	6922.42	7.53	6922.41	7.75	6922.41	8.26	6922.4	9.16	6922.37
9.54	6922.37	10.55	6922.33	11.56	6922.28	11.87	6922.27	12.3	6922.25
12.56	6922.23	12.77	6922.23	13.44	6922.19	17.28	6922.02	17.99	6921.98
18.19	6921.98	18.6	6921.96	19.09	6921.93	19.61	6921.91	19.99	6921.89
20.26	6921.88	20.62	6921.86	21.4	6921.83	21.8	6921.81	22.54	6921.78
23.32	6921.74	23.6	6921.73	23.68	6921.72	24.51	6921.69	24.81	6921.67
25.41	6921.64	25.95	6921.62	26.31	6921.6	26.66	6921.59	27.09	6921.57
27.21	6921.56	28.12	6921.52	28.23	6921.51	28.67	6921.49	29.02	6921.48
29.36	6921.46	29.92	6921.44	30.5	6921.41	30.82	6921.39	31.64	6921.36
31.73	6921.35	32.07	6921.34	32.78	6921.3	33.53	6921.27	33.91	6921.25
34.71	6921.22	35.05	6921.2	35.34	6921.19	35.71	6921.17	36.72	6921.13
37.73	6921.08	38.05	6921.07	39.6	6921	40.74	6920.95	40.82	6920.95
41.87	6920.9	43.46	6920.83	43.77	6920.82	44.77	6920.77	45.78	6920.73
46.42	6920.7	46.79	6920.69	47.07	6920.67	47.79	6920.64	47.98	6920.63

Pr RAS Input Report.txt

48.7	6920.6	48.88	6920.59	49.84	6920.55	50.68	6920.51	51.59	6920.48
51.82	6920.47	52.11	6920.45	52.49	6920.44	52.82	6920.42	53.25	6920.4
53.39	6920.4	53.83	6920.38	54.29	6920.32	54.38	6920.29	54.84	6920.23
54.97	6920.19	55.2	6920.13	55.52	6920.05	55.84	6919.96	57	6919.65
57.91	6919.4	58.93	6919.13	59.71	6918.92	59.87	6918.87	60.07	6918.82
60.61	6918.67	61.21	6918.51	61.52	6918.43	61.88	6918.33	62.35	6918.21
62.89	6918.06	63.48	6917.91	63.9	6917.8	64.22	6917.71	64.9	6917.54
65.91	6917.28	66.03	6917.26	66.9	6917.18	67.08	6917.18	67.84	6917.19
68.03	6917.19	68.74	6917.21	69.17	6917.21	69.64	6917.22	69.94	6917.23
70.31	6917.23	70.54	6917.24	70.94	6917.24	71.95	6917.26	72.35	6917.26
72.58	6917.27	72.96	6917.27	73.25	6917.28	73.72	6917.29	74.15	6917.29
74.86	6917.31	75.06	6917.31	75.83	6917.32	75.99	6917.32	76.23	6917.33
76.86	6917.34	77.13	6917.34	77.76	6917.35	77.99	6917.36	78.27	6917.36
78.67	6917.37	78.99	6917.37	79.41	6917.38	79.57	6917.38	80.47	6917.4
81.01	6917.41	81.68	6917.52	82.01	6917.58	82.28	6917.62	82.82	6917.72
83.02	6917.76	83.18	6917.78	83.95	6917.92	84.08	6917.95	84.58	6918.03
85.09	6918.13	86.23	6918.33	86.79	6918.43	87.05	6918.48	87.37	6918.53
88.05	6918.66	88.5	6918.74	88.6	6918.75	89.06	6918.84	89.5	6918.91
89.64	6918.94	90.4	6919.08	90.78	6919.14	91.07	6919.2	91.31	6919.24
92.08	6919.38	92.21	6919.4	93.33	6919.6	94.19	6919.75	94.92	6919.88
95.1	6919.92	95.82	6920.05	96.47	6920.16	96.72	6920.21	97.11	6920.28
97.6	6920.33	97.62	6920.34	98.12	6920.4	98.3	6920.4	98.53	6920.41
98.74	6920.42	99.12	6920.42	99.88	6920.44	100.13	6920.45	100.33	6920.45
101.01	6920.47	101.24	6920.48	103.04	6920.52	103.29	6920.52	103.94	6920.54
104.16	6920.55	104.43	6920.55	105.56	6920.58	105.75	6920.58	106.17	6920.59
106.65	6920.61	107.18	6920.62	107.55	6920.63	107.84	6920.63	108.46	6920.65
108.98	6920.66	109.19	6920.67	109.36	6920.67	110.11	6920.69	110.26	6920.69
110.83	6920.71	111.2	6920.71	111.25	6920.72	112.07	6920.74	112.39	6920.74
112.97	6920.76	113.22	6920.76	114.22	6920.79	114.78	6920.8	115.68	6920.82
115.8	6920.83	116.24	6920.84	116.58	6920.84	117.24	6920.86	117.48	6920.87
118.07	6920.88	118.25	6920.88	118.39	6920.89	119.59	6920.92	120.19	6920.93
120.35	6920.93	121.09	6920.95	121.27	6920.96	121.49	6920.96	122	6920.97
122.9	6921	123.28	6921	123.76	6921.02	124.71	6921.04	124.9	6921.04
125.61	6921.06	126.04	6921.07	126.3	6921.08	126.51	6921.08	127.17	6921.1
127.41	6921.1	128.31	6921.13	129.22	6921.15	129.45	6921.15	130.12	6921.17
130.33	6921.17	130.59	6921.18	131.02	6921.19	131.72	6921.21	131.93	6921.21
132.86	6921.23	133.35	6921.25	133.73	6921.26	134	6921.26	134.63	6921.28
135.13	6921.29	135.36	6921.29	135.54	6921.3	136.27	6921.32	136.44	6921.32
137.09	6921.34	137.41	6921.34	138.25	6921.36	138.38	6921.37	138.55	6921.37
139.15	6921.39	139.39	6921.39	140.39	6921.42	140.95	6921.43	141.86	6921.45
142.4	6921.46	143.41	6921.49	143.66	6921.49	144.23	6921.51	144.56	6921.51
145.4	6921.54	145.6	6921.54	146.33	6921.56	146.59	6921.56	147.21	6921.57
147.78	6921.59	148.09	6921.59	148.46	6921.6	149.47	6921.62	150.48	6921.65
150.72	6921.65	151.35	6921.66	151.6	6921.67	152.3	6921.68	152.54	6921.69
153.36	6921.71	153.73	6921.71	154.24	6921.73	154.53	6921.73	154.93	6921.74
155.11	6921.74	155.99	6921.76	156.12	6921.77	156.55	6921.77	157.31	6921.79
157.56	6921.8	157.75	6921.8	158.5	6921.82	159.51	6921.84	159.69	6921.84
160.39	6921.86	160.6	6921.86	161.26	6921.88	161.61	6921.88	162.62	6921.9

Pr RAS Input Report.txt

163.02	6921.91	163.63	6921.93	163.9	6921.93	164.46	6921.94	164.78	6921.95
166.54	6921.99	166.84	6921.99	167.41	6922.01	167.68	6922.01	168.03	6922.02
168.29	6922.02	168.69	6922.03	169.7	6922.05	170.71	6922.08	170.93	6922.08
171.6	6922.1	171.84	6922.1	172.6	6922.11	172.83	6922.12	173.61	6922.13
173.72	6922.14	174.61	6922.15	174.83	6922.16	175.61	6922.17	175.72	6922.18
176.72	6922.19	176.83	6922.2	177.72	6922.21	177.83	6922.22	178.72	6922.23
178.82	6922.24	179.61	6922.25	179.82	6922.25	180.62	6922.27	180.82	6922.27
181.62	6922.29	182.82	6922.29	183.62	6922.28	184.81	6922.28	185.62	6922.27
185.81	6922.27	186.63	6922.26	187.81	6922.26	188.63	6922.25	188.81	6922.25
189.63	6922.24	190.8	6922.24	191.63	6922.23	191.8	6922.23	192.64	6922.22
193.8	6922.22	194.64	6922.21	195.64	6922.21	195.72	6922.2	196.79	6922.2
197.64	6922.19	203.78	6922.19	204.66	6922.18	218.75	6922.18	219.68	6922.17
234.73	6922.17	235.71	6922.16	238.72	6922.16	239.72	6922.11	240.71	6921.95
241.71	6921.79	241.72	6921.79	242.71	6921.63	242.72	6921.63	243.71	6921.46
243.72	6921.46	244.71	6921.3	244.72	6921.3	245.71	6921.14	245.72	6921.13
246.7	6920.97	246.72	6920.97	247.7	6920.81	247.72	6920.8	248.7	6920.64
248.73	6920.64	249.7	6920.48	249.73	6920.48	250.7	6920.32	250.73	6920.31
251.7	6920.15	251.73	6920.15	252.69	6919.99	252.73	6919.99	253.69	6920.4
253.73	6920.42	254.74	6920.85	255.69	6921.26	255.74	6921.28	256.69	6921.69
256.74	6921.72	257.69	6922.13	257.74	6922.15	258.68	6922.56	258.74	6922.58
259.68	6922.99	259.74	6923.02	260.68	6923.42	261.75	6923.88	262.68	6924.29
263.67	6924.72	263.75	6924.75	264.67	6925.15	264.75	6925.18	265.67	6925.55
266.67	6925.92	266.76	6925.96	267.67	6926.3	267.76	6926.33	268.67	6926.67
268.76	6926.7	269.66	6927.04	269.76	6927.08	270.66	6927.41	270.76	6927.45
271.66	6927.78	271.76	6927.82	272.66	6928.16	274.77	6928.94	275.65	6929.27
275.77	6929.32	276.65	6929.65	276.77	6929.69	277.65	6930.02	277.77	6930.06
278.65	6930.39	278.77	6930.44	279.65	6930.76	280.64	6931.13	280.78	6931.17
281.64	6931.38	281.78	6931.39	282.64	6931.38	283.78	6931.37	284.64	6931.35
285.64	6931.34	286.63	6931.33	286.79	6931.33	287.63	6931.31	287.79	6931.31
288.63	6931.3	288.79	6931.3	289.63	6931.29	289.79	6931.28	290.63	6931.27
290.79	6931.27	291.63	6931.26	291.8	6931.26	292.71	6931.25	292.8	6931.24
293.62	6931.23	293.8	6931.23	294.62	6931.22	294.8	6931.22	295.62	6931.21
295.8	6931.2	296.62	6931.19	296.8	6931.19	297.62	6931.18	297.81	6931.18
298.61	6931.17	298.72	6931.16						

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
0	.05	54.97	.035
		98.3	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	54.97	98.3		142.81	150.39		.1	.3
Ineffective Flow			num=	1				
Sta L	Sta R	Elev	Permanent					
181.3	298.72	6922.41	F					

CROSS SECTION

Pr RAS Input Report.txt

RIVER: UT_BSC2
REACH: NCONFL-BGM

RS: 2650

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-7.75	6919.41	-7.13	6919.41	-5.94	6919.37	-3.02	6919.28	-2.05	6919.26
-1.18	6919.23	-.1	6919.2	.76	6919.17	2.94	6919.11	3.97	6919.07
4.76	6919.05	6.03	6919.01	6.7	6918.98	7.67	6918.95	7.88	6918.95
9.13	6918.9	9.62	6918.89	10.88	6918.85	11.19	6918.83	12.22	6918.8
12.53	6918.78	12.88	6918.77	13.88	6918.72	14.28	6918.71	15.31	6918.66
15.44	6918.66	16.35	6918.62	17.38	6918.58	17.39	6918.59	18.36	6918.55
18.88	6918.54	19.33	6918.52	19.88	6918.51	20.3	6918.49	20.88	6918.48
21.27	6918.46	21.5	6918.46	21.88	6918.44	22.53	6918.43	22.88	6918.41
24.89	6918.35	25.16	6918.35	25.89	6918.32	26.13	6918.32	26.89	6918.29
27.1	6918.29	29.75	6918.21	30.78	6918.17	30.99	6918.17	31.81	6918.14
31.96	6918.14	36.82	6917.99	36.97	6917.99	38	6917.95	40.7	6917.87
40.89	6917.87	41.67	6917.84	41.89	6917.84	42.64	6917.81	42.89	6917.81
43.89	6917.77	44.19	6917.77	44.89	6917.74	46.89	6917.68	47.5	6917.65
47.89	6917.62	48.18	6917.56	48.31	6917.54	48.47	6917.5	48.89	6917.42
49.89	6917.22	50.37	6917.12	50.42	6917.1	51.4	6916.89	52.36	6916.68
53.33	6916.45	53.9	6916.33	54.3	6916.23	54.9	6916.1	55.53	6915.95
55.9	6915.87	57.22	6915.57	57.59	6915.48	58.19	6915.35	60.13	6914.91
61.1	6914.68	61.71	6914.55	62.07	6914.46	62.9	6914.28	64.02	6914.13
64.81	6914.08	64.99	6914.06	65.96	6913.99	66.87	6913.93	66.93	6913.92
67.9	6913.89	68.87	6913.85	69.84	6913.82	69.96	6913.81	70.73	6913.78
70.99	6913.78	72.76	6913.71	72.9	6913.71	73.73	6913.92	74.09	6914
74.7	6914.16	75.12	6914.26	75.9	6914.46	76.9	6914.7	78.21	6915.03
78.91	6915.2	79.24	6915.29	79.91	6915.45	80.53	6915.61	80.91	6915.7
82.34	6916.06	83.37	6916.31	84.4	6916.58	84.42	6916.58	85.39	6916.84
85.43	6916.86	85.91	6916.99	87.33	6917.4	87.91	6917.56	88.3	6917.68
88.91	6917.85	89.27	6917.94	89.55	6917.98	89.91	6918.06	90.07	6918.06
90.24	6918.07	91.22	6918.07	91.62	6918.08	92.65	6918.08	92.91	6918.09
94.13	6918.09	94.71	6918.1	95.74	6918.11	97.04	6918.11	98.83	6918.13
99.91	6918.13	99.96	6918.14	100.93	6918.14	101.93	6918.16	103.84	6918.18
103.99	6918.19	106.05	6918.21	106.76	6918.22	107.73	6918.24	108.7	6918.25
109.15	6918.25	110.18	6918.27	110.64	6918.27	111.61	6918.29	112.24	6918.29
114.53	6918.33	114.92	6918.33	115.33	6918.34	115.92	6918.34	116.92	6918.36
117.44	6918.36	118.41	6918.38	118.92	6918.38	119.92	6918.4	120.49	6918.4
121.33	6918.42	121.92	6918.42	122.92	6918.44	123.58	6918.44	124.92	6918.46
125.21	6918.47	125.64	6918.47	126.67	6918.49	127.16	6918.49	127.92	6918.5
128.13	6918.51	128.74	6918.51	128.92	6918.52	130.07	6918.53	131.83	6918.55
131.92	6918.56	133.96	6918.58	135.9	6918.61	137.84	6918.63	137.93	6918.64
140.08	6918.66	140.93	6918.67	141.11	6918.68	141.73	6918.69	142.14	6918.69

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142.7	6918.7	143.17	6918.7	144.2	6918.72	144.64	6918.72	146.27	6918.75
146.93	6918.75	147.93	6918.77	148.33	6918.77	148.53	6918.78	148.93	6918.78
149.36	6918.79	149.93	6918.79	150.93	6918.81	152.45	6918.81	152.93	6918.8
153.93	6918.8	154.36	6918.79	154.93	6918.79	155.33	6918.78	156.3	6918.78
156.58	6918.77	157.27	6918.77	157.61	6918.76	158.24	6918.76	158.64	6918.75
159.67	6918.75	159.94	6918.74	160.7	6918.74	160.94	6918.73	161.94	6918.73
162.13	6918.72	163.1	6918.72	167.92	6918.67	168.95	6918.67	174.76	6918.61
175.73	6918.61	175.94	6918.6	176.94	6918.6	177.2	6918.59	177.94	6918.59
178.23	6918.58	179.26	6918.58	179.61	6918.57	180.29	6918.57	180.59	6918.56
181.56	6918.56	181.94	6918.55	182.53	6918.55	182.94	6918.54	183.5	6918.54
183.94	6918.53	184.94	6918.53	185.44	6918.52	185.95	6918.52	186.41	6918.51
186.95	6918.51	187.39	6918.5	188.36	6918.5	188.54	6918.49	189.57	6918.49
189.95	6918.48	190.6	6918.48	190.95	6918.47	191.63	6918.47	191.95	6918.46
192.95	6918.46	193.21	6918.45	194.19	6918.45	194.73	6918.44	195.16	6918.44
196.79	6918.42	198.85	6918.4	199.88	6918.4	199.95	6918.39	200.99	6918.39
202.15	6918.38	205.84	6918.34	206.81	6918.34	206.95	6918.33	207.95	6918.33
208.13	6918.32	209.16	6918.32	209.73	6918.31	210.19	6918.31	210.7	6918.3
212.26	6918.3	212.96	6918.28	213.97	6918.16	214.03	6918.16	215.06	6918.04
215.61	6917.99	216.37	6917.9	218.78	6917.64	221.95	6917.3	222.44	6917.24
222.69	6917.22	223.54	6917.13	224.55	6917.2	225.61	6917.31	225.85	6917.33
226.71	6917.42	227.43	6917.5	228.22	6917.58	229.01	6917.67	229.83	6917.75
229.87	6917.76	230.88	6917.86	231.93	6917.99	232.17	6918.01	233.75	6918.21
234.63	6918.31	235.33	6918.4	236.21	6918.5	236.91	6918.53	238.26	6918.58
238.49	6918.58	239.18	6918.61	239.38	6918.61	240.37	6918.65	241.42	6918.67
242.34	6918.68	242.55	6918.69	243.53	6918.7	244.59	6918.72	244.81	6918.72
245.49	6918.74	246.39	6918.75	246.7	6918.76	247.18	6918.76	247.3	6918.77
247.75	6918.77	247.97	6918.78	249.55	6918.8	249.86	6918.81	250.91	6918.83
251.79	6918.84	252.06	6918.85	253.02	6918.86	254.08	6918.89	254.94	6918.9
255.23	6918.91	257.24	6918.95	257.45	6918.96	258.09	6918.97	259.82	6919.01
260.61	6919.02	261.25	6919.04	262.19	6919.05	263.57	6919.08	263.77	6919.09
265.36	6919.12	266.15	6919.14	266.94	6919.15	267.55	6919.17	267.9	6919.17
268.52	6919.19	269.31	6919.2	269.89	6919.22	270.7	6919.23	272.47	6919.27
273.85	6919.29	274.84	6919.31	275.17	6919.31	277	6919.34	277.21	6919.35
278.33	6919.36	280.16	6919.39	281.49	6919.42	281.95	6919.42	282.16	6919.43
282.55	6919.43	283.31	6919.45	283.75	6919.45	285.11	6919.48	286.46	6919.5
287.48	6919.52	287.82	6919.52	289.61	6919.55	290.98	6919.58	291.43	6919.58
292.22	6919.6	292.76	6919.6	293.8	6919.62	294.59	6919.64	294.84	6919.64
296.42	6919.67	296.96	6919.67	297.75	6919.69	299.07	6919.71	299.42	6919.72
300.47	6919.73	301.53	6919.76	302.58	6919.78	302.76	6919.79	304.07	6919.82
304.69	6919.84	305.74	6919.86	305.93	6919.87	307.23	6919.9	307.52	6919.9
308.02	6919.92	308.81	6919.94	309.1	6919.94	309.6	6919.96	309.96	6919.96
311.67	6920.01	312.27	6920.02	315.23	6920.09	317.02	6920.14	317.34	6920.14
318.61	6920.18	319.87	6920.21	322.61	6920.28	323.03	6920.3	323.36	6920.3
323.82	6920.32	324.72	6920.34	324.95	6920.35	326.98	6920.4	328.11	6920.43
328.56	6920.45	333.3	6920.57	333.73	6920.59	334.09	6920.59	334.88	6920.62
339.62	6920.74	340.04	6920.76	340.79	6920.78	345.94	6920.91	346.34	6920.93
351.47	6921.06	351.88	6921.08	356.21	6921.19	357	6921.23	357.41	6921.24
358.46	6921.29	358.58	6921.29	359.52	6921.34	360.16	6921.36	360.95	6921.4

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361.74	6921.43	362.97	6921.49	363.33	6921.5	364.12	6921.54	364.56	6921.55
365.25	6921.59	365.7	6921.6	366.49	6921.64	367.28	6921.66	367.95	6921.69
368.4	6921.7	368.86	6921.72	369.65	6921.74	370.06	6921.76	370.9	6921.79
372.02	6921.82	372.17	6921.83	373.23	6921.86	373.6	6921.88	374.71	6921.91
375.18	6921.93	375.65	6921.94	375.97	6921.96	376.76	6921.98	377.44	6922.01
377.86	6922.02	379.13	6922.06	379.55	6922.08	380.71	6922.11	381.01	6922.13
381.5	6922.14	382.29	6922.17	383.08	6922.19	383.77	6922.22	384.66	6922.25
385.45	6922.27	385.88	6922.29	387.31	6922.34	387.82	6922.35	389.04	6922.4
389.91	6922.42	391.77	6922.49	392.56	6922.51	394.14	6922.57	394.93	6922.59
395.37	6922.61	396.77	6922.66	397.3	6922.67	398.09	6922.7	398.53	6922.71
398.88	6922.73	399.42	6922.74	401.25	6922.81	402.04	6922.83	403.62	6922.89
404.17	6922.9	404.86	6922.93	405.99	6922.97	406.22	6922.97	407.57	6923.02
408.02	6923.03	408.97	6923.06						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-7.75	.05	48.18	.035	90.07	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

48.18	90.07	44.76	44.76	44.76	.1	.3
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
150.92	408.97	6918.86	F

CROSS SECTION

RIVER: UT_BSC2
 REACH: NCONFL-BGM RS: 2605

INPUT

Description: Source: 2003 LOMR Hec-2 Output
 Datum: NGVD29
 Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6920	90.01	6918	100.01	6916.2	108.01	6918	115.01	6918.2
127.01	6918	138.01	6917.5	150.01	6918	182.01	6918	190.01	6917.6
200.01	6918	222.01	6918.4	242.01	6918	258.01	6914	270.01	6916
305.01	6918	325	6919.8						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	90.01	.035	305.01	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

90.01	305.01	0	0	0	.1	.3
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Pr RAS Input Report.txt

SUMMARY OF MANNING'S N VALUES

River:UT_BSC2

Reach	River Sta.	n1	n2	n3
NCONFL-BGM	5100	.05	.035	.05
NCONFL-BGM	5000	.05	.035	.05
NCONFL-BGM	4900	.05	.035	.05
NCONFL-BGM	4850	.05	.035	.05
NCONFL-BGM	4750	.05	.035	.05
NCONFL-BGM	4650	.05	.035	.05
NCONFL-BGM	4600	.05	.035	.05
NCONFL-BGM	4550	.05	.035	.05
NCONFL-BGM	4500	.05	.035	.05
NCONFL-BGM	4400	.035	.035	.035
NCONFL-BGM	4300	.035	.035	.035
NCONFL-BGM	4280	.035	.035	.035
NCONFL-BGM	4250	.035	.035	.035
NCONFL-BGM	4240	.035	.035	.035
NCONFL-BGM	4200	.035	.035	.035
NCONFL-BGM	4175	.035	.035	.035
NCONFL-BGM	4150	.035	.013	.035
NCONFL-BGM	4073	Culvert		
NCONFL-BGM	4040	.035	.013	.035
NCONFL-BGM	4030	.035	.04	.035
NCONFL-BGM	4000	.035	.035	.035
NCONFL-BGM	3900	.035	.035	.035
NCONFL-BGM	3850	.035	.035	.035
NCONFL-BGM	3800	.05	.035	.05
NCONFL-BGM	3694	.05	.035	.05
NCONFL-BGM	3600	.05	.035	.05
NCONFL-BGM	3500	.05	.035	.05
NCONFL-BGM	3450	.05	.035	.05
NCONFL-BGM	3350	.05	.035	.05
NCONFL-BGM	3300	.05	.035	.05
NCONFL-BGM	3250	.05	.035	.05
NCONFL-BGM	3200	.05	.035	.05
NCONFL-BGM	3150	.05	.035	.05
NCONFL-BGM	3100	.05	.035	.05
NCONFL-BGM	3050	.035	.035	.035
NCONFL-BGM	3000	.035	.035	.035
NCONFL-BGM	2900	.05	.035	.05
NCONFL-BGM	2800	.05	.035	.05
NCONFL-BGM	2650	.05	.035	.05

Pr RAS Input Report.txt

NCONFL-BGM 2605 .05 .035 .05

SUMMARY OF REACH LENGTHS

River: UT_BSC2

Reach	River Sta.	Left	Channel	Right
NCONFL-BGM	5100	123.64	123.64	123.64
NCONFL-BGM	5000	106.14	100.12	95.6
NCONFL-BGM	4900	67.95	50.29	29.23
NCONFL-BGM	4850	100.34	100.34	100.34
NCONFL-BGM	4750	100.72	100.72	100.72
NCONFL-BGM	4650	17.95	48.25	87.43
NCONFL-BGM	4600	48.37	48.37	48.37
NCONFL-BGM	4550	60.1	60.1	60.1
NCONFL-BGM	4500	88.02	91.85	94.75
NCONFL-BGM	4400	117.95	112.69	105.12
NCONFL-BGM	4300	6.2	14.98	23.62
NCONFL-BGM	4280	19	19	19
NCONFL-BGM	4250	15.35	15.35	15.35
NCONFL-BGM	4240	46.77	46.77	46.77
NCONFL-BGM	4200	13.79	13.79	13.79
NCONFL-BGM	4175	15.93	15.93	15.93
NCONFL-BGM	4150	125.43	125.43	125.43
NCONFL-BGM	4073	Culvert		
NCONFL-BGM	4040	8.99	8.99	8.99
NCONFL-BGM	4030	39.8	30.2	21.92
NCONFL-BGM	4000	85.66	85.66	85.66
NCONFL-BGM	3900	35.1	50.3	65.88
NCONFL-BGM	3850	37.4	50.43	64.11
NCONFL-BGM	3800	105.51	105.75	101.97
NCONFL-BGM	3694	94.09	94.09	94.09
NCONFL-BGM	3600	106.69	100.23	101.74
NCONFL-BGM	3500	39.01	50.1	61.55
NCONFL-BGM	3450	73.26	100.11	126.77
NCONFL-BGM	3350	69.29	50.21	21.13
NCONFL-BGM	3300	65.29	49.89	27.72
NCONFL-BGM	3250	50.17	50.17	50.17
NCONFL-BGM	3200	50.08	50.08	50.08
NCONFL-BGM	3150	40.98	49.96	61.22
NCONFL-BGM	3100	33.13	33.13	33.13
NCONFL-BGM	3050	75.27	75.27	75.27
NCONFL-BGM	3000	92.31	92.31	92.31
NCONFL-BGM	2900	110.37	99.71	68.37

		Pr RAS Input Report.txt		
NCONFL-BGM	2800	142.81	150.39	167.75
NCONFL-BGM	2650	44.76	44.76	44.76
NCONFL-BGM	2605	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: UT_BSC2

Reach	River Sta.	Contr.	Expan.
NCONFL-BGM	5100	.1	.3
NCONFL-BGM	5000	.1	.3
NCONFL-BGM	4900	.1	.3
NCONFL-BGM	4850	.1	.3
NCONFL-BGM	4750	.1	.3
NCONFL-BGM	4650	.1	.3
NCONFL-BGM	4600	.1	.3
NCONFL-BGM	4550	.1	.3
NCONFL-BGM	4500	.1	.3
NCONFL-BGM	4400	.1	.3
NCONFL-BGM	4300	.1	.3
NCONFL-BGM	4280	.1	.3
NCONFL-BGM	4250	.1	.3
NCONFL-BGM	4240	.1	.3
NCONFL-BGM	4200	.1	.3
NCONFL-BGM	4175	.3	.5
NCONFL-BGM	4150	.3	.5
NCONFL-BGM	4073	Culvert	
NCONFL-BGM	4040	.3	.5
NCONFL-BGM	4030	.3	.5
NCONFL-BGM	4000	.1	.3
NCONFL-BGM	3900	.1	.3
NCONFL-BGM	3850	.1	.3
NCONFL-BGM	3800	.1	.3
NCONFL-BGM	3694	.1	.3
NCONFL-BGM	3600	.1	.3
NCONFL-BGM	3500	.1	.3
NCONFL-BGM	3450	.1	.3
NCONFL-BGM	3350	.1	.3
NCONFL-BGM	3300	.1	.3
NCONFL-BGM	3250	.1	.3
NCONFL-BGM	3200	.1	.3
NCONFL-BGM	3150	.1	.3
NCONFL-BGM	3100	.1	.3
NCONFL-BGM	3050	.1	.3

Pr RAS Input Report.txt

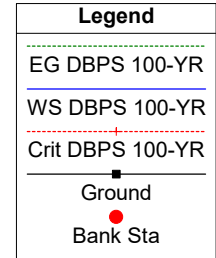
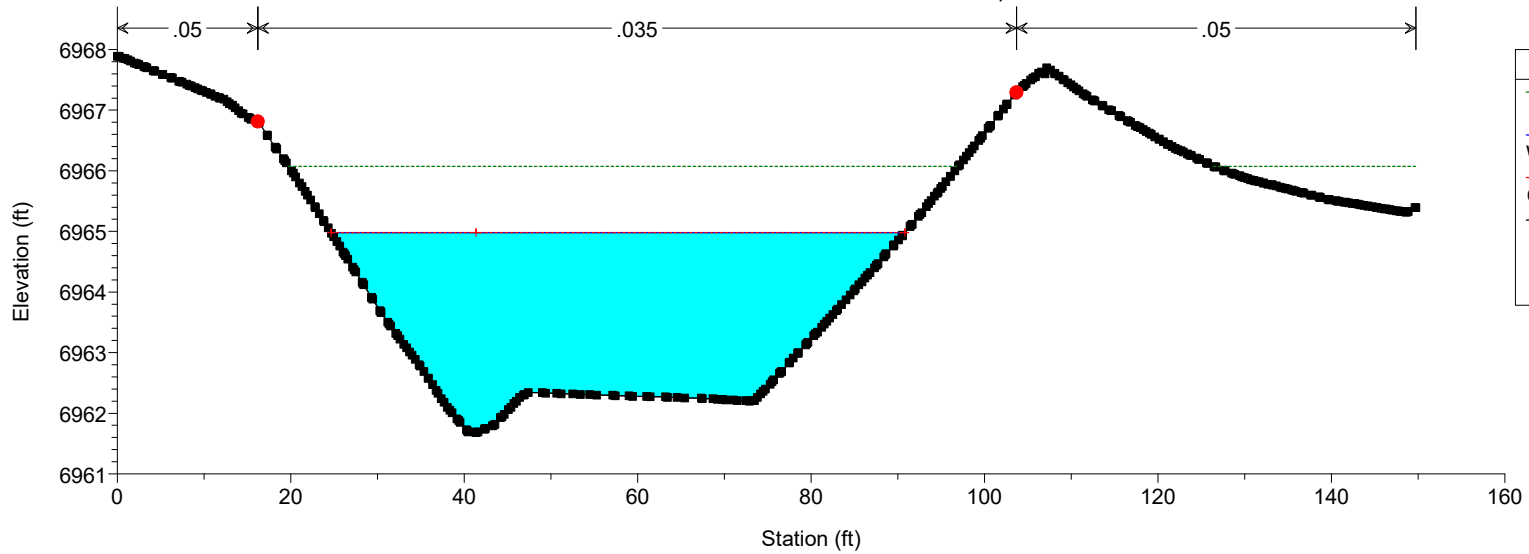
NCONFL-BGM	3000	.1	.3
NCONFL-BGM	2900	.1	.3
NCONFL-BGM	2800	.1	.3
NCONFL-BGM	2650	.1	.3
NCONFL-BGM	2605	.1	.3

Revised Condition

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Shear Chan	Shear Total	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(lb/sq ft)	(lb/sq ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NCONFL-BGM	5100	FEMA 100-YR	1450	6961.68	6965.31	2.01	2.01	6965.31	6966.5	0.013647	8.78	165.23	69.52	1
NCONFL-BGM	5000	FEMA 100-YR	1450	6959.57	6963.33	2.06	1.83	6963.33	6964.58	0.013151	8.98	161.83	71.6	0.99
NCONFL-BGM	4900	FEMA 100-YR	1450	6956.08	6960.79	1.96	1.96	6960.79	6961.95	0.013751	8.63	167.98	72.94	1
NCONFL-BGM	4850	FEMA 100-YR	1450	6954.44	6959.58	2.04	1.58	6959.58	6960.85	0.011886	9.09	164.84	76.61	0.96
NCONFL-BGM	4750	FEMA 100-YR	1450	6952.25	6957.61	1.75	1.09	6957.61	6958.68	0.009513	8.52	197.2	106.64	0.87
NCONFL-BGM	4650	FEMA 100-YR	1450	6950.54	6955.7	2.04	1.21	6955.7	6956.99	0.009615	9.4	181.5	89.06	0.89
NCONFL-BGM	4600	FEMA 100-YR	1450	6949.23	6954.15	2.1	1.54	6954.15	6955.5	0.011109	9.36	162.85	72.45	0.94
NCONFL-BGM	4550	FEMA 100-YR	1450	6947.92	6954.09	0.94	0.6		6954.69	0.003918	6.5	263.6	106.84	0.58
NCONFL-BGM	4500	FEMA 100-YR	1450	6947.9	6952.81	2.23	1.89	6952.81	6954.22	0.012699	9.54	153.3	63.23	0.99
NCONFL-BGM	4400	FEMA 100-YR	1450	6945	6949.06	2.11	1.96	6948.98	6950.42	0.011344	9.35	156.84	67.53	0.95
NCONFL-BGM	4300	FEMA 100-YR	1450	6944.71	6948.34	1.4	1.33	6947.85	6949.24	0.007601	7.63	191.51	215.39	0.78
NCONFL-BGM	4280	FEMA 100-YR	1450	6944.64	6947.8	2.08	2.08	6947.8	6949.06	0.013478	9.01	161	203.94	1
NCONFL-BGM	4250	FEMA 100-YR	1450	6940.08	6943.2	2.11	1.9	6943.2	6944.52	0.012253	9.25	159.4	100.87	0.98
NCONFL-BGM	4240	FEMA 100-YR	1450	6937.01	6943.72	0.18	0.09		6943.85	0.000547	3.03	580.63	209.57	0.23
NCONFL-BGM	4200	FEMA 100-YR	1450	6936.87	6943.62	0.24	0.24		6943.81	0.00068	3.55	408.05	208.21	0.26
NCONFL-BGM	4175	FEMA 100-YR	1450	6936.83	6943.42	0.44	0.44		6943.78	0.001083	4.85	299.02	186.78	0.34
NCONFL-BGM	4150	FEMA 100-YR	1450	6936.78	6943.35	0.07	0.05	6940.09	6943.76	0.000168	5.17	285.54	154.16	0.36
NCONFL-BGM	4073		Culvert											
NCONFL-BGM	4040	FEMA 100-YR	1450	6936.4	6940.05	0.29	0.27	6939.74	6941.47	0.001263	9.57	153.28	42.55	0.89
NCONFL-BGM	4030	FEMA 100-YR	1450	6936.38	6940.36	1.44	1.44	6939.5	6941.1	0.006694	6.94	209.04	68.93	0.66
NCONFL-BGM	4000	FEMA 100-YR	1450	6936.28	6939.58	1.86	1.86	6939.45	6940.73	0.011507	8.58	168.98	79.52	0.93
NCONFL-BGM	3900	FEMA 100-YR	1450	6936.02	6939.36	0.85	0.73		6939.87	0.005632	5.72	258.04	122.62	0.65
NCONFL-BGM	3850	FEMA 100-YR	1450	6935.31	6938.84	1.15	1.15		6939.51	0.008202	6.58	220.49	97.4	0.77
NCONFL-BGM	3800	FEMA 100-YR	1450	6934.35	6937.95	1.76	1.76	6937.95	6938.94	0.014759	7.95	182.42	94.05	1.01
NCONFL-BGM	3694	FEMA 100-YR	1482	6931.81	6935.53	1.28	1.28	6935.35	6936.24	0.010872	6.76	219.11	115.41	0.87
NCONFL-BGM	3600	FEMA 100-YR	1482	6930.58	6934.13	1.66	1.66	6934.13	6935.02	0.015245	7.59	195.35	111.22	1.01
NCONFL-BGM	3500	FEMA 100-YR	1482	6928.8	6933.06	0.72	0.72		6933.51	0.004225	5.39	274.81	99.75	0.57
NCONFL-BGM	3450	FEMA 100-YR	1482	6927.99	6931.95	1.95	1.95	6931.95	6933.09	0.01378	8.59	172.56	75.61	1
NCONFL-BGM	3350	FEMA 100-YR	1482	6926.42	6930.26	1.7	1.7	6930.26	6931.2	0.014757	7.76	190.87	102.92	1.01
NCONFL-BGM	3300	FEMA 100-YR	1482	6924.78	6929.52	1.37	1.21	6929.14	6930.36	0.00868	7.34	202.85	89.96	0.81
NCONFL-BGM	3250	FEMA 100-YR	1482	6923.75	6928.66	1.9	1.67	6928.57	6929.81	0.012179	8.63	172.72	77.97	0.96
NCONFL-BGM	3200	FEMA 100-YR	1482	6923.28	6927.88	2.09	1.86	6927.88	6929.18	0.012816	9.12	164	69.79	0.99
NCONFL-BGM	3150	FEMA 100-YR	1482	6923.15	6926.8	1.97	1.41	6926.8	6928.02	0.011701	8.89	173.92	89.73	0.95
NCONFL-BGM	3100	FEMA 100-YR	1482	6921.99	6925.66	1.92	1.65	6925.61	6926.83	0.012306	8.68	172.24	79.63	0.96
NCONFL-BGM	3050	FEMA 100-YR	1482	6921.38	6925.94	0.75	0.55		6926.44	0.003459	5.7	271.11	106.11	0.54
NCONFL-BGM	3000	FEMA 100-YR	1482	6920.36	6925.04	1.59	0.84	6925.04	6926	0.008551	8.14	210.53	210.44	0.83
NCONFL-BGM	2900	FEMA 100-YR	1482	6919.32	6923.09	1.82	1.11	6923.09	6924.14	0.010417	8.61	210.14	146.5	0.9
NCONFL-BGM	2800	FEMA 100-YR	1482	6917.18	6921.88	1.68	0.77	6921.88	6922.91	0.007634	8.58	227.48	156.9	0.8
NCONFL-BGM	2650	FEMA 100-YR	1482	6913.71	6919.22	1.21	0.4	6919.22	6919.89	0.005223	7.34	334.61	270.62	0.67
NCONFL-BGM	2605	FEMA 100-YR	1482	6914	6918.85	0.72	0.63	6918.58	6919.21	0.008288	4.82	321.29	262.7	0.72

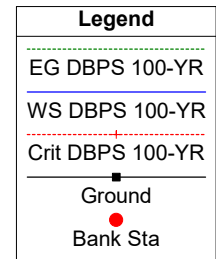
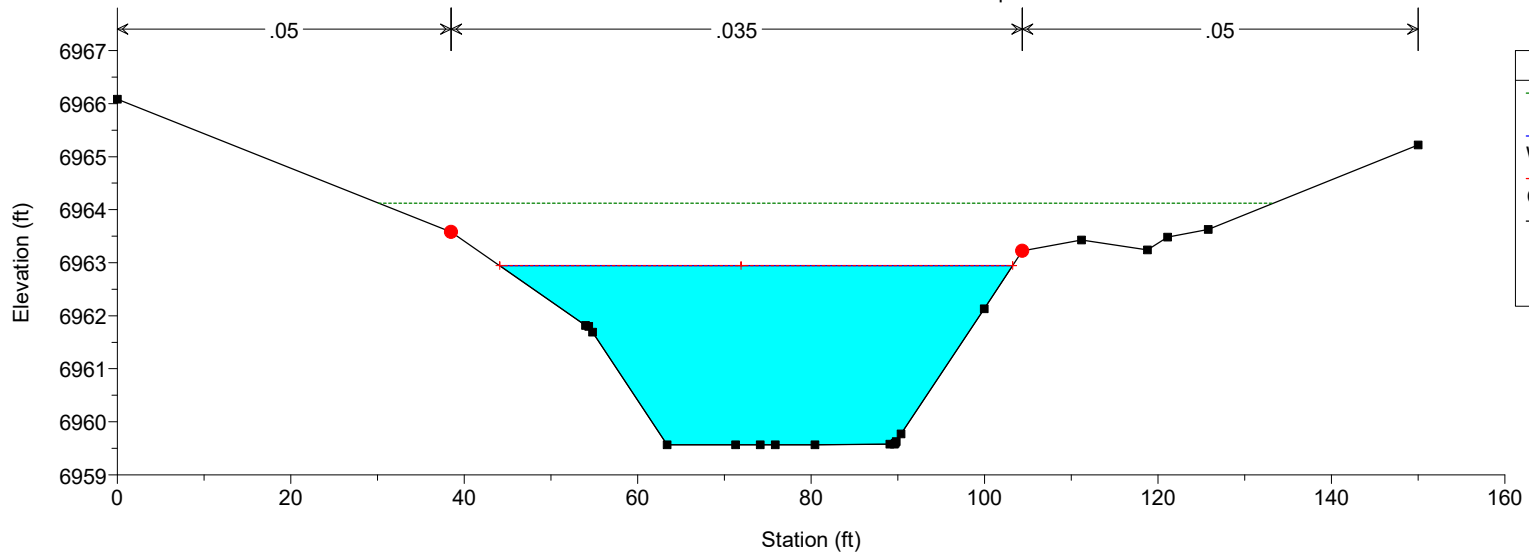
HEC-RAS Model Plan: RC 2/4/2020

Source: Revised Condition Topo



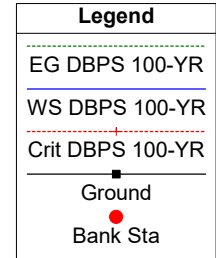
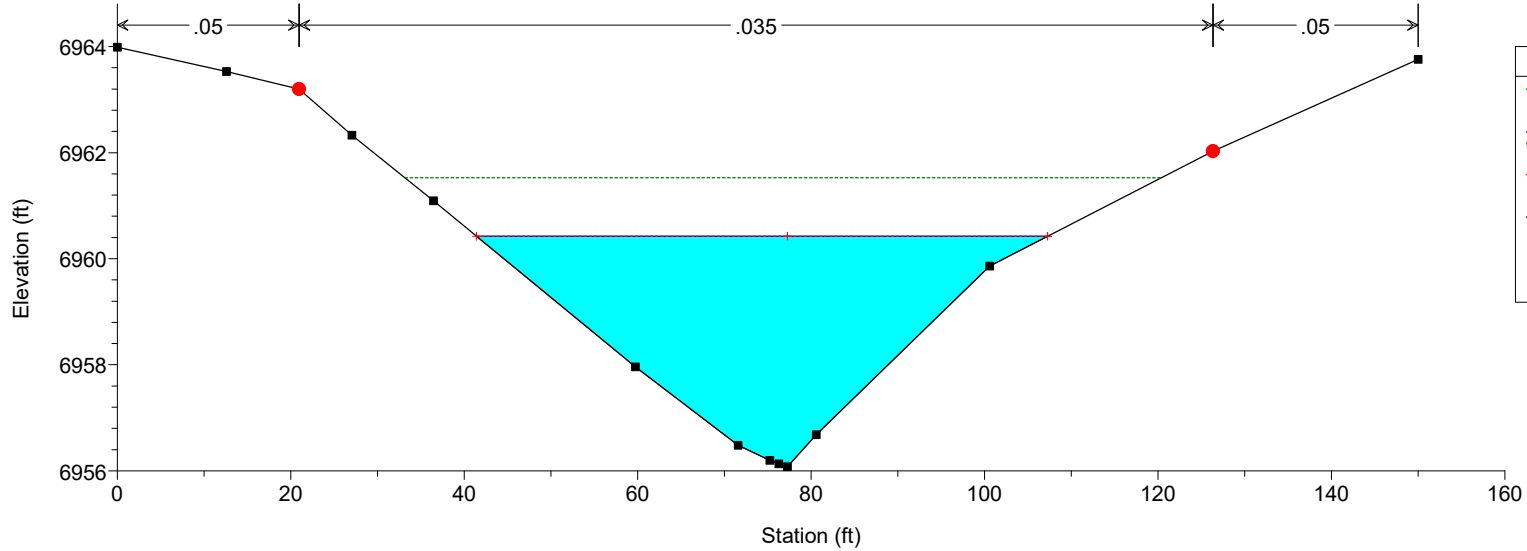
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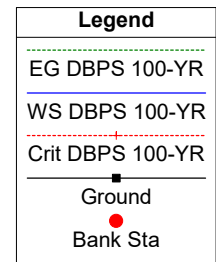
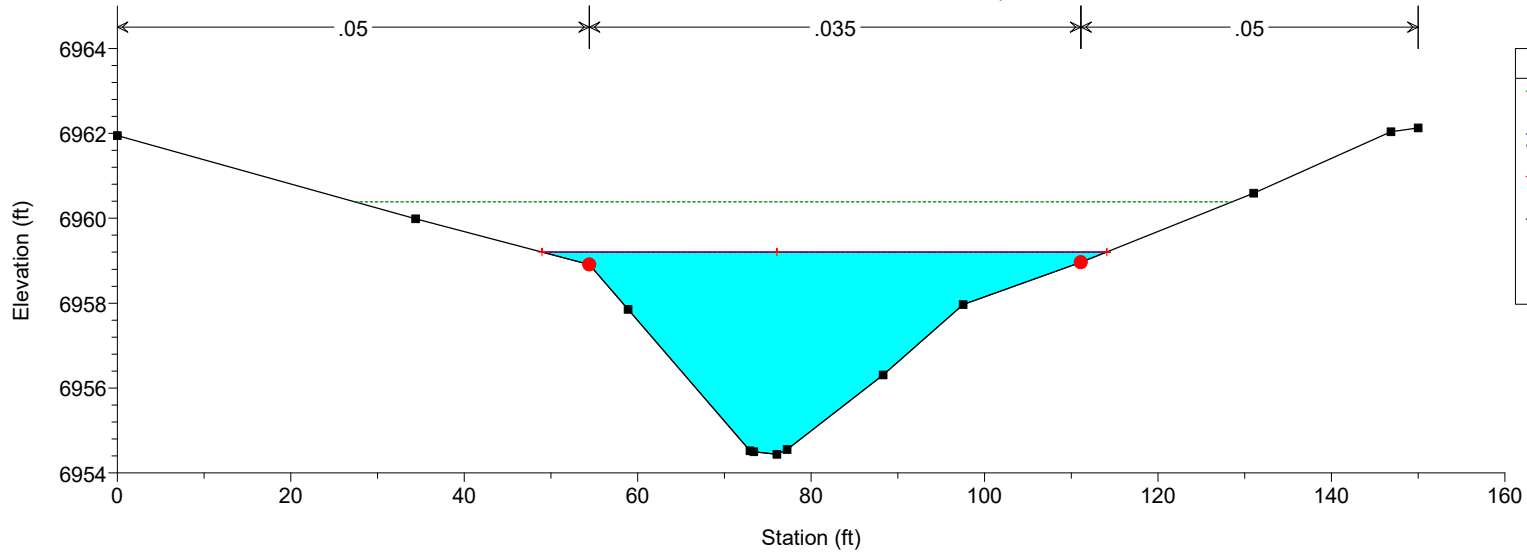
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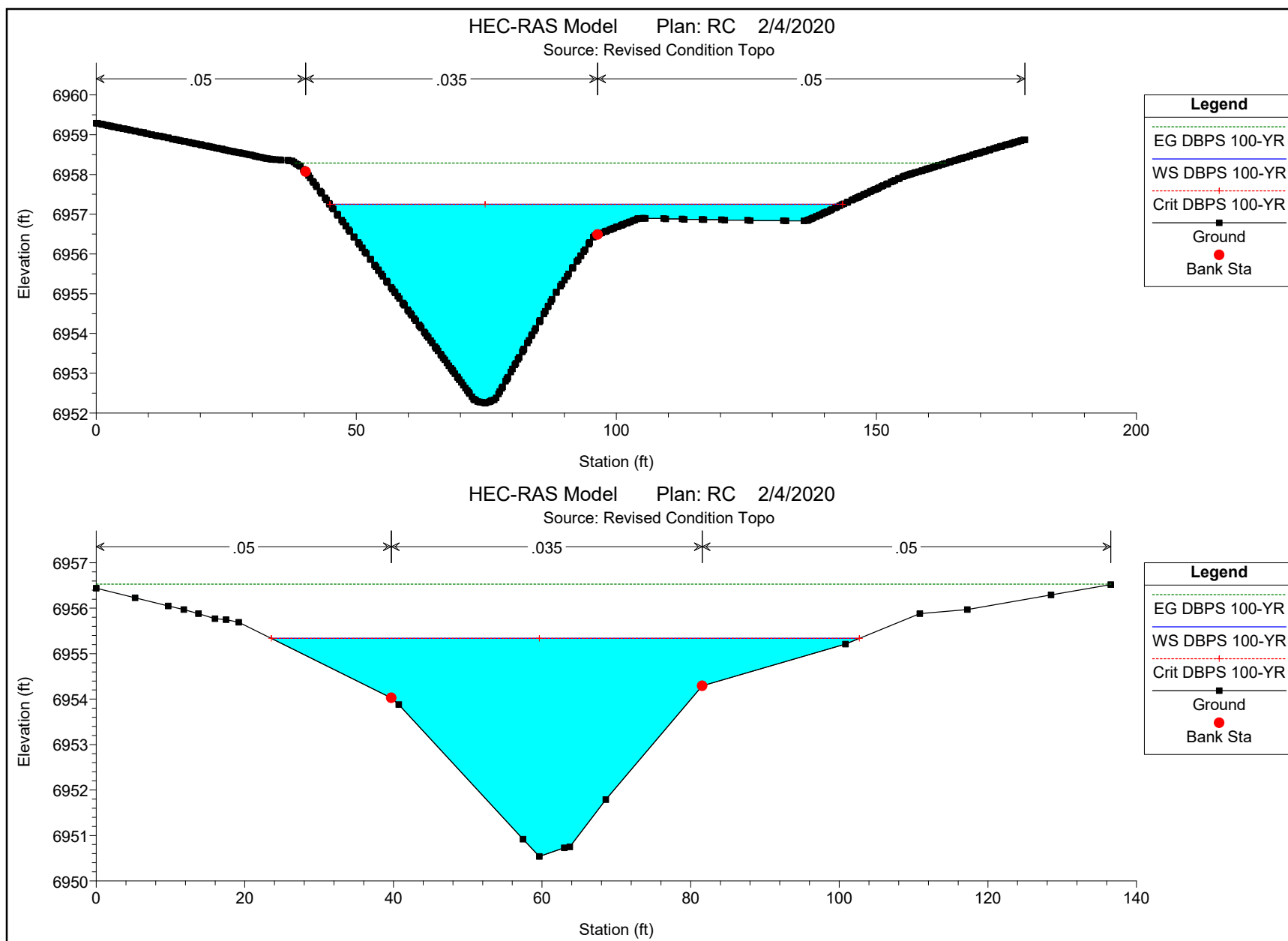
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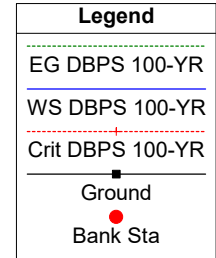
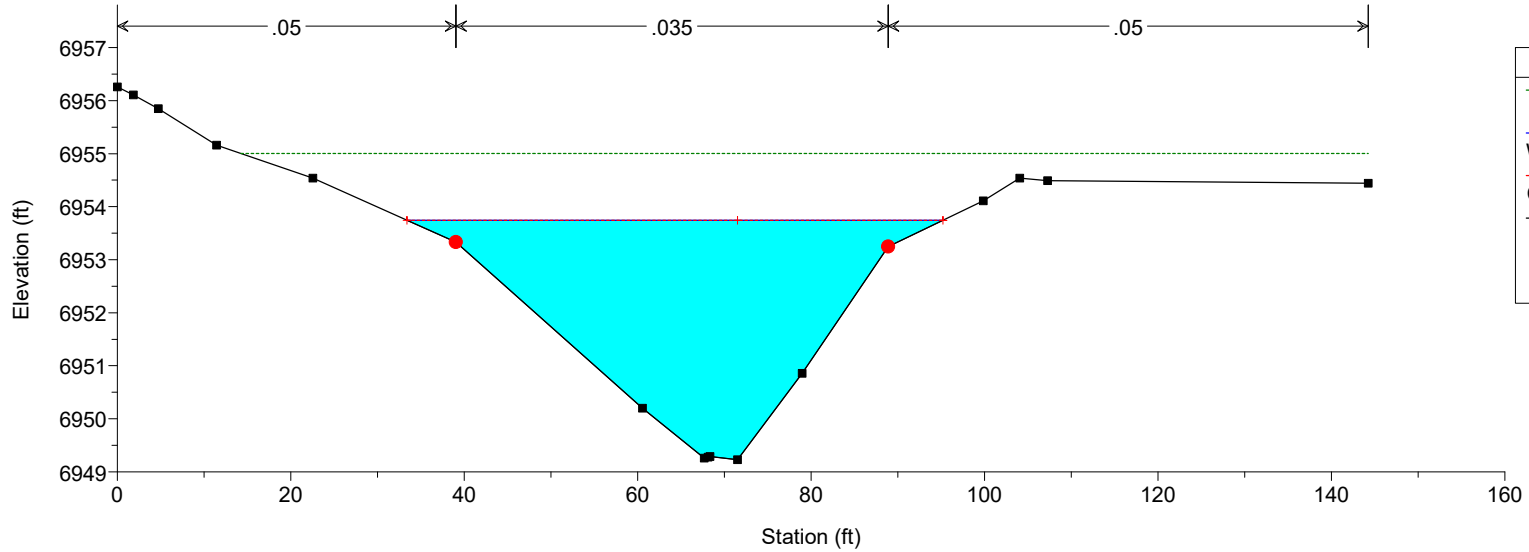
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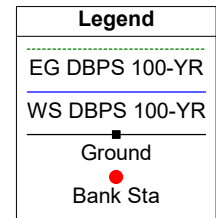
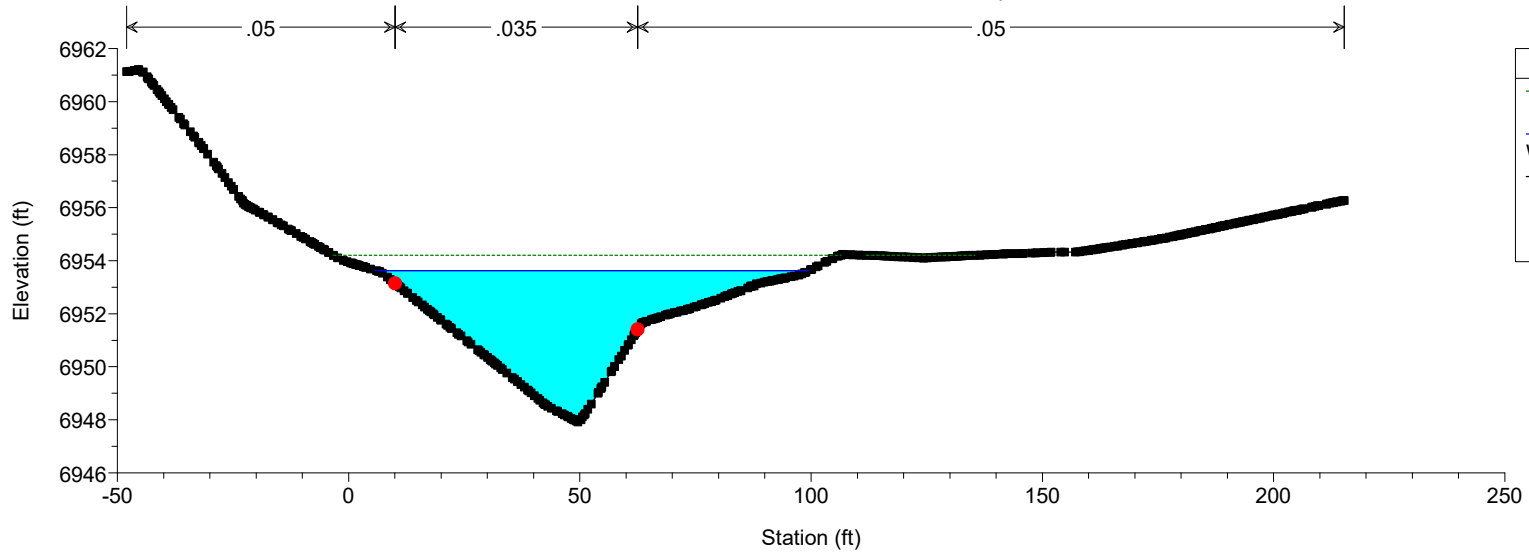
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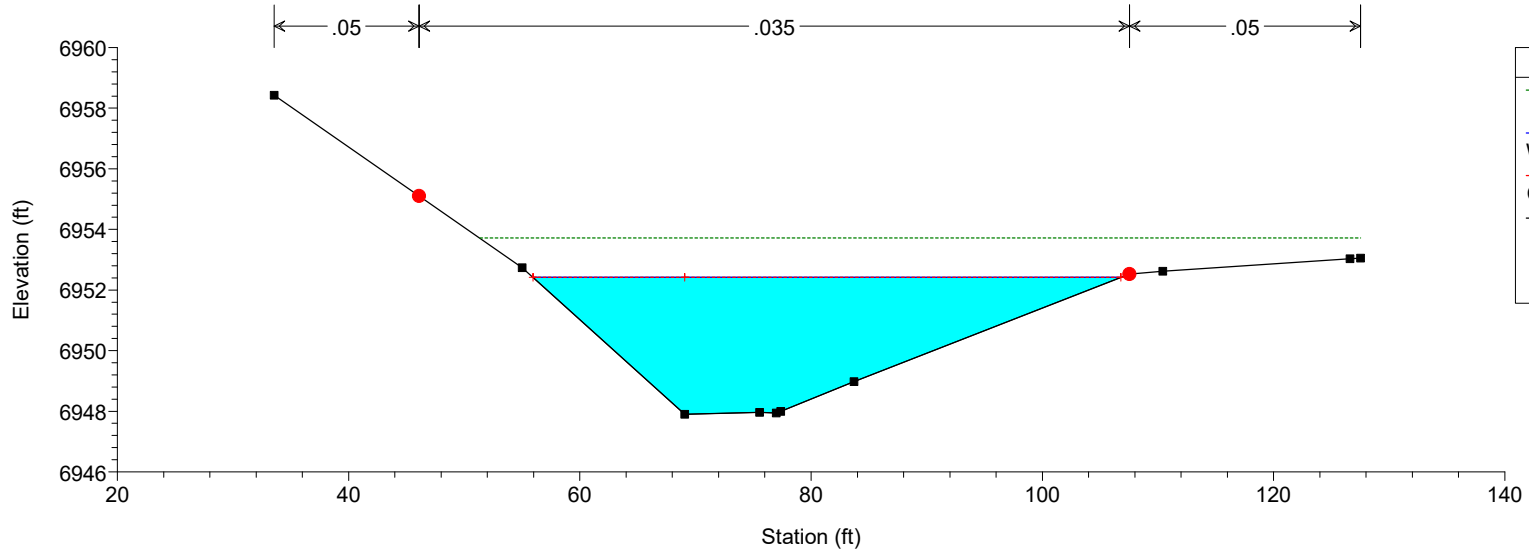
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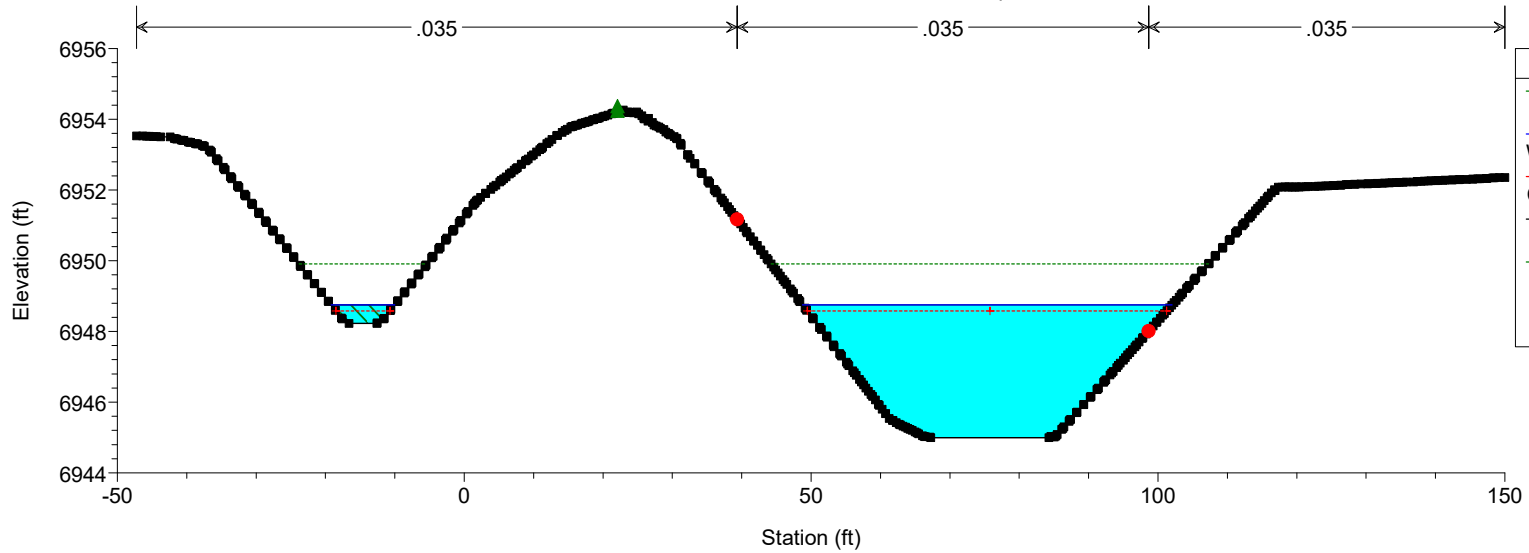
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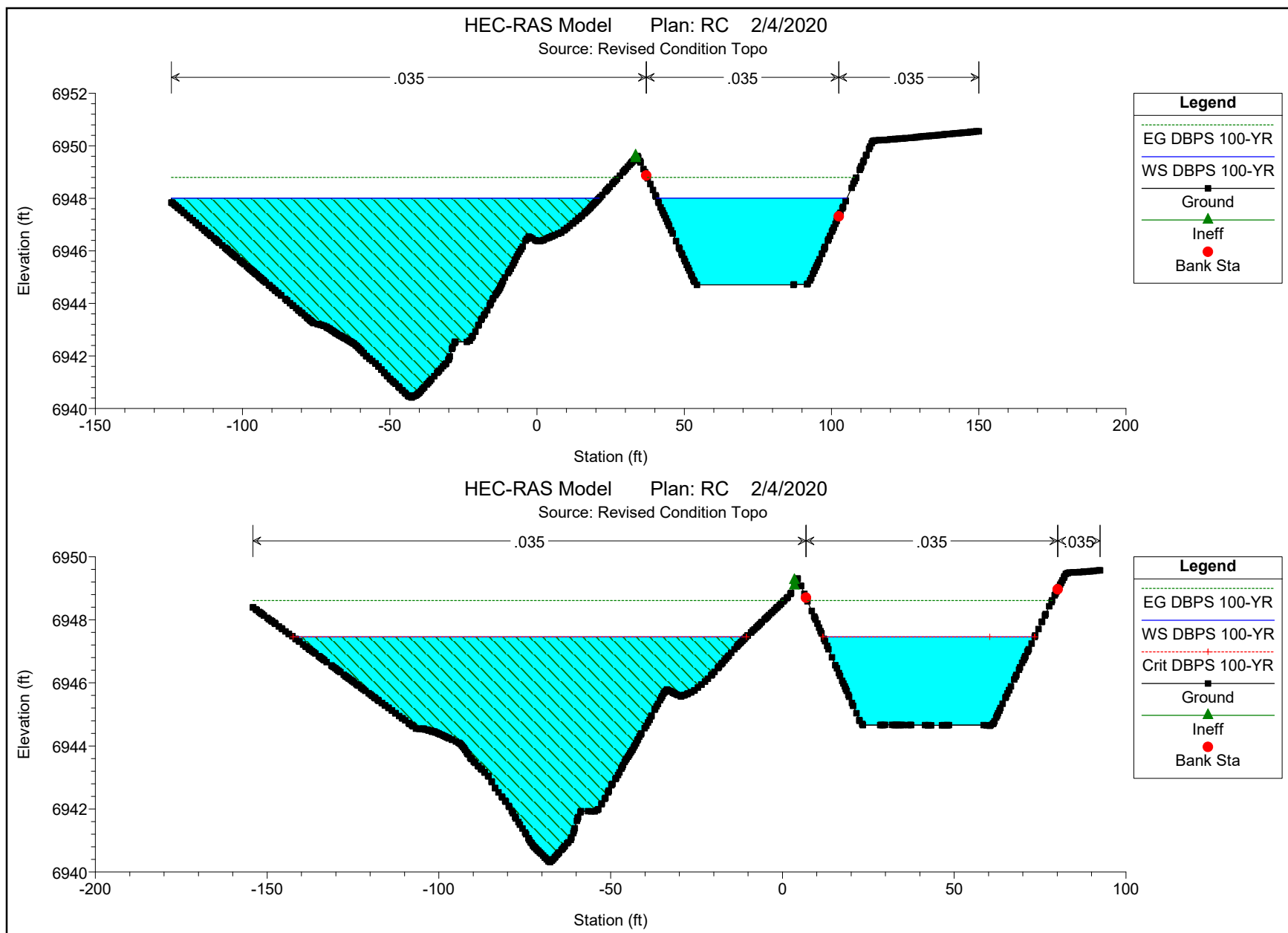
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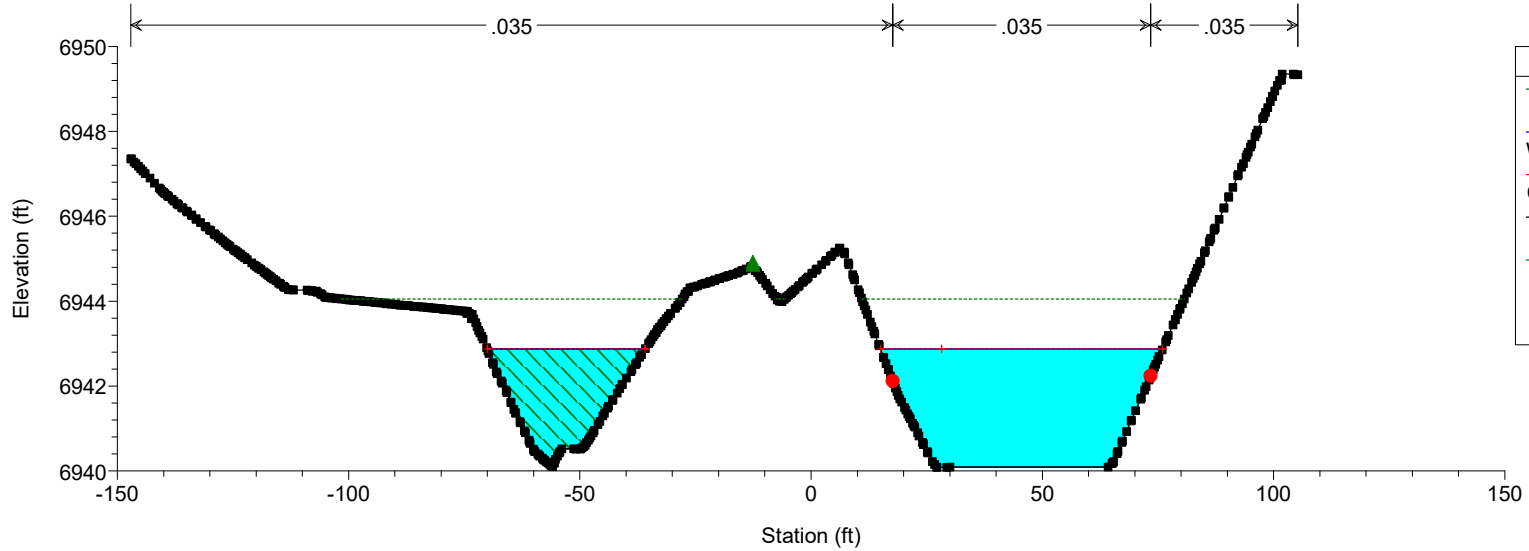
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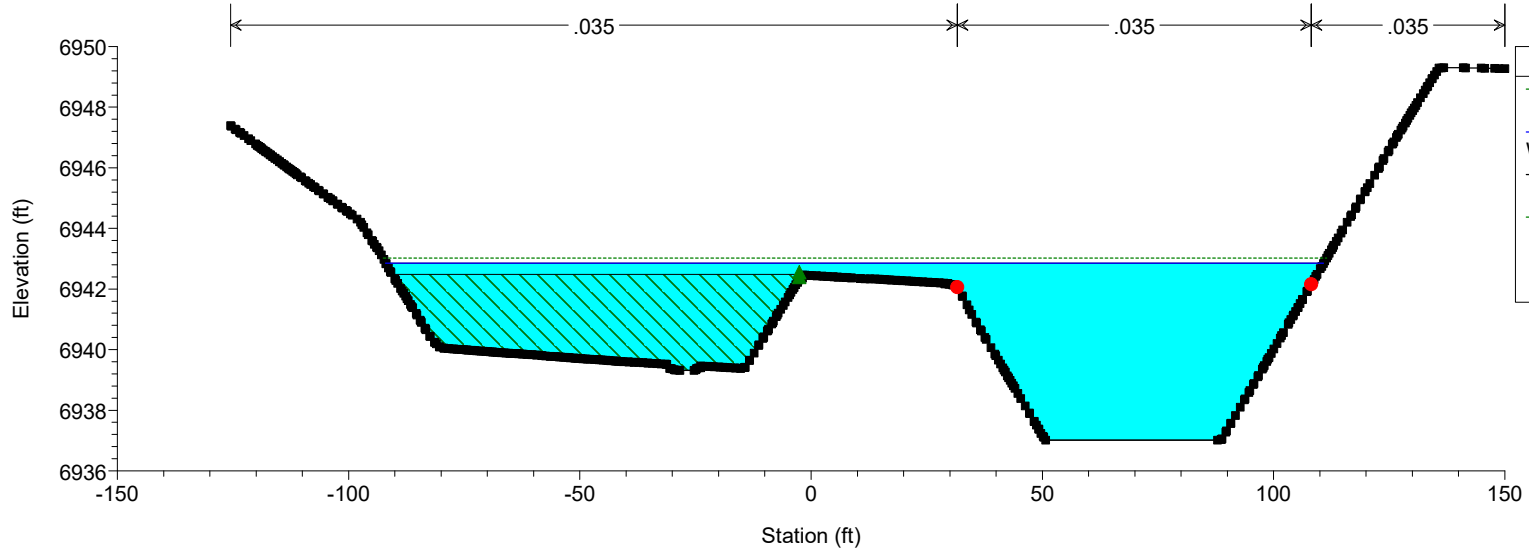
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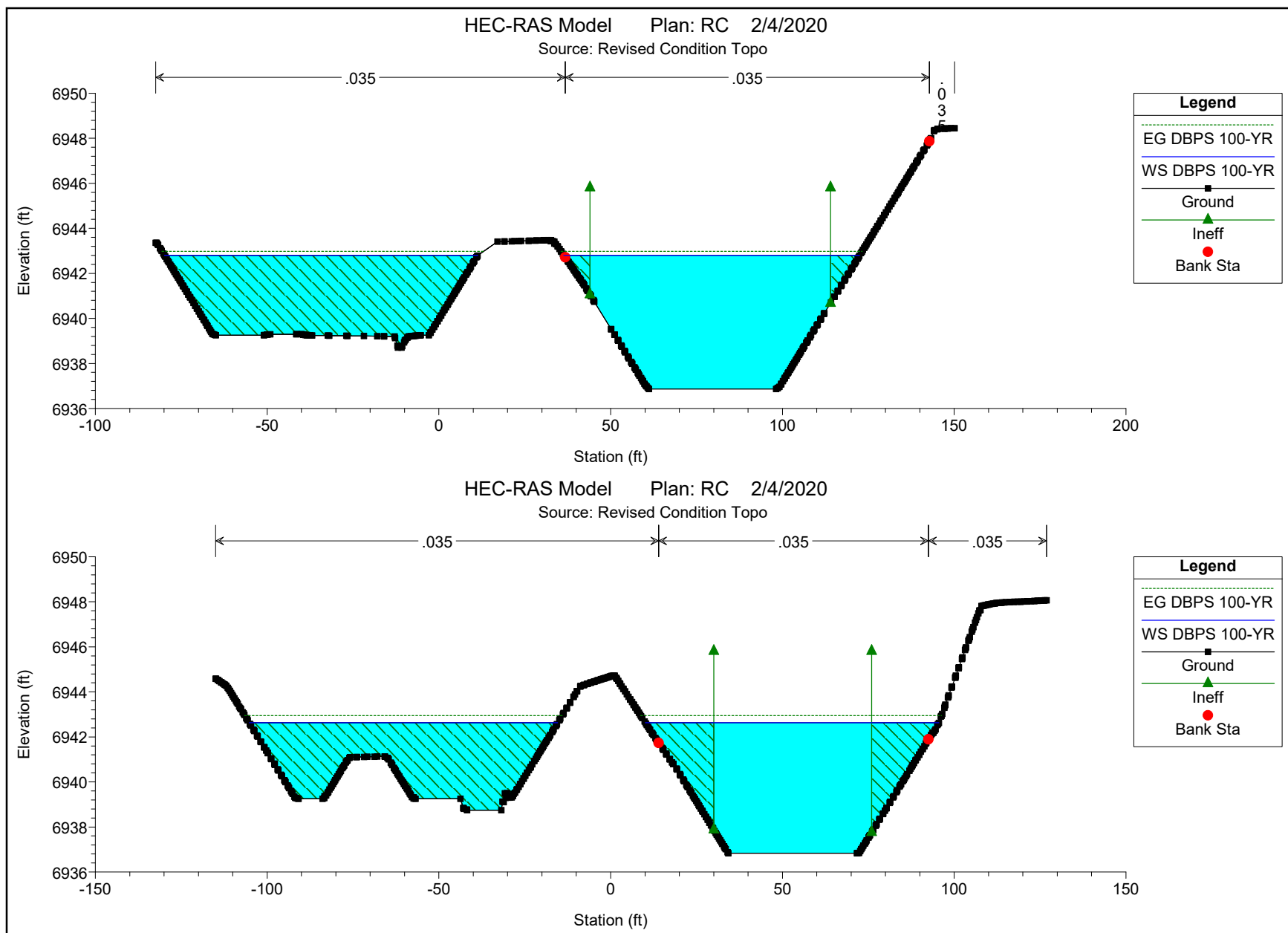
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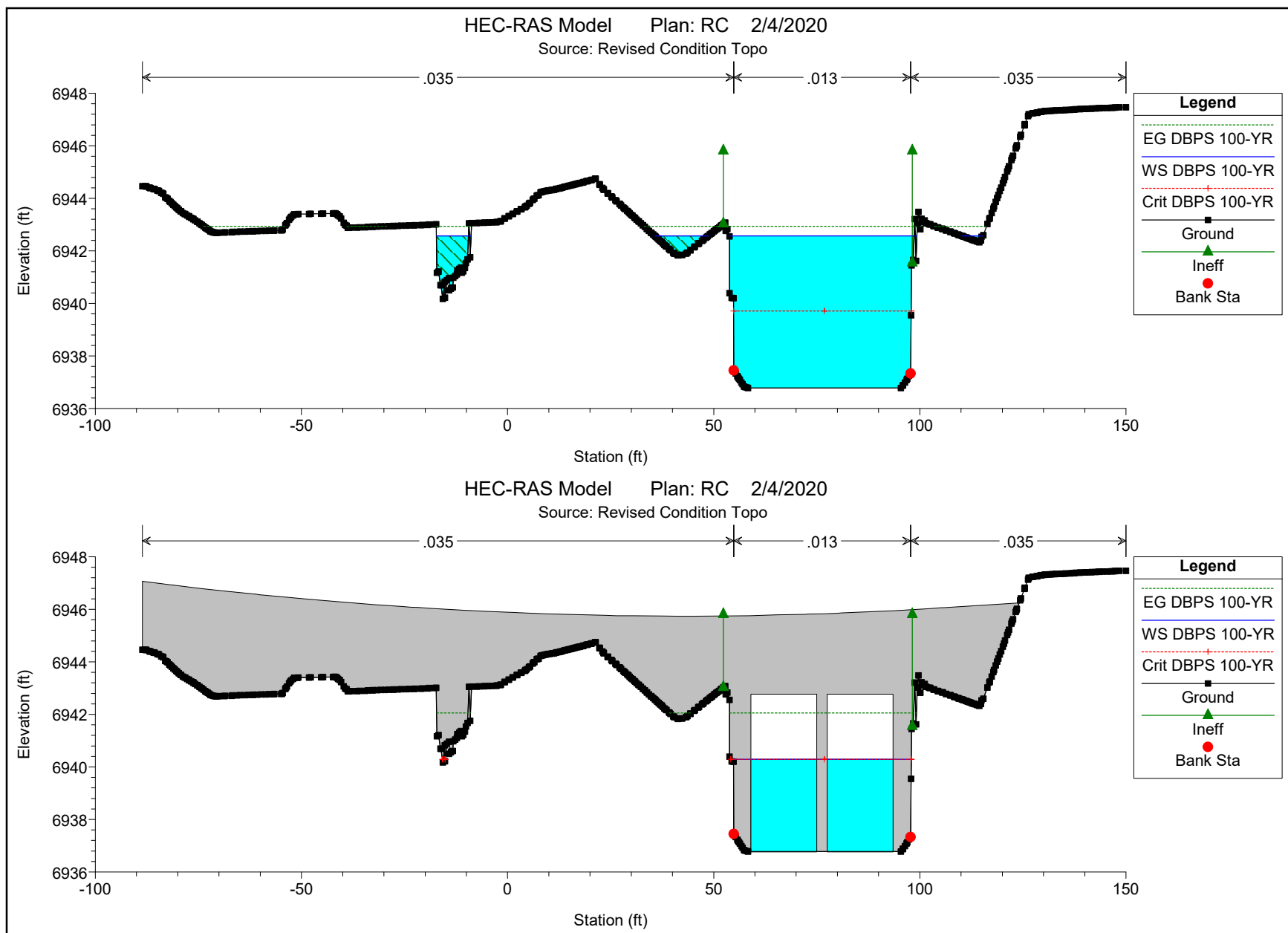


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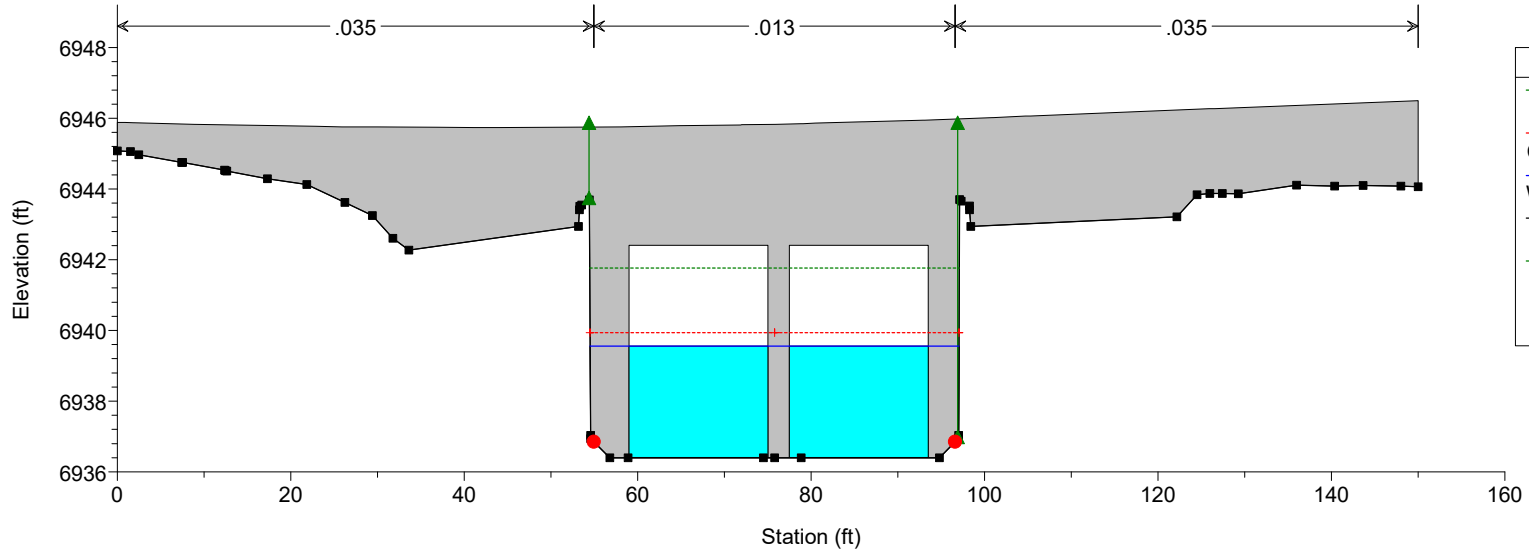






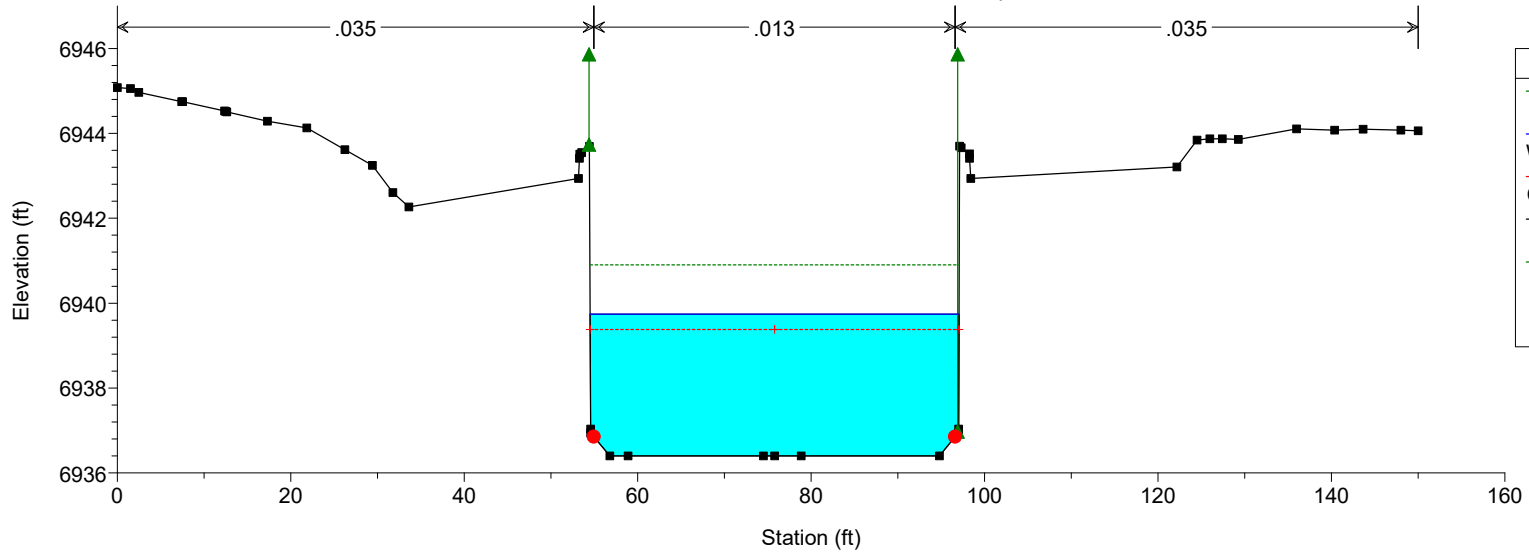
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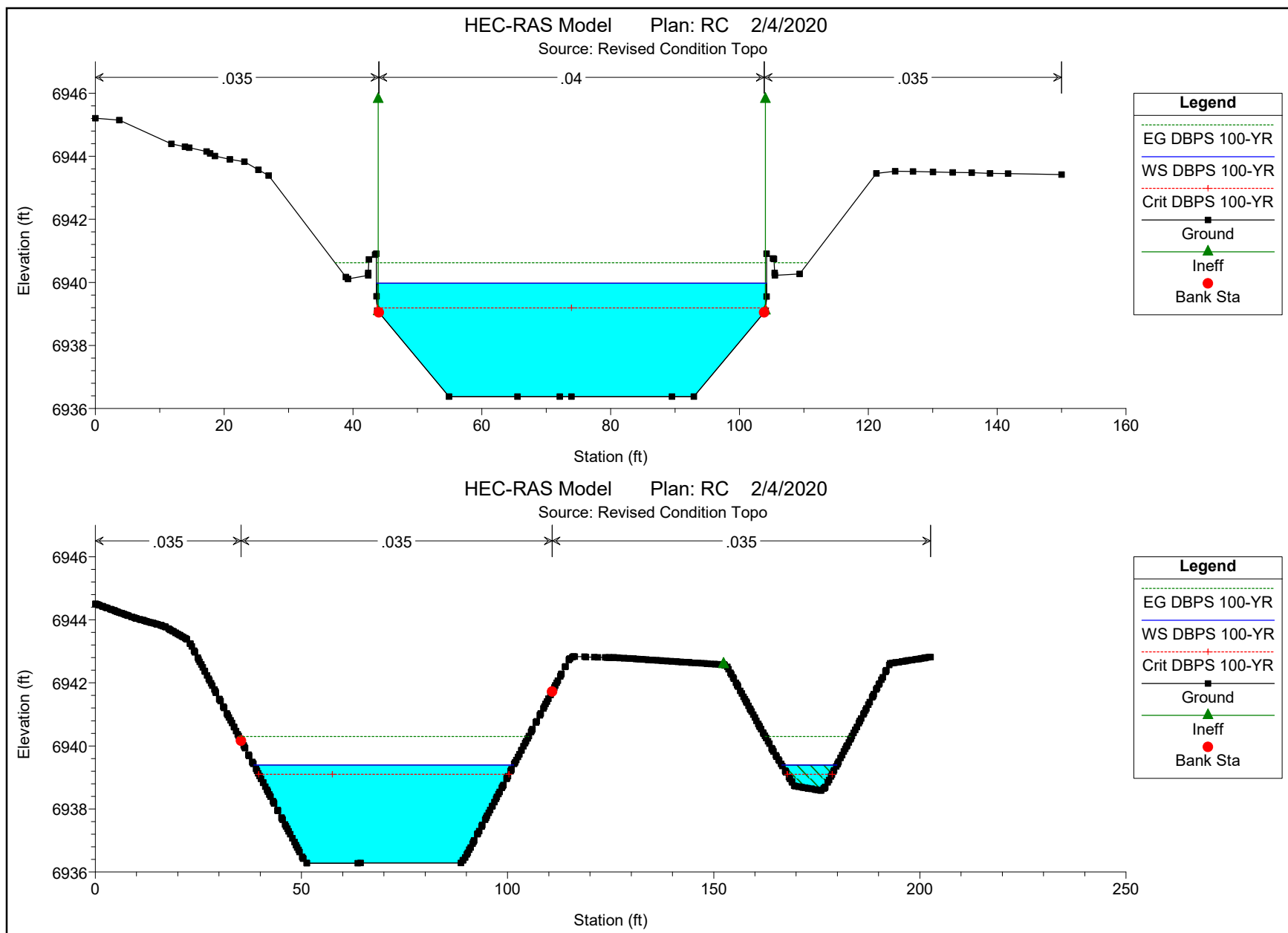
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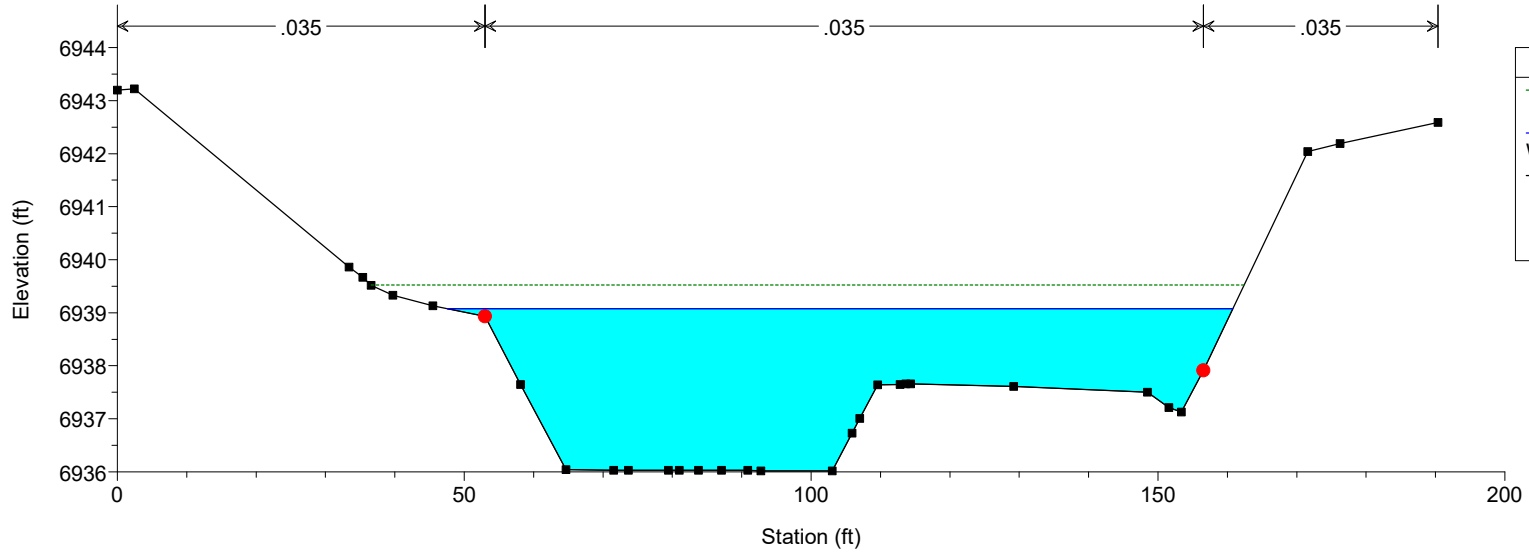
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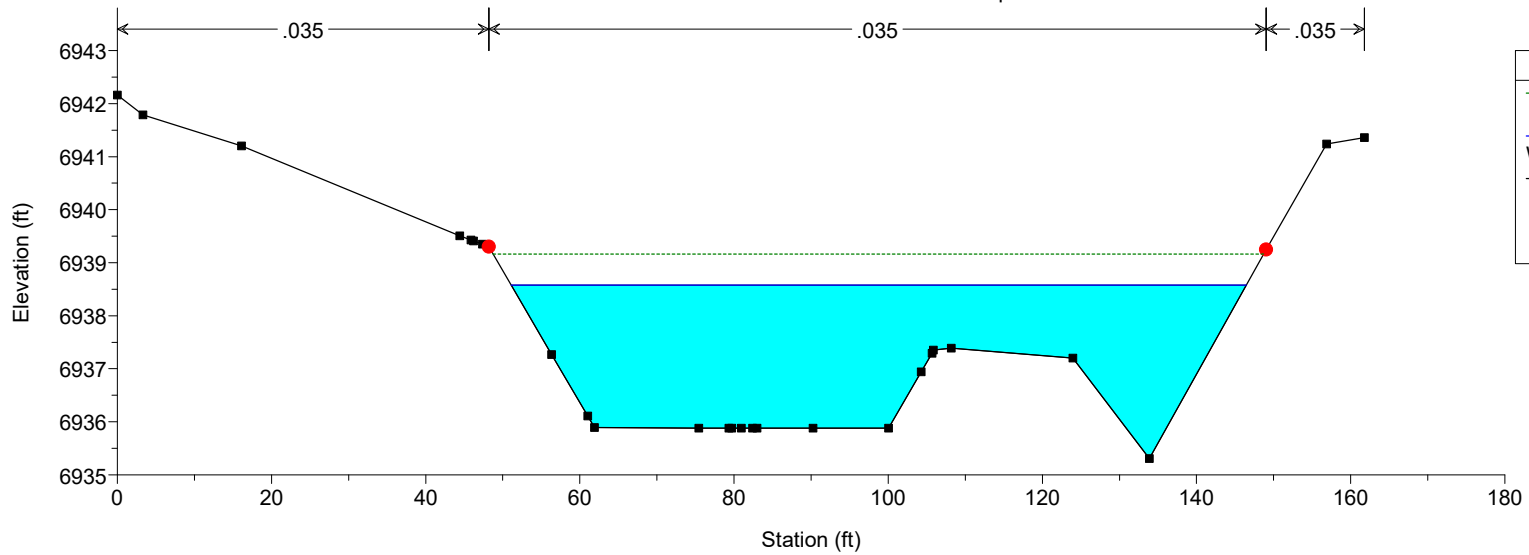
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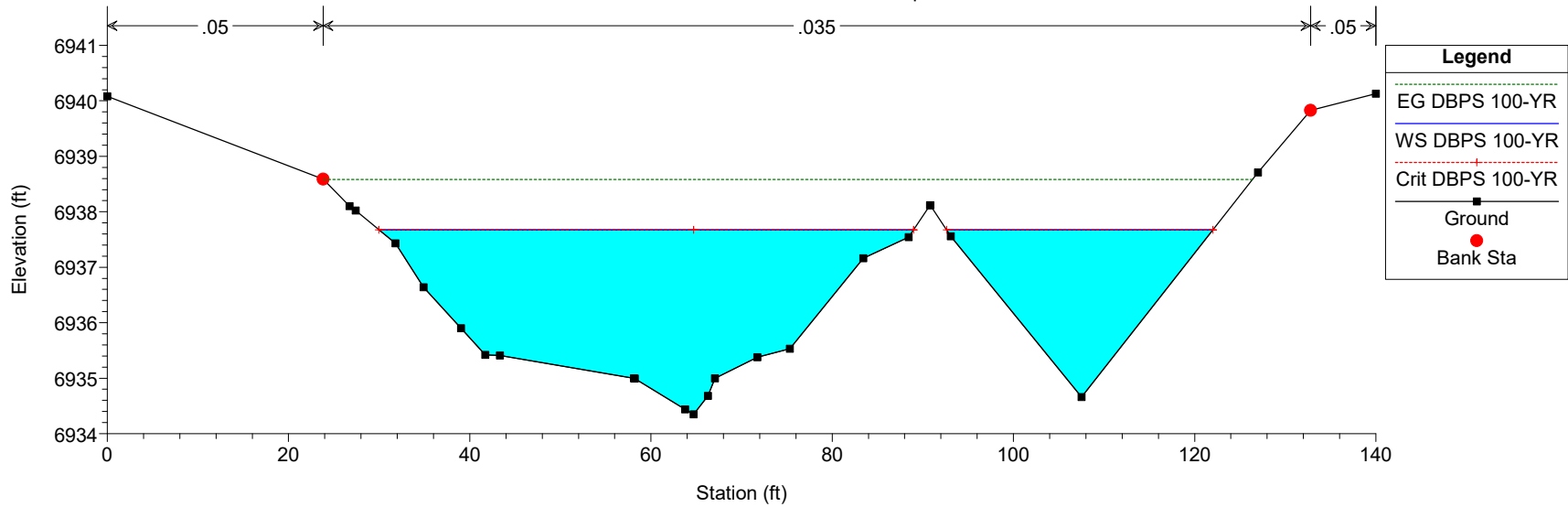
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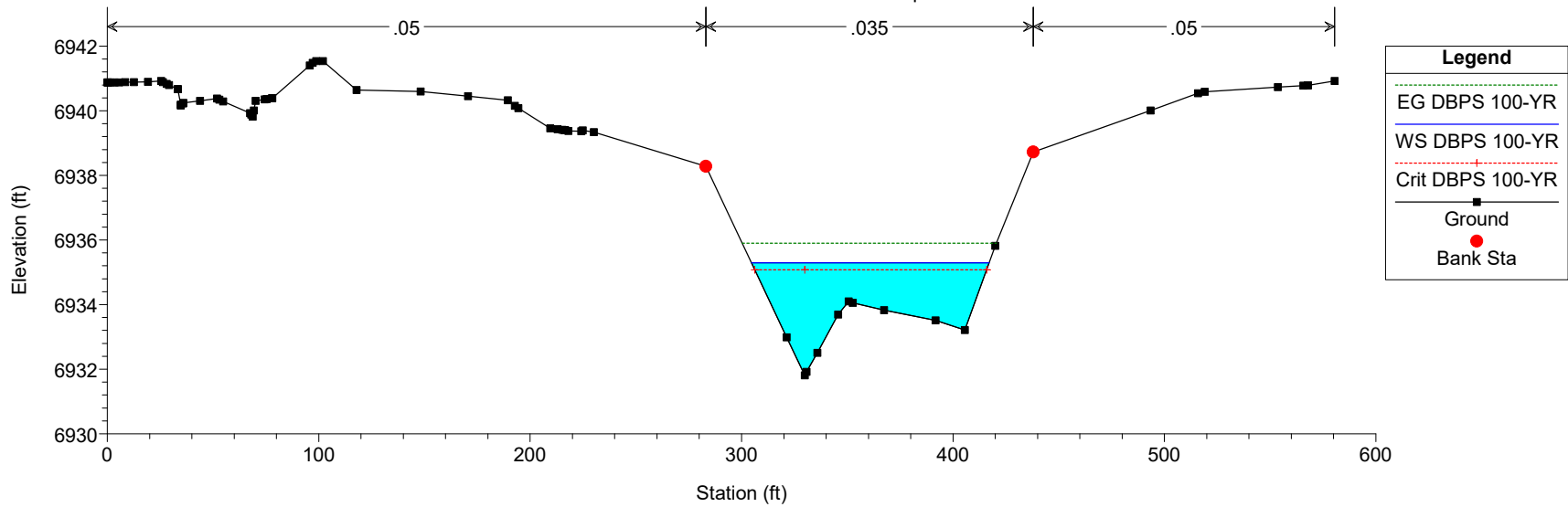
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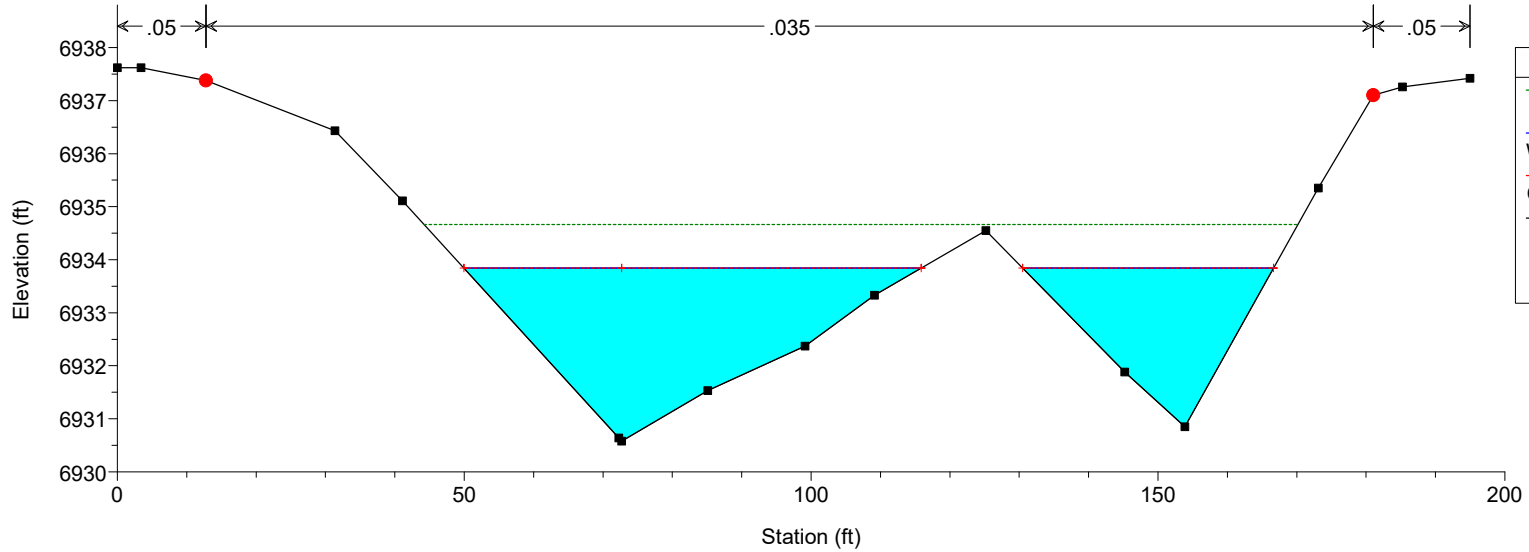
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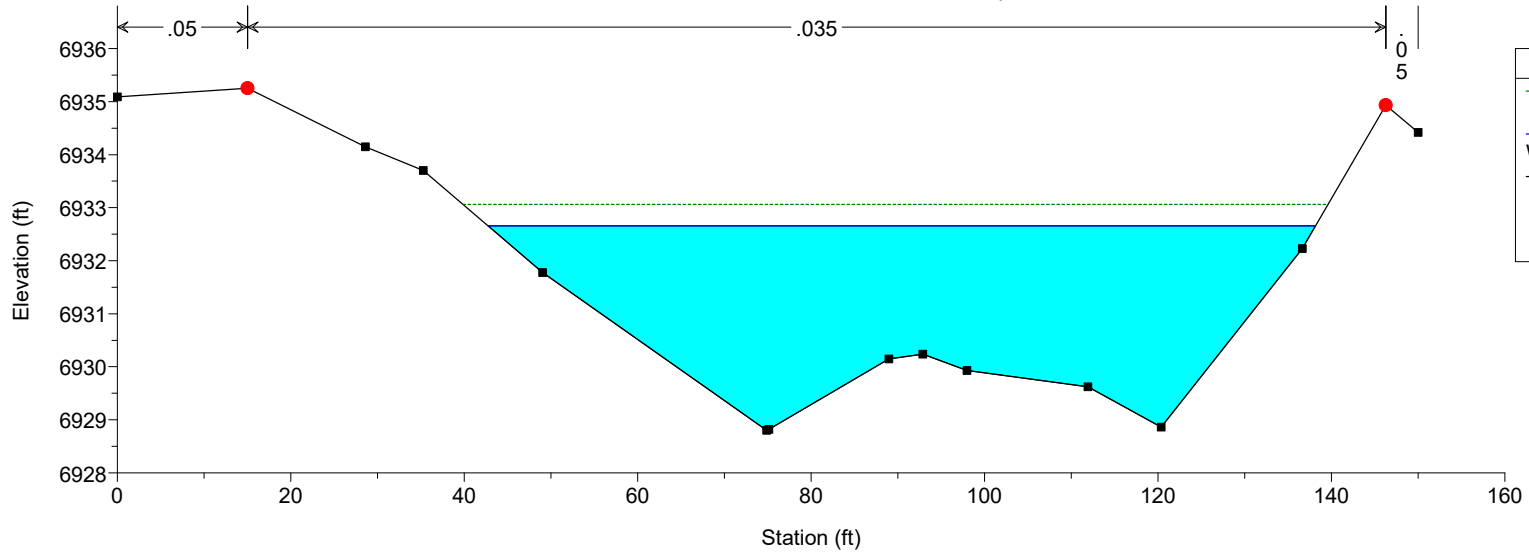
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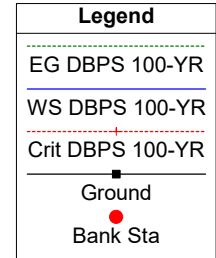
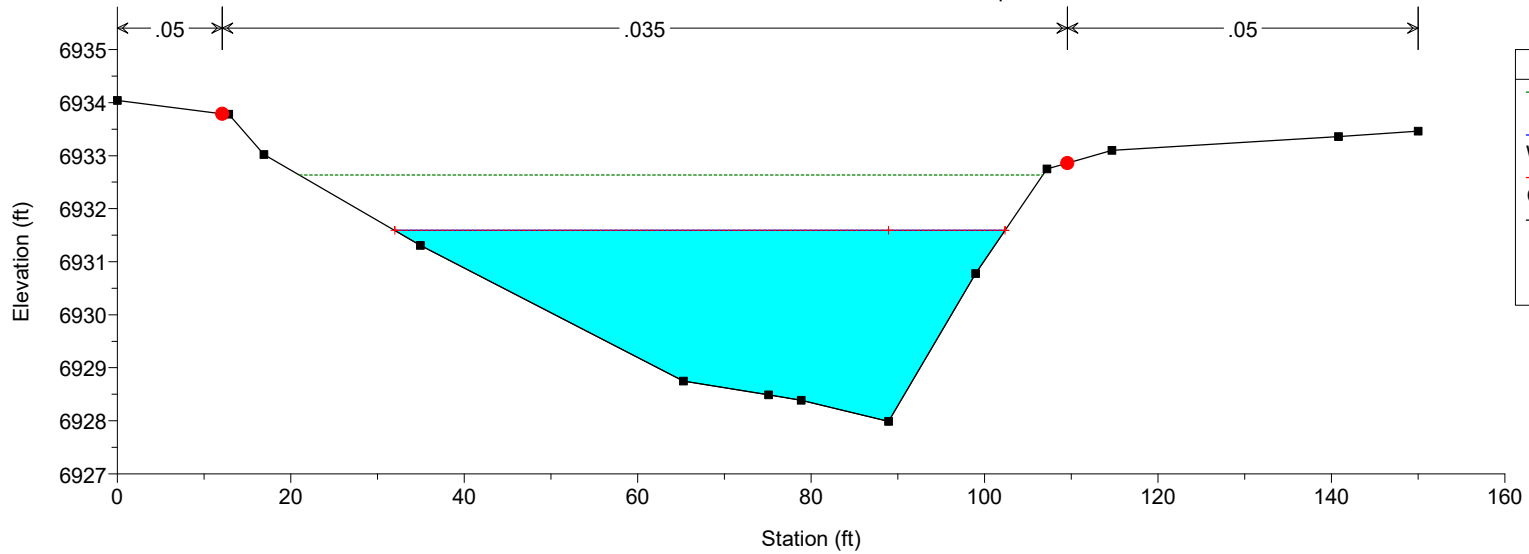
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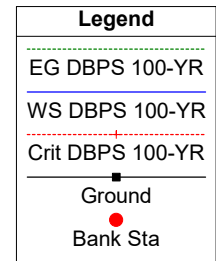
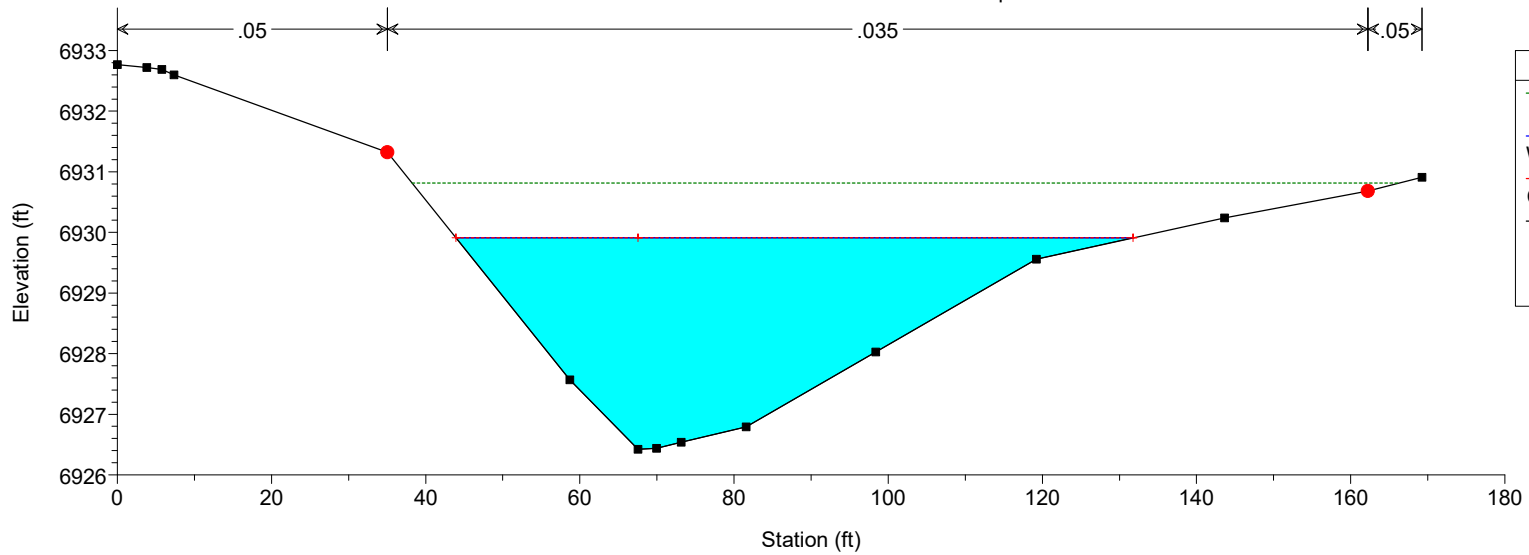
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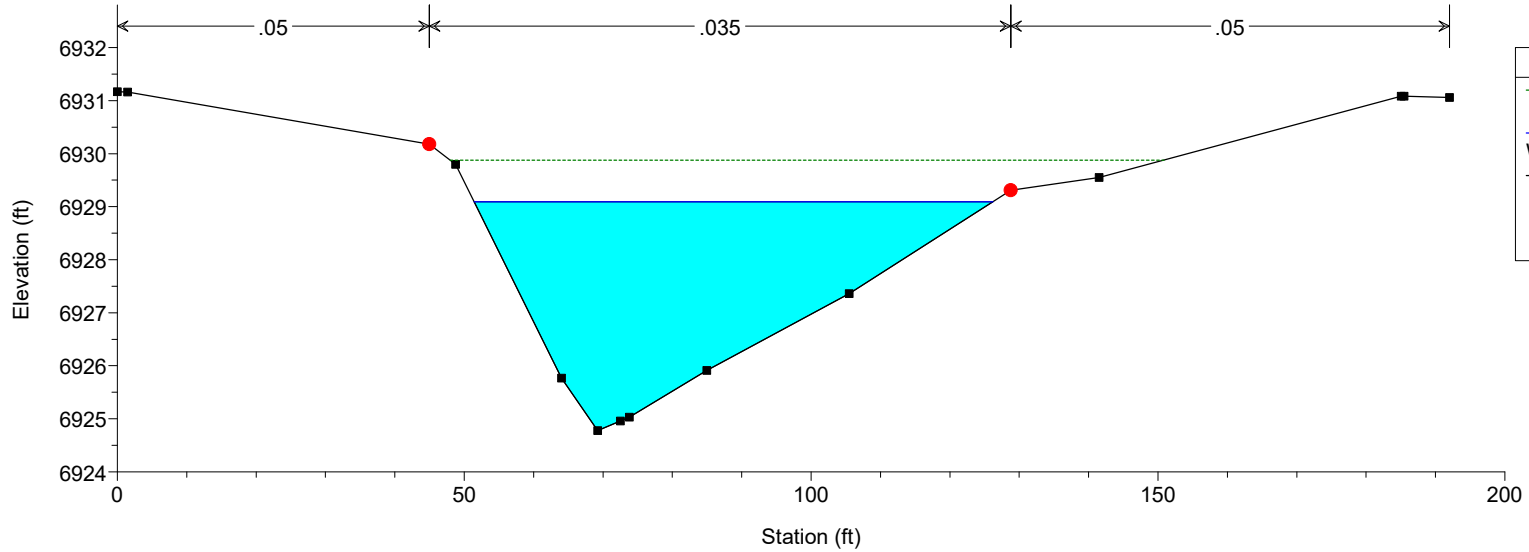
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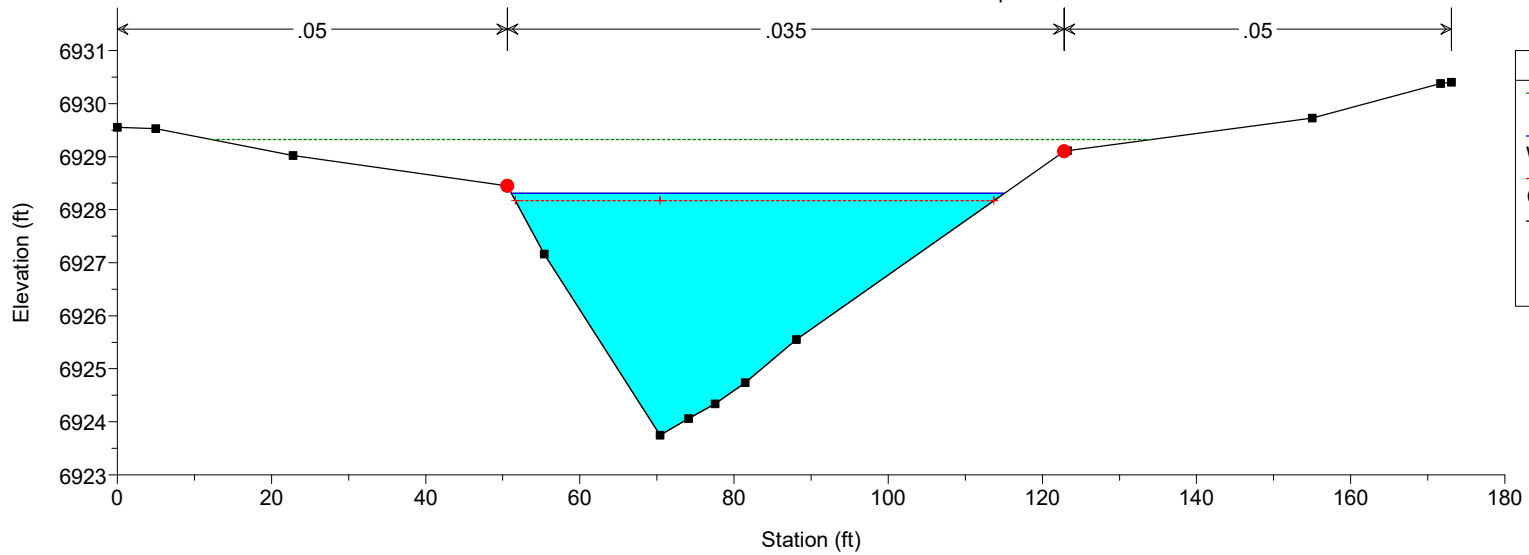
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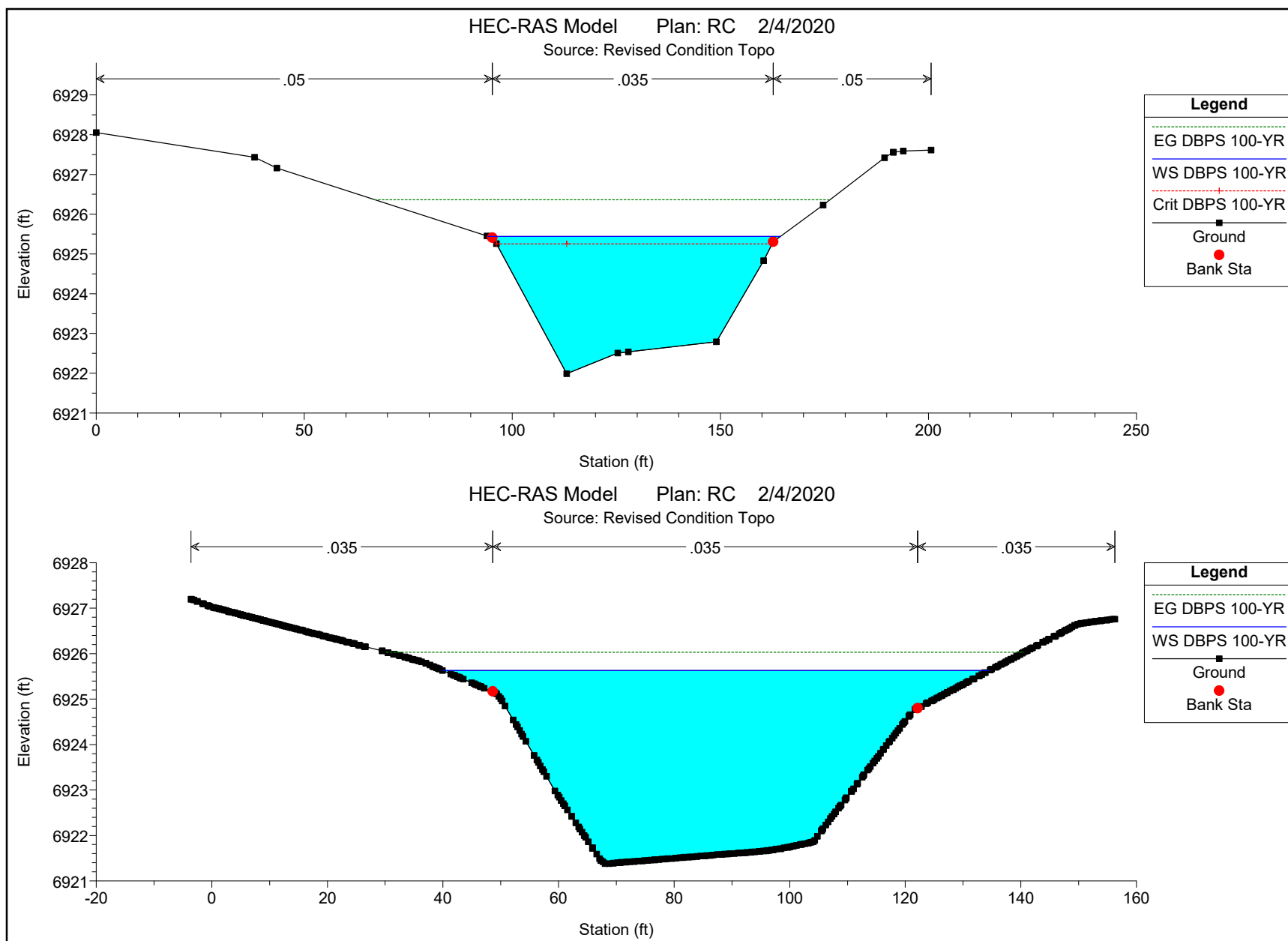
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WS DBPS 100-YR	
Ground	
Bank Sta	

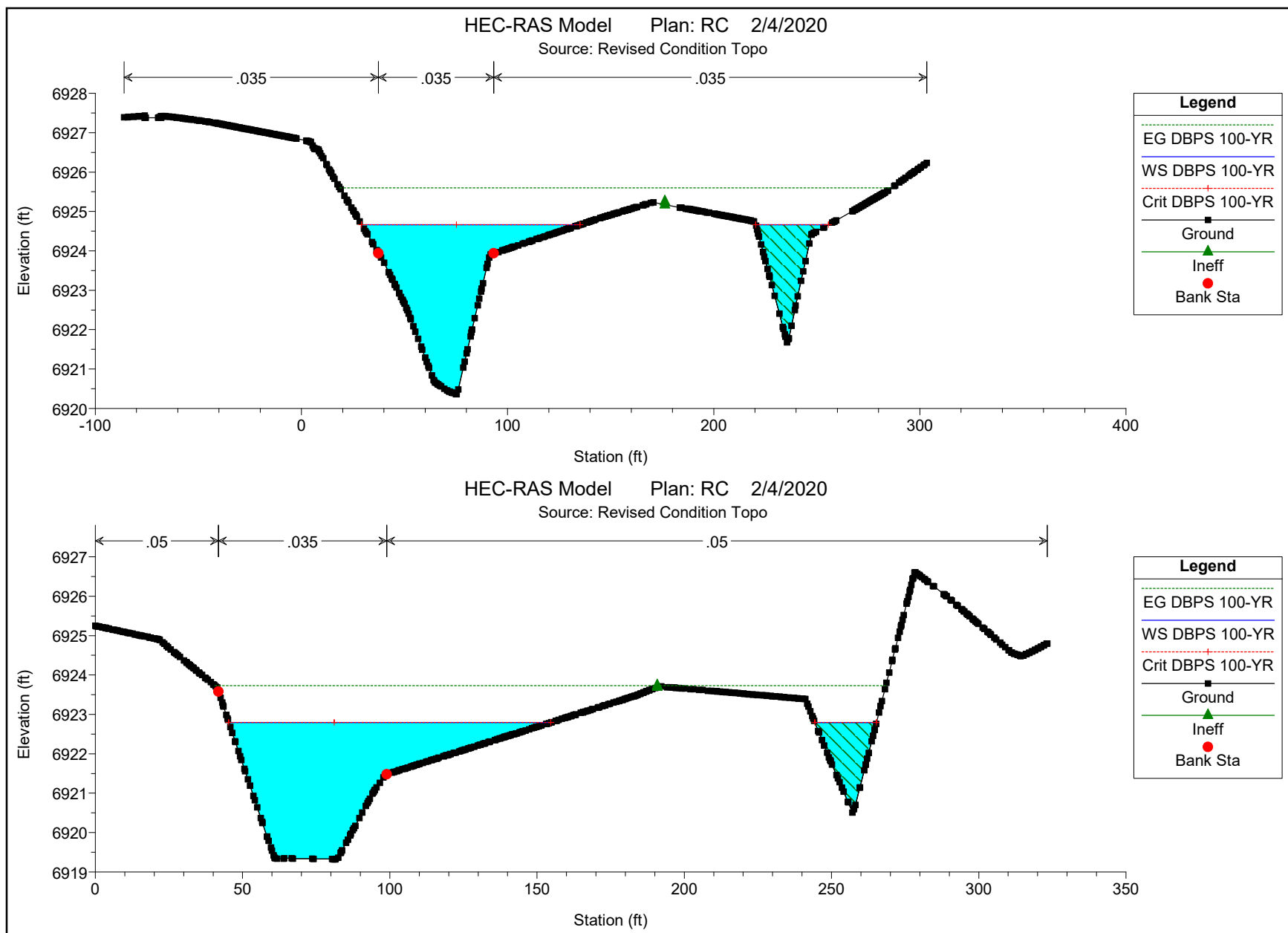
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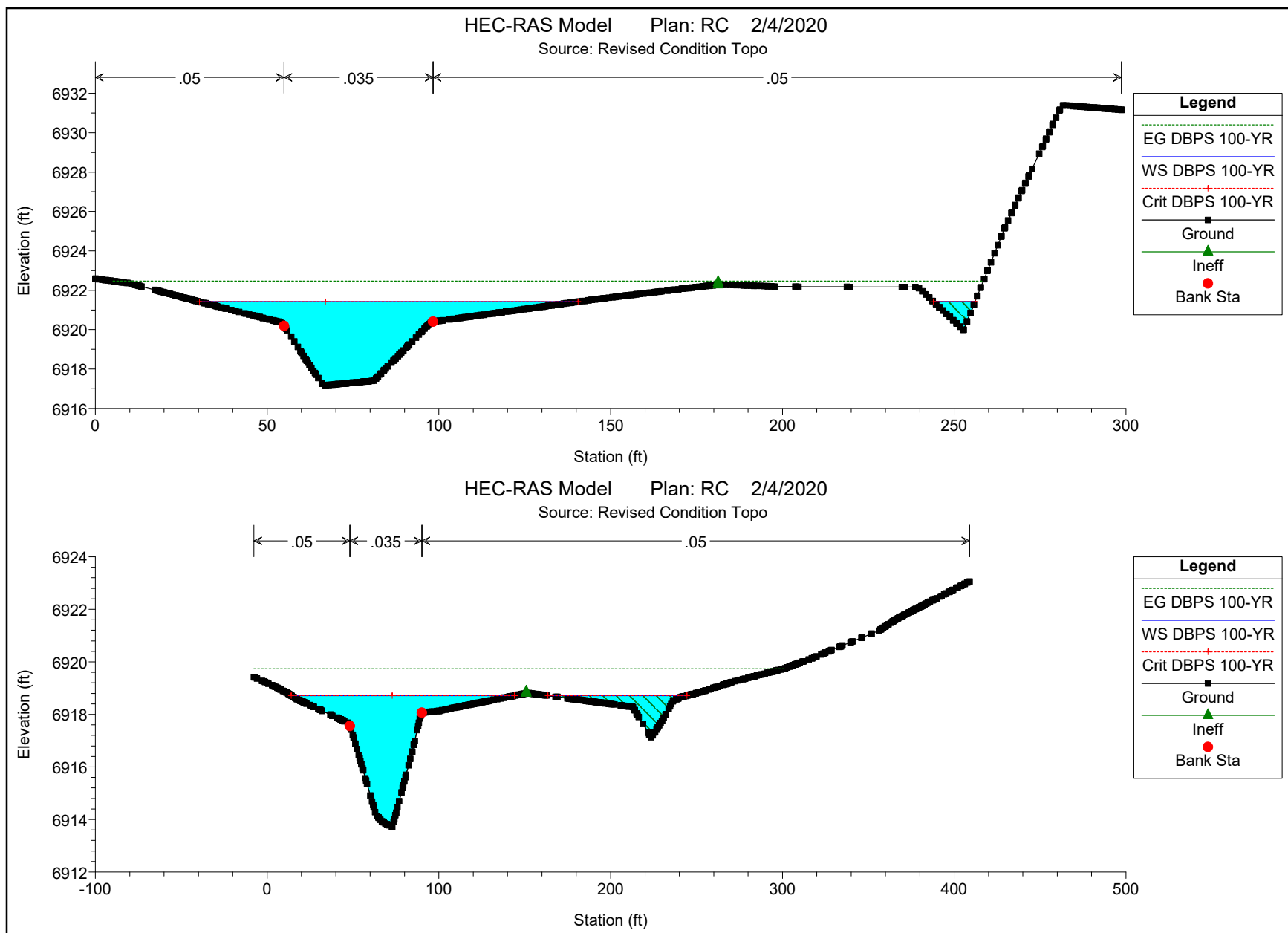
Source: Revised Condition Topo



Legend	
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WS DBPS 100-YR	
Crit DBPS 100-YR	
Ground	
Bank Sta	

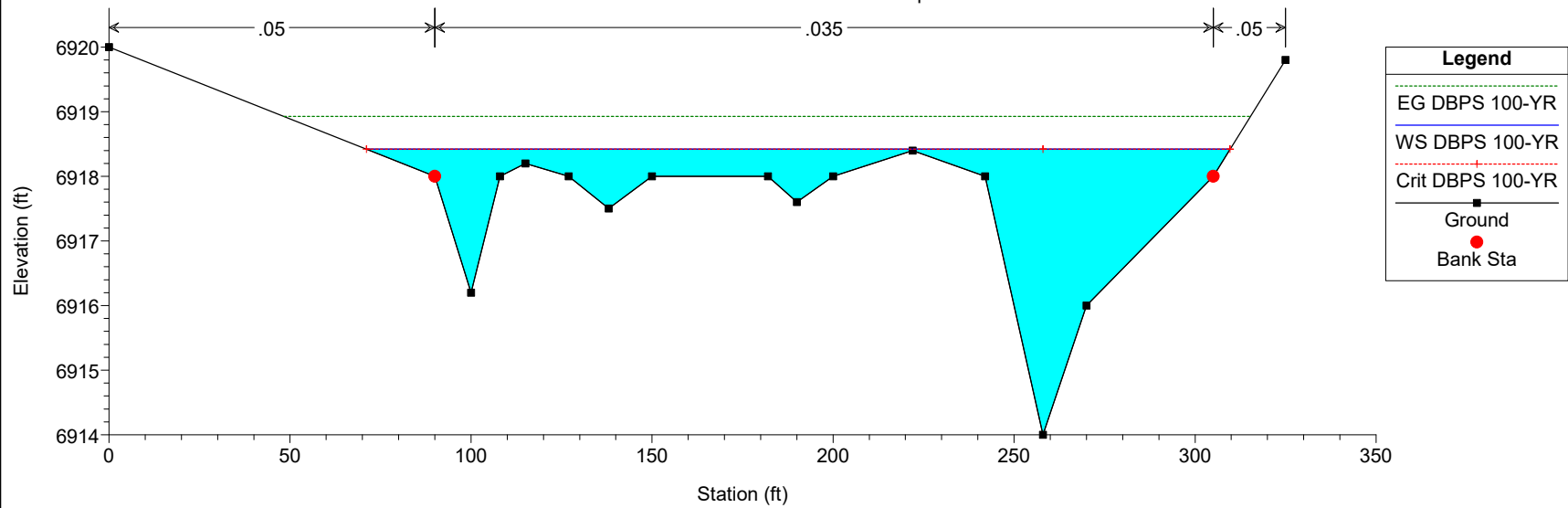






HEC-RAS Model Plan: RC 2/4/2020

Source: 2003 LOMR Hec-2 Output



USDA NRCS Part 650 Engineering Field Handbook, Chapter 7 Grassed Waterways. 2007.

By: AJL

Date: 1/21/2020

Variable		Unit	Source
Allowable Effective Stress, Ta	0.03	lb/ft ²	Table 7-1: "Erodible"
Void Ratio, e	0.65		Table 7-2: "Dense angular-grained silty sand"
Void Ratio Correction Factor, Ce	1.04		Table 7-7
Vegetation Height, h	0.21	ft	Estimated from photos
Stem Density, M	116.7	#/sf	Table 7-3: "Kentucky Bluegrass, Poor Condition"
Retardance Curve Index, C1	3.3		Eq 7-5
Allowable Vegetative Stress, Tva	2.46		Eq 7-4
Max Shear in Existing Condition	2.38	lb/sf	OK, SHEAR STRESS ON CHANNEL < ALLOWABLE VEGETATIVE STRESS
Max Shear in Revised Condition	2.23	lb/sf	OK, SHEAR STRESS ON CHANNEL < ALLOWABLE VEGETATIVE STRESS

Steps in waterway design are as follows:

Step 1 Determine allowable effective stress based on an evaluation of the soil material.

Step 2 Determine the flow retardance and the allowable stress on the vegetation based on the sparsest and shortest vegetation expected (typically winter vegetation) and the flow retardance offered by the densest and longest vegetation (typically summer vegetation).

Step 3 Determine the vegetal cover factor associated with sparsest vegetation expected.

Step 4 Determine the bed slope.

Step 5 Choose a cross section shape.

Step 6 Use design aids or equations to size channel for sparsest and shortest vegetation.

Step 7 Use design aids or equations to determine depth required to contain the flow for densest and longest vegetation.

Step 8 Add freeboard as appropriate.

$$\tau_e = \gamma DS(1 - C_F) \left(\frac{n_s}{n} \right)^2 \quad (\text{eq. 7-1})$$

where:

γ = unit weight of water, 62.4 lb/ft³

D = maximum flow depth in the cross section

C_F = a vegetal cover factor

n_s = roughness associated with soil grain size

n = Manning's roughness coefficient

S = channel bed slope, ft/ft

Table 7-1 Allowable effective stress for categories of soil erodibility

Category	Allowable stress, τ_a , lb/ft ²
Easily eroded	0.02
Erodible	0.03
Erosion resistant	0.05
Very erosion resistant	0.07

$$\tau_{va} = 0.75C_I \quad (\text{eq. 7-4})$$

Retardance curve index (C_I) is in turn related to the stem length and density of the cover as:

$$C_I = 2.5 \left(h \sqrt{M} \right)^{\frac{1}{3}} \quad (\text{eq. 7-5})$$

where:

h = the representative height of the vegetation in feet

M = the stem density in stems per square foot

Urban Drainage and Flood Control District. *USDCM Volume 2, Chapter 9, Hydraulic Structures* . 2017.

By: AJL

Date: 1/16/2020

Riprap Apron Length

Variable		Unit	Source
Width of Conduit, W	32	ft	Design Plans
Tailwater Depth, Yt	3.34	ft	HEC-RAS Model
Design Discharge, Q	1,200	cfs	Master Plan
Allowable Velocity, V	5.0	ft/s	El Paso County Drainage Criteria Manual
Required Area of Flow, At	240	ft ²	
Conduit Height, H	6	ft	
Froude Parameter, $Q/WH^{1.5}$	2.55		
Yt/H	0.56		
Expansion Factor	6.7		Figure 9-36
Length of Protection, Lp	267	ft	
Max Lp Check	60	ft	
Adopted Lp	60	ft	

Rock Size

$Q/WH^{0.5}$	15.3		
Yt/H	0.56		
Required Riprap Size	Type L		Figure 9-39
Minimum Riprap D50	9	in	
Minimum Riprap Thickness	18	in	2*D50

$$L_p = \left(\frac{1}{2 \tan \theta} \right) \left(\frac{A_t}{Y_t} - W \right)$$

Equation 9-11

Where:

L_p = length of protection (ft)

W = width of the conduit (ft, use diameter for circular conduits)

Y_t = tailwater depth (ft)

θ = the expansion angle of the culvert flow

and:

$$A_t = \frac{Q}{V}$$

Equation 9-12

Where:

Q = design discharge (cfs)

V = the allowable non-eroding velocity in the downstream channel (ft/sec)

A_t = required area of flow at allowable velocity (ft²)

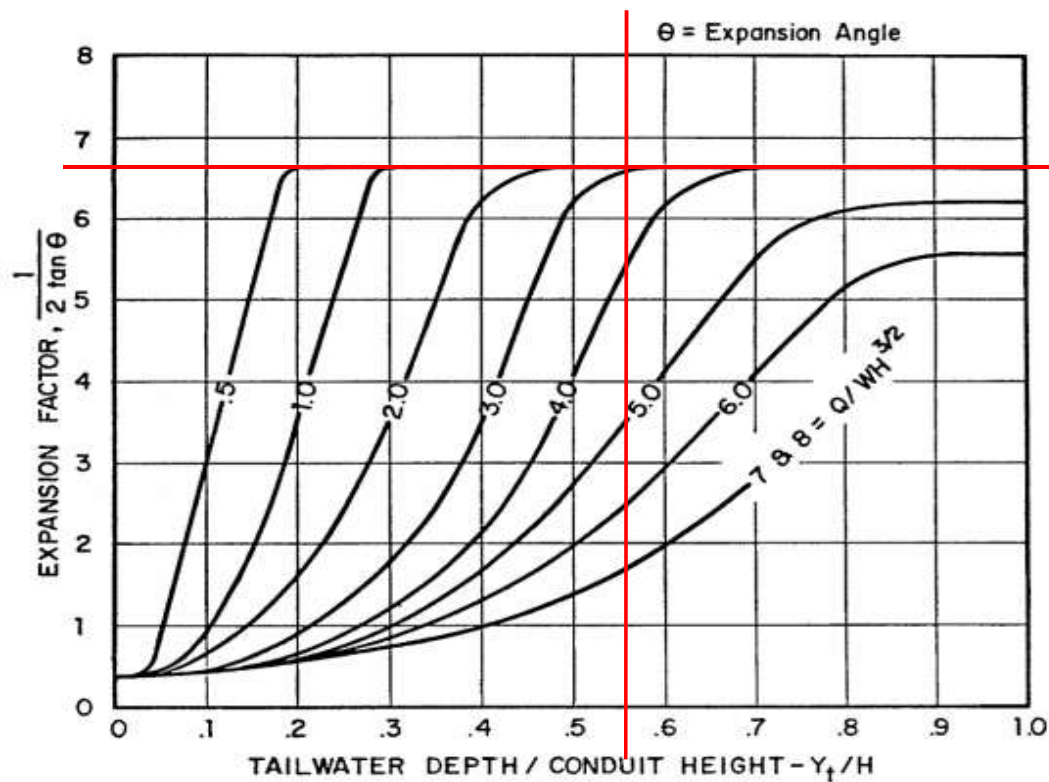
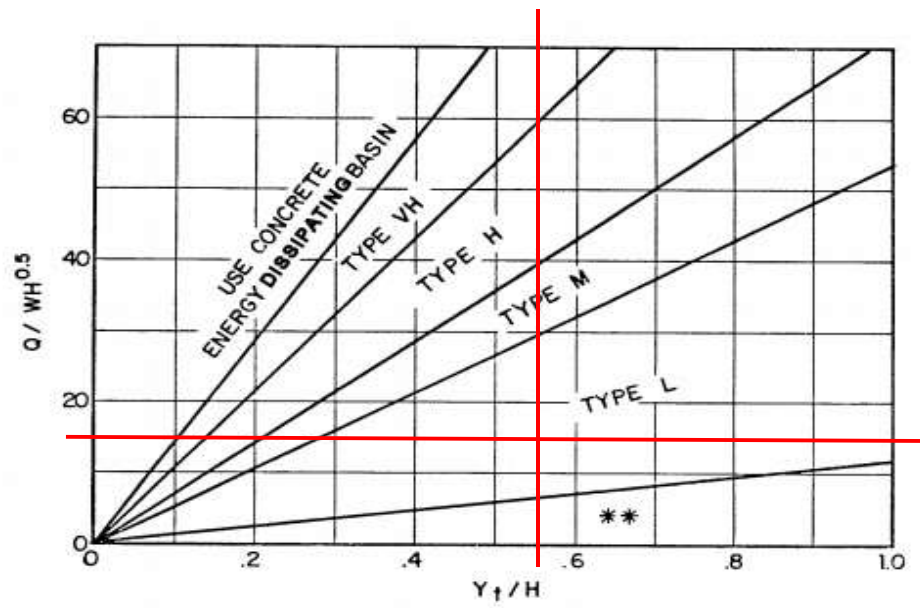


Figure 9-36. Expansion factor for rectangular conduits



Use H_0 instead of H whenever culvert has supercritical flow in the barrel.
 **Use Type L for a distance of $3H$ downstream.

Figure 9-39. Riprap erosion protection at rectangular conduit outlet (valid for $Q/WH^{1.5} \leq 8.0$)

APPENDIX E
On-Site Pond Calculations

Detention Pond Tributary Areas

Subdivision: Bent Grass Residential Filing No. 2
Location: CO, Colorado Springs

Project Name: Bent Grass Residential Filing No. 2
Project No.: CLH000014
Calculated By: CMWJ
Checked By: SMB
Date: 1/13/20

Pond (North)

Basin	Area	% Imp
A-1	2.7	44.7
A-2	1.19	43.4
A-3	1.57	49.4
A-4	2.24	46.5
B-1	4.46	49.5
B-2	1.17	65
B-3	0.46	65
B-5	1.56	2
B-6	0.62	2
E-1	1.71	62.3
E-2	0.68	82.8
E-3	0.78	88.7
Total	19.14	47.9

Pond (South)

Basin	Area	% Imp
C-1	1.35	58.2
C-2	6.8	46.8
C-3	2.38	56.9
C-4	3.61	59.8
C-5	7.86	60.8
C-6	5.54	52.7
C-7	0.89	2
G-1	1.47	23.4
Total	29.90	52.0

Pond (North) Calculations

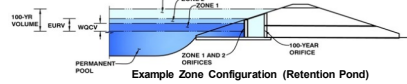
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

Project: Bent Grass Residential Filing No. 2

Basin ID: Pond (North)

Basin ID: Pond (North)



Example Zone Configuration (Retention Pond)

Required Volume Calculation
Selected BMP Type = **EDB**

Selected BMP Type =	EDB	
Watershed Area =	19.12	acres
Watershed Length =	1.700	ft
Watershed Slope =	0.020	ft/ft
Watershed Imperviousness =	47.90%	percent
Percentage Hydrologic Soil Group A =	100.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Desired WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	
Water Quality Capture Volume (WQCV) =	0.320	ac-ft/acre
Excess Urban Runoff Volume (ELRV) =	1.043	ac-ft/acre
2-yr Runoff Volume (P1 = 1.19 i.) =	0.711	ac-ft/acre
5-yr Runoff Volume (P1 = 1.5 i.) =	0.936	ac-ft/acre
10-yr Runoff Volume (P1 = 1.75 i.) =	1.154	ac-ft/acre
25-yr Runoff Volume (P1 = 2.25 i.) =	1.444	ac-ft/acre
50-yr Runoff Volume (P1 = 2.25 i.) =	1.917	ac-ft/acre
100-yr Runoff Volume (P1 = 2.52 i.) =	2.259	ac-ft/acre
500-yr Runoff Volume (P1 = 3.68 i.) =	3.846	ac-ft/acre
Approximate 2-yr Detention Volume =	0.670	ac-ft/acre
Approximate 5-yr Detention Volume =	0.883	ac-ft/acre
Approximate 10-yr Detention Volume =	1.079	ac-ft/acre
Approximate 25-yr Detention Volume =	1.324	ac-ft/acre
Approximate 50-yr Detention Volume =	1.481	ac-ft/acre
Approximate 100-yr Detention Volume =	1.678	ac-ft/acre

Water Quality Capture Volume (WQCV) =	0.320	acre-feet	Optional User Override 1-hr Precipitation <table border="1"> <tr> <td>1.19</td> <td>inches</td> </tr> <tr> <td>1.50</td> <td>inches</td> </tr> <tr> <td>1.75</td> <td>inches</td> </tr> <tr> <td>2.00</td> <td>inches</td> </tr> <tr> <td>2.25</td> <td>inches</td> </tr> <tr> <td>2.52</td> <td>inches</td> </tr> <tr> <td>3.68</td> <td>inches</td> </tr> </table>	1.19	inches	1.50	inches	1.75	inches	2.00	inches	2.25	inches	2.52	inches	3.68	inches
1.19	inches																
1.50	inches																
1.75	inches																
2.00	inches																
2.25	inches																
2.52	inches																
3.68	inches																
Excess Urban Runoff Volume (EURV) =	1.043	acre-feet															
2-yr Runoff Volume (P1 = 1.19 in.) =	0.711	acre-feet															
5-yr Runoff Volume (P1 = 1.5 in.) =	0.936	acre-feet															
10-yr Runoff Volume (P1 = 1.75 in.) =	1.154	acre-feet															
25-yr Runoff Volume (P1 = 2 in.) =	1.445	acre-feet															
50-yr Runoff Volume (P1 = 2.25 in.) =	1.817	acre-feet															
100-yr Runoff Volume (P1 = 2.52 in.) =	2.289	acre-feet															
500-yr Runoff Volume (P1 = 3.68 in.) =	3.68	acre-feet															

Stage-Storage Calculation

Zone 1 Volume (WQCV) = 0.320 acre feet

Zone 1 Volume ($WOCV$)	0.320	acre-feet
Select Zone 2 Storage Volume (Optional)		acre-feet
Select Zone 3 Storage Volume (Optional)		acre-feet
Total Detention Basin Volume	0.320	acre-feet
Initial Surcharge Volume (ISV)	user	ft ³
Initial Surcharge Depth (ISD)	user	ft
Total Available Detention Depth ($H_{(DA)}$)	user	ft
Depth of Trickle Channel (H_{TC})	user	ft
Slope of Trickle Channel (S_{TC})	user	ft/ft
Slopes of Main Basin Sides ($S_{(MS)}$)	user	H/V
Basin Length-to-Width Ratio ($R_{(LW)}$)	user	
Initial Surcharge Area (A_{IS})	user	ft ²
Surcharge Volume Length (L_{IS})	user	ft
Surcharge Volume Width (W_{IS})	user	ft
Depth of Basin Floor ($H_{(BF)}$)	user	ft
Length of Basin Floor ($L_{(BF)}$)	user	ft
Width of Basin Floor ($W_{(BF)}$)	user	ft
Area of Basin Floor ($A_{(BF)}$)	user	ft ²
Volume of Basin Floor ($V_{(BF)}$)	user	ft ³
Depth of Main Basin ($H_{(MB)}$)	user	ft
Length of Main Basin ($L_{(MB)}$)	user	ft
Width of Main Basin ($W_{(MB)}$)	user	ft
Area of Main Basin ($A_{(MB)}$)	user	ft ²
Volume of Main Basin ($V_{(MB)}$)	user	ft ³
Calculated Total Basin Volume ($V_{(TB)}$)	user	acre-feet

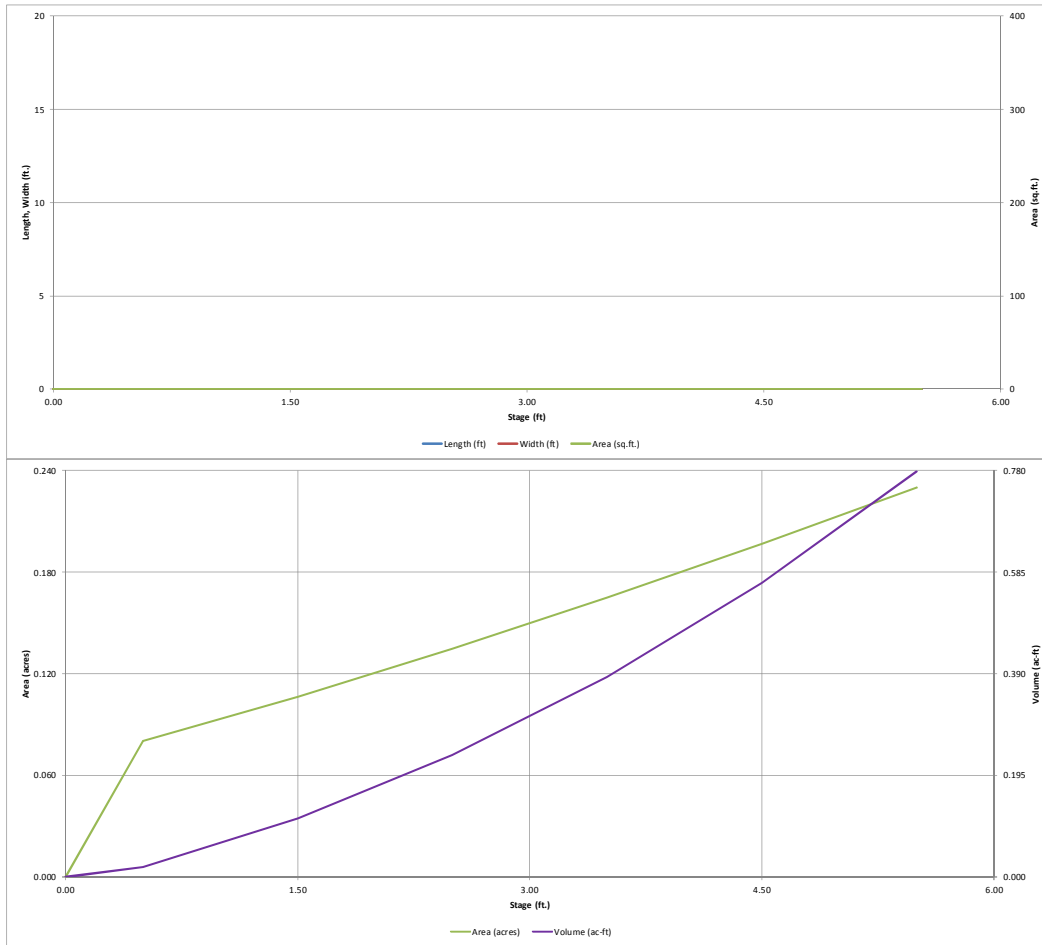
Total detention volume is less than 100-year volume.

Select Zone 2 Storage Volume (Optional) =		acre-feet	Total detention volume is less than 100-year volume.
Select Zone 3 Storage Volume (Optional) =		acre-feet	
Total Detention Basin Volume =	0.000	acre-feet	

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DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

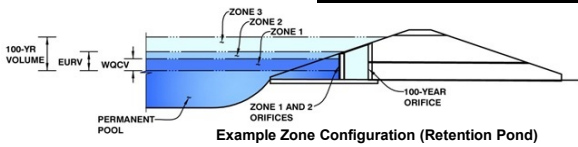


Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Project: Bent Grass Residential Filing No. 2

Basin ID: Pond (North)



	Stage (ft)	Zone Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	3.10	0.320	Orifice Plate
Zone 2			
Zone 3			
		0.320	Total

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth = ft (distance below the filtration media surface)
Underdrain Orifice Diameter = inches

Calculated Parameters for Underdrain

Underdrain Orifice Area = ft²
Underdrain Orifice Centroid = feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice = ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate = ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing = inches
Orifice Plate: Orifice Area per Row = sq. inches (diameter = 1-7/16 inches)

Calculated Parameters for Plate

WQ Orifice Area per Row = ft²
Elliptical Half-Width = feet
Elliptical Slot Centroid = feet
Elliptical Slot Area = ft²

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.00	2.00					
Orifice Area (sq. inches)	1.66	1.66	1.66					

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

Invert of Vertical Orifice = ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice = ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Diameter = inches

Calculated Parameters for Vertical Orifice

Vertical Orifice Area = ft²
Vertical Orifice Centroid = feet

User Input: Overflow Weir (Dropbox) and Grate (Flat or Sloped)

Overflow Weir Front Edge Height, H_o = ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length = feet
Overflow Weir Slope = H:V (enter zero for flat grate)
Horiz. Length of Weir Sides = feet
Overflow Grate Open Area % = %
Debris Clogging % = %

Calculated Parameters for Overflow Weir

Height of Grate Upper Edge, H₁ = feet
Over Flow Weir Slope Length = feet
Grate Open Area / 100-yr Orifice Area = should be ≥ 4
Overflow Grate Open Area w/o Debris = ft²
Overflow Grate Open Area w/ Debris = ft²

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

Depth to Invert of Outlet Pipe = ft (distance below basin bottom at Stage = 0 ft)
Circular Orifice Diameter = inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

Outlet Orifice Area = ft²
Outlet Orifice Centroid = feet
Half-Central Angle of Restrictor Plate on Pipe = radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage = ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length = feet
Spillway End Slopes = H:V
Freeboard above Max Water Surface = feet

Calculated Parameters for Spillway

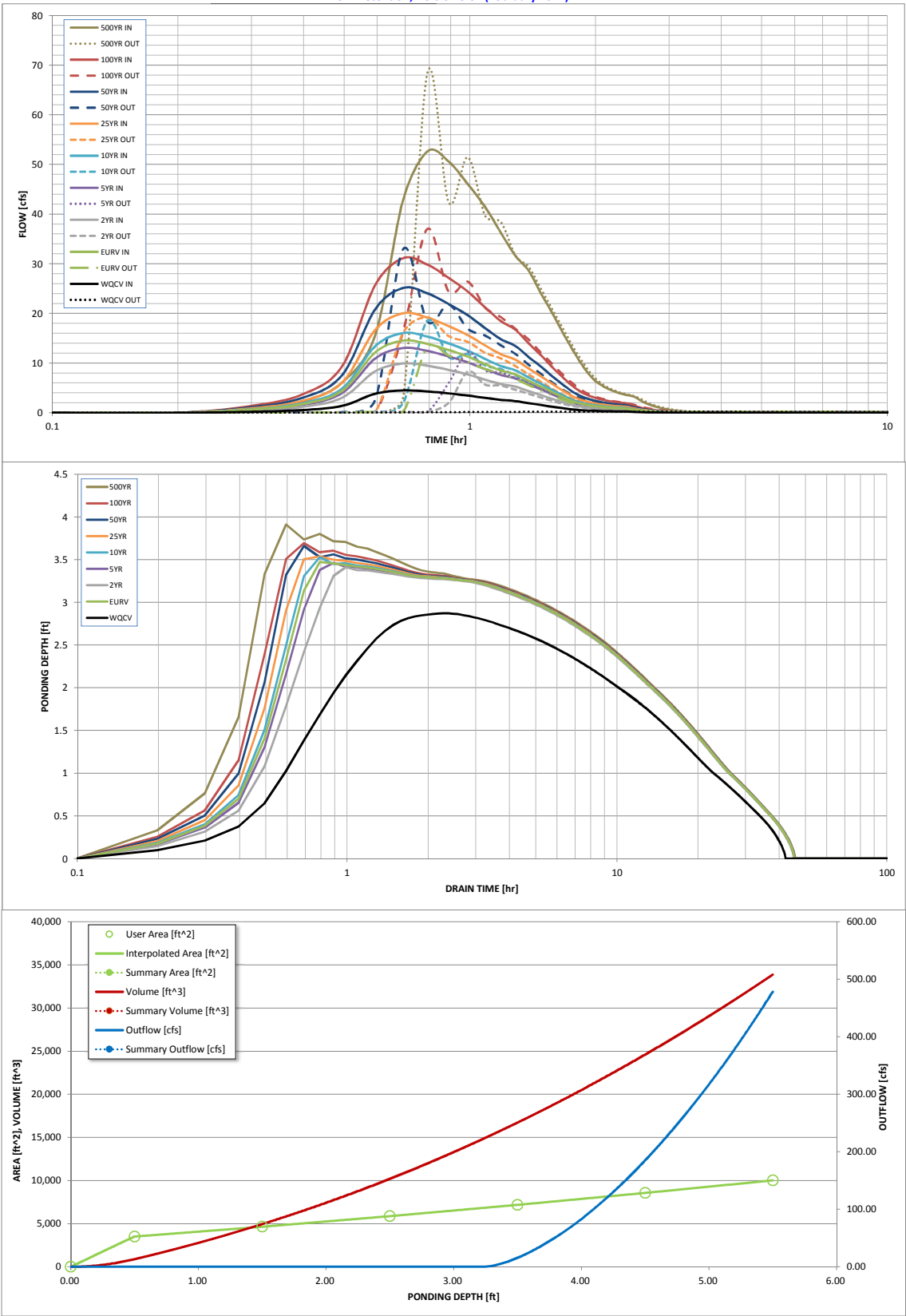
Spillway Design Flow Depth = feet
Stage at Top of Freeboard = feet
Basin Area at Top of Freeboard = acres

Routed Hydrograph Results

	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period =									
One-Hour Rainfall Depth (in) =	0.53	1.07	1.19	1.50	1.75	2.00	2.25	2.52	3.68
Calculated Runoff Volume (acre-ft) =	0.320	1.043	0.711	0.936	1.154	1.445	1.817	2.259	3.846
OPTIONAL Override Runoff Volume (acre-ft) =									
Inflow Hydrograph Volume (acre-ft) =	0.320	1.043	0.710	0.936	1.154	1.445	1.817	2.259	3.847
Predevelopment Unit Peak Flow, q (cfs/acre) =	0.00	0.00	0.00	0.00	0.01	0.02	0.15	0.38	1.02
Predevelopment Peak Q (cfs) =	0.0	0.0	0.0	0.1	0.2	0.4	3.0	7.2	19.5
Peak Inflow Q (cfs) =	4.5	14.5	9.9	13.0	16.1	20.0	25.1	31.1	52.6
Peak Outflow Q (cfs) =	0.2	13.2	8.3	12.2	18.5	19.2	32.9	37.0	68.4
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	159.6	104.1	48.2	11.1	5.1	3.5
Structure Controlling Flow =	Plate	Spillway	Spillway	Spillway	Spillway	Spillway	Spillway	Spillway	Spillway
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	38	34	37	35	33	31	28	26	19
Time to Drain 99% of Inflow Volume (hours) =	40	40	42	41	40	39	38	37	32
Maximum Ponding Depth (ft) =	2.87	3.47	3.41	3.46	3.53	3.54	3.66	3.69	3.91
Area at Maximum Ponding Depth (acres) =	0.15	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.18
Maximum Volume Stored (acre-ft) =	0.286	0.379	0.369	0.377	0.389	0.389	0.410	0.416	0.454

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)



S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

Pond (North) - FOREBAY CALCULATIONS

1) $WQCV \text{ (inches)} = a(.91I^3 - 1.19I^2 + .78I)$

I = impervious percentage =

48%

a = Coefficient corresponding to WQCV drain time =

1 (40 hours)

WQCV (inches) = 0.20 inches

2) $WQCV \text{ (ac-ft)} = (WQCV \text{ (inches)})/12 \times A$

Area = tributary area =

19.12 acres

WQCV (ac-ft) = 0.32

WQCV (cubic feet) = 13,923

3) Forebay Volume

Per Table EDB-4, Section T-5 of USDCM Volume 3 - Forebay Volume = 2% of WQCV and be 18" depth since watershed up to 5 impervious acres

Forebay Volume = 2% of WQCV =

278 cubic feet

with pond depth at 1.5', Forebay Area =

185.6 sq-ft

(minimum)

4) Forebay Discharge

Per Table EDB-4, Section T-5 of USDCM Volume 3 - Forebay Discharge = 2% of 100-yr Flow into pond

Q100 = 50 cfs

Forebay discharge = 1.00 cfs

Pond (North) - Forebay Slot

Project Description

Solve For Crest Length

Input Data

Discharge	1.00	ft ³ /s
Headwater Elevation	1.25	ft
Crest Elevation	0.00	ft
Tailwater Elevation	0.00	ft
Weir Coefficient	3.00	US
Number Of Contractions	0	

Results

Crest Length	0.24	ft
Headwater Height Above Crest	1.25	ft
Tailwater Height Above Crest	0.00	ft
Flow Area	0.30	ft ²
Velocity	3.35	ft/s
Wetted Perimeter	2.74	ft
Top Width	0.24	ft

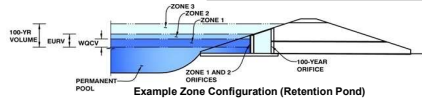
Pond (South) Calculations

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

Project: Bent Grass Residential Filing No. 2

Basin ID: Pond (South)



Required Volume Calculation

Selected BMP Type =	EDB	
Watershed Area =	29.90	acres
Watershed Length =	1.800	ft
Watershed Slope =	0.020	ft/ft
Watershed Imperviousness =	53.20%	percent
Percentage Hydrologic Soil Group A =	100.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Group C/D =	0.0%	percent
Desired WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depth =	Use Input	
Water Quality Capture Volume (WQCV) =	0.536	acre-feet
Excess Urban Runoff Volume (EURV) =	1.866	acre-feet
2-yr Runoff Volume ($P1 = 1.19$ in.) =	1.276	acre-feet
5-yr Runoff Volume ($P1 = 1.5$ in.) =	1.674	acre-feet
10-yr Runoff Volume ($P1 = 1.75$ in.) =	2.056	acre-feet
25-yr Runoff Volume ($P1 = 2$ in.) =	2.545	acre-feet
50-yr Runoff Volume ($P1 = 2.25$ in.) =	3.141	acre-feet
100-yr Runoff Volume ($P1 = 2.52$ in.) =	3.840	acre-feet
500-yr Runoff Volume ($P1 = 3.68$ in.) =	6.387	acre-feet
Approximate 2-yr Detention Volume =	1.203	acre-feet
Approximate 5-yr Detention Volume =	1.582	acre-feet
Approximate 10-yr Detention Volume =	1.924	acre-feet
Approximate 25-yr Detention Volume =	2.345	acre-feet
Approximate 50-yr Detention Volume =	2.609	acre-feet
Approximate 100-yr Detention Volume =	2.919	acre-feet

Optional User Override 1-hr Precipitation

1.19	inches
1.50	inches
1.75	inches
2.00	inches
2.25	inches
2.52	inches
3.68	inches

Stage-Storage Calculation

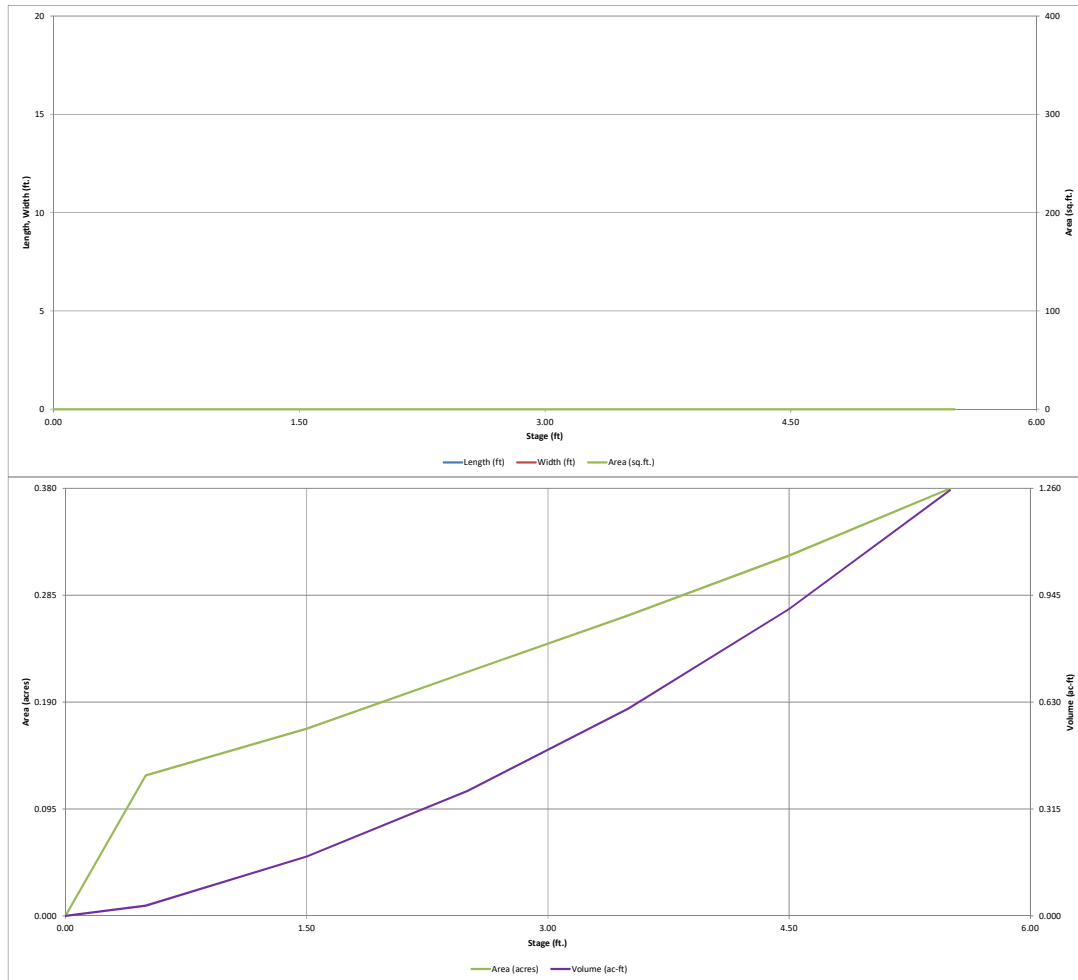
Zone 1 Volume (V_{WC1}) =	0.536	acre-feet
Select Zone 2 Storage Volume (Optional) =		acre-feet
Select Zone 3 Storage Volume (Optional) =		acre-feet
Total Detention Basin Volume =	0.536	acre-feet
Initial Surcharge Volume (ISV) =	user	ft ³
Detention Depth (IDD) =	user	ft
Total Available Detention Depth (H_{DAV}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{MAI}) =	user	H:V
Basin Length-to-Width Ratio (R_{LW}) =	user	
Initial Surcharge Area (A_{ISV}) =	user	ft ²
Surcharge Volume Length (L_{SV}) =	user	ft
Surcharge Volume Width (W_{SV}) =	user	ft
Depth of Basin Floor (H_{BLOA}) =	user	ft
Length of Basin Floor (L_{BLOA}) =	user	ft
Width of Basin Floor (W_{BLOA}) =	user	ft
Area of Basin Floor (A_{BLOA}) =	user	ft ²
Volume of Basin Floor (V_{BLOA}) =	user	ft ³
Depth of Main Basin (H_{MAI}) =	user	ft
Length of Main Basin (L_{MAI}) =	user	ft
Width of Main Basin (W_{MAI}) =	user	ft
Area of Main Basin (A_{MAI}) =	user	ft ²
Volume of Main Basin (V_{MAI}) =	user	ft ³
Calculated Total Basin Volume (V_{DAV}) =	user	acre-feet

Total detention volume is less than 100-year volume.

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DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

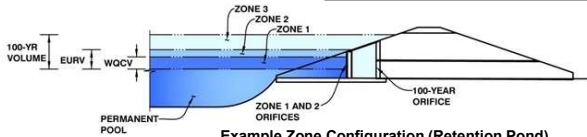


Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Project: **Bent Grass Residential Filing No. 2**

Basin ID: **Pond (South)**



Example Zone Configuration (Retention Pond)

	Stage (ft)	Zone Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	3.22	0.536	Orifice Plate
Zone 2			Not Utilized
Zone 3			Not Utilized
		0.536	Total

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)
Underdrain Orifice Diameter =	N/A	inches

Calculated Parameters for Underdrain

Underdrain Orifice Area =	N/A	ft ²
Underdrain Orifice Centroid =	N/A	feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate =	3.30	ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing =	12.80	inches
Orifice Plate: Orifice Area per Row =	2.75	sq. inches (diameter = 1-7/8 inches)

Calculated Parameters for Plate

WQ Orifice Area per Row =	1.910E-02	ft ²
Elliptical Half-Width =	N/A	feet
Elliptical Slot Centroid =	N/A	feet
Elliptical Slot Area =	N/A	ft ²

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.10	2.20					
Orifice Area (sq. inches)	2.75	2.75	2.75					

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Not Selected	Not Selected	
Invert of Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Diameter =	N/A	N/A	inches

Calculated Parameters for Vertical Orifice

	Not Selected	Not Selected	
Vertical Orifice Area =	N/A	N/A	ft ²
Vertical Orifice Centroid =	N/A	N/A	feet

User Input: Overflow Weir (Dropbox) and Grate (Flat or Sloped)

	Not Selected	Not Selected	
Overflow Weir Front Edge Height, H _o =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	N/A	N/A	feet
Overflow Weir Slope =	N/A	N/A	H:V (enter zero for flat grate)
Horiz. Length of Weir Sides =	N/A	N/A	feet
Overflow Grate Open Area % =	N/A	N/A	%, grate open area/total area
Debris Clogging % =	N/A	N/A	%

Calculated Parameters for Overflow Weir

	Not Selected	Not Selected	
Height of Grate Upper Edge, H _u =	N/A	N/A	feet
Over Flow Weir Slope Length =	N/A	N/A	feet
Grate Open Area / 100-yr Orifice Area =	N/A	N/A	should be ≥ 4
Overflow Grate Open Area w/o Debris =	N/A	N/A	ft ²
Overflow Grate Open Area w/ Debris =	N/A	N/A	ft ²

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Not Selected	Not Selected	
Depth to Invert of Outlet Pipe =	N/A	N/A	ft (distance below basin bottom at Stage = 0 ft)
Circular Orifice Diameter =	N/A	N/A	inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

	Not Selected	Not Selected	
Outlet Orifice Area =	N/A	N/A	ft ²
Outlet Orifice Centroid =	N/A	N/A	feet
Half-Central Angle of Restrictor Plate on Pipe =	N/A	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	3.25	ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length =	50.00	feet
Spillway End Slopes =	4.00	H:V
Freeboard above Max Water Surface =	1.00	feet

Calculated Parameters for Spillway

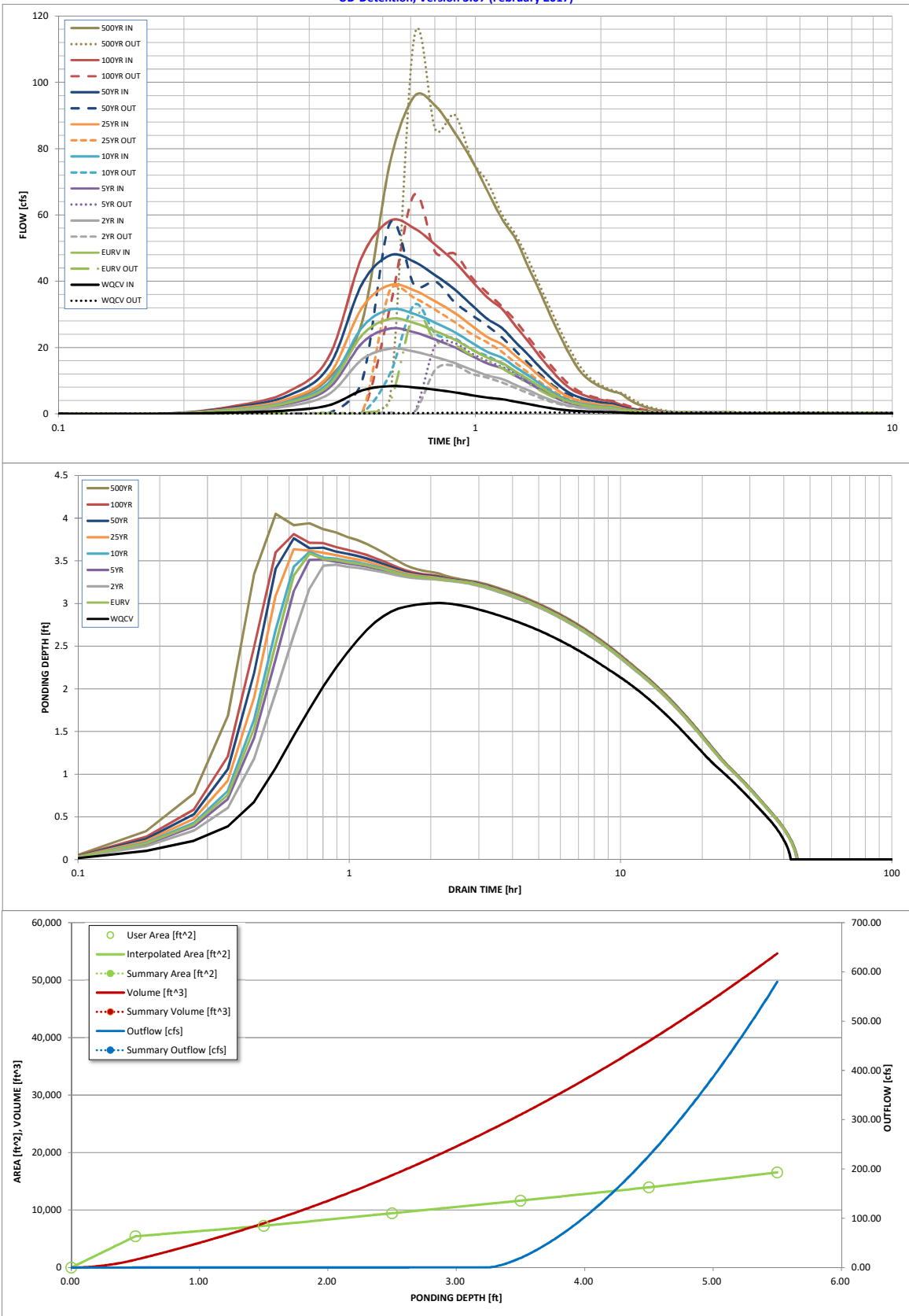
Spillway Design Flow Depth=	0.52	feet
Stage at Top of Freeboard =	4.77	feet
Basin Area at Top of Freeboard =	0.34	acres

Routed Hydrograph Results

	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period =	0.53	1.07	1.19	1.50	1.75	2.00	2.25	2.52	3.68
One-Hour Rainfall Depth (in) =	0.536	1.866	1.276	1.674	2.056	2.545	3.141	3.840	6.387
Calculated Runoff Volume (acre-ft) =									
OPTIONAL Override Runoff Volume (acre-ft) =									
Inflow Hydrograph Volume (acre-ft) =	0.536	1.866	1.275	1.674	2.055	2.544	3.141	3.840	6.382
Predevelopment Unit Peak Flow, q (cfs/acre) =	0.00	0.00	0.00	0.00	0.01	0.02	0.18	0.43	1.16
Predevelopment Peak Q (cfs) =	0.0	0.0	0.0	0.1	0.3	0.7	5.4	13.0	34.7
Peak Inflow Q (cfs) =	8.3	28.6	19.6	25.7	31.5	38.8	47.8	58.2	95.7
Peak Outflow Q (cfs) =	0.4	30.1	14.5	21.3	32.8	37.3	57.5	66.0	113.4
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	153.5	101.7	51.7	10.7	5.1	3.3
Structure Controlling Flow =	Plate	Spillway	Spillway	Spillway	Spillway	Spillway	Spillway	Spillway	Spillway
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	38	33	36	34	32	30	27	25	19
Time to Drain 99% of Inflow Volume (hours) =	40	40	41	40	39	38	37	36	32
Maximum Ponding Depth (ft) =	3.01	3.58	3.45	3.52	3.60	3.64	3.76	3.81	4.05
Area at Maximum Ponding Depth (acres) =	0.24	0.27	0.26	0.27	0.27	0.27	0.28	0.28	0.30
Maximum Volume Stored (acre-ft) =	0.483	0.632	0.597	0.613	0.637	0.646	0.682	0.696	0.765

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)



S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

Pond (South) - FOREBAY CALCULATIONS

1) $WQCV \text{ (inches)} = a(.91I^3 - 1.19I^2 + .78I)$

I = impervious percentage =

53%

a = Coefficient corresponding to WQCV drain time =

1 (40 hours)

WQCV (inches) = 0.22 inches

2) $WQCV \text{ (ac-ft)} = (WQCV \text{ (inches)})/12 \times A$

Area = tributary area =

29.31 acres

WQCV (ac-ft) = 0.53

WQCV (cubic feet) = 22,894

3) Forebay Volume

Per Table EDB-4, Section T-5 of USDCM Volume 3 - Forebay Volume = 2% of WQCV and be 18" depth since watershed up to 5 impervious acres

Forebay Volume = 2% of WQCV =

458 cubic feet

with pond depth at 1.5', Forebay Area =

305.3 sq-ft

(minimum)

4) Forebay Discharge

Per Table EDB-4, Section T-5 of USDCM Volume 3 - Forebay Discharge = 2% of 100-yr Flow into pond

Q100 = 85 cfs

Forebay discharge = 1.70 cfs

Pond (South) - Forebay Slot

Project Description

Solve For Crest Length

Input Data

Discharge	1.70	ft ³ /s
Headwater Elevation	1.25	ft
Crest Elevation	0.00	ft
Tailwater Elevation	0.00	ft
Weir Coefficient	3.00	US
Number Of Contractions	0	

Results

Crest Length	0.41	ft
Headwater Height Above Crest	1.25	ft
Tailwater Height Above Crest	0.00	ft
Flow Area	0.51	ft ²
Velocity	3.35	ft/s
Wetted Perimeter	2.91	ft
Top Width	0.41	ft

Pond (West) Calculations

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

Basin ID: Pond (West)



Example 2.10 (continued)

Selected BMP Type = **EDB**

Watershed Area =	25.96	acres
Watershed Length =	1,300	ft
Watershed Slope =	0.020	ft/ft
Watershed Imperviousness =	57.78%	percent
Percentage Hydrologic Soil Group A =	100.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Desired WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depth =	Use Input	
Water Quality Capture Volume (WQCV) =	0.495	acre-feet
Excess Urban Runoff Volume (EURV) =	1.801	acre-feet
2-y Runoff Volume ($P_1 = 1.19$ in.) =	1.234	acre-feet
5-y Runoff Volume ($P_1 = 1.51$ in.) =	1.616	acre-feet
10-y Runoff Volume ($P_1 = 1.78$ in.) =	1.978	acre-feet
25-y Runoff Volume ($P_1 = 2.21$ in.) =	2.426	acre-feet
50-y Runoff Volume ($P_1 = 2.25$ in.) =	2.952	acre-feet
100-y Runoff Volume ($P_1 = 2.52$ in.) =	3.565	acre-feet
500-y Runoff Volume ($P_1 = 3.68$ in.) =	5.826	acre-feet
Approximate 2-yr Detention Volume =	1.166	acre-feet
Approximate 5-yr Detention Volume =	1.529	acre-feet
Approximate 10-yr Detention Volume =	1.853	acre-feet
Approximate 25-yr Detention Volume =	2.246	acre-feet
Approximate 50-yr Detention Volume =	2.488	acre-feet
Approximate 100-yr Detention Volume =	2.759	acre-feet

Water Quality Capture Volume (WQCV)	0.495	acre-feet	Optional User Override
Excess Urban Runoff Volume (EURV)	1.801	acre-feet	1-hr Precipitation
2-yr Runoff Volume (P1 = 1.19 in.)	1.234	acre-feet	1.19 inches
5-yr Runoff Volume (P1 = 1.5 in.)	1.616	acre-feet	1.50 inches
10-yr Runoff Volume (P1 = 1.75 in.)	1.978	acre-feet	1.75 inches
25-yr Runoff Volume (P1 = 2 in.)	2.426	acre-feet	2.00 inches
50-yr Runoff Volume (P1 = 2.25 in.)	2.952	acre-feet	2.25 inches
100-yr Runoff Volume (P1 = 2.52 in.)	3.565	acre-feet	2.52 inches
500-yr Runoff Volume (P1 = 3.68 in.)	5.826	acre-feet	3.68 inches

Stage-Storage Calculation

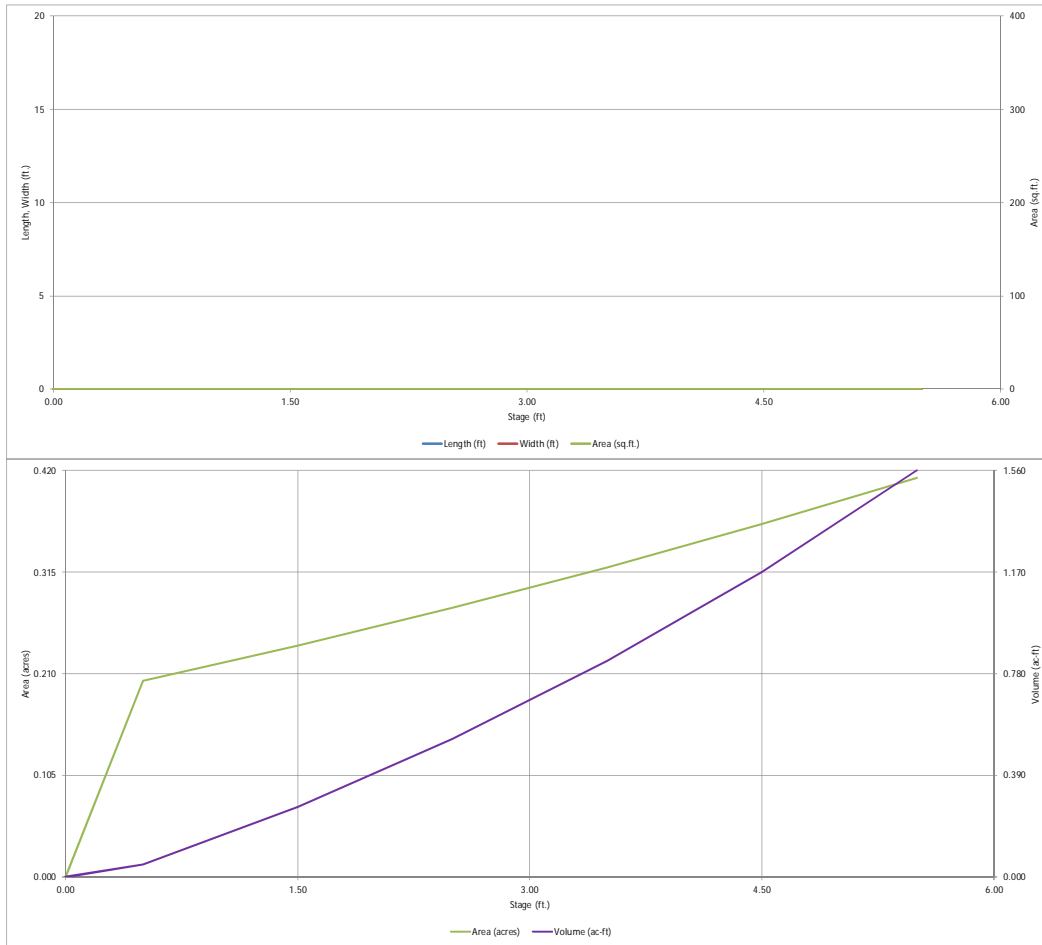
Zone 1 Volume (V_{OCV}) =	0.495	acre-feet	Total detention vol is less than 100-year volume.
Select Zone 2 Storage Volume (Optional) =		acre-feet	
Select Zone 3 Storage Volume (Optional) =		acre-feet	
Total Detention Basin Volume =	0.495	acre-feet	
Initial Surcharge Volume (ISV) =	0.667	ft ³	
Initial Surcharge Depth (ISD) =	0.667	ft	
Total Available Detention Depth ($H_{t,avail}$) =	0.667	ft	
Depth of Trickle Channel (H_{TC}) =	0.667	ft	
Slope of Trickle Channel (S_{TC}) =	0.667	ft/ft	
Slopes of Main Basin Sides (S_{basin}) =	0.667	H:V	
Basin Length-to-Width Ratio ($R_{L/W}$) =	0.667		
Initial Surcharge Area (A_{IS}) =	0.667	ft ²	
Surcharge Volume Length (L_{IS}) =	0.667	ft	
Surcharge Volume Width (W_{IS}) =	0.667	ft	
Depth of Basin Floor ($H_{b,000}$) =	0.667	ft	
Length of Basin Floor ($L_{b,000}$) =	0.667	ft	
Width of Basin Floor ($W_{b,000}$) =	0.667	ft	
Area of Basin Floor ($A_{b,000}$) =	0.667	ft ²	
Volume of Basin Floor ($V_{b,000}$) =	0.667	ft ³	
Depth of Main Basin ($H_{b,main}$) =	0.667	ft	
Length of Main Basin ($L_{b,main}$) =	0.667	ft	
Width of Main Basin ($W_{b,main}$) =	0.667	ft	
Area of Main Basin ($A_{b,main}$) =	0.667	ft ²	
Volume of Main Basin ($V_{b,main}$) =	0.667	ft ³	
Calculated Total Basin Volume (V_{total}) =	0.667	acre-feet	

Select Zone 2 Storage Volume (Optional) =		acre-feet	Total detention volume is less than 100-year volume.
Select Zone 3 Storage Volume (Optional) =		acre-feet	
Total Detention Basin Volume =	0.495	acre-feet	

[illegible]

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



APPENDIX F

Regional Pond Calculations

Provide stage-storage
discharge calculations and
tables.

Provide electronic model.

Tributary to Detention Pond WU

See Figures 3-2 & 3-7 of the Falcon Drainage Basin Planning Study (September 2015)

Basin	Area (sq miles)	Percent Impervious
WT10	0.14	2%
WT20	0.07	2%
WT30	0.08	4%
WT40	0.19	3%
WT50	0.19	2%
WT60	0.20	2%
WT70	0.17	1%
WT80	0.07	2%
WT90	0.15	1%
WT100	0.19	1%
WT110	0.19	2%
WT120	0.05	3%
WT130	0.10	29%
WT140	0.13	2%
WT150	0.23	10%
WT160	0.11	20%
WT170	0.12	3%
WT180	0.10	0%
WT190	0.06	8%
WT200	0.30	4%
WT210	0.27	12%
WT220	0.19	13%
WT230	0.20	27%
WT240	0.08	27%
Total	3.58	7.33%

Water Quality Capture Volume, WQCV:

$$WQCV = a(0.91I^3 - 1.19I^2 + 0.78I) \quad (\text{Equation 3-1})$$

Where:

a = Coefficient corresponding to WQCV drain time

I = Imperviousness (%/100)

Drain Time = 40 hrs

WQCV = 0.051 Inches

BMP Storage Volume, V:

$$V = (WQCV/12)A \quad (\text{Equation 3-3})$$

Where:

A = Tributary area (acres)

V = 9.764 acre-ft

*Reference Section 3.0 of UDFCD Volume 3, August 2011

Project: Aug15_Working_Falcon_DBPS_SSimulation Run: FU 100-yr

Start of Run: 01Jan2011, 00:00 Basin Model: Falcon_DBPS_Future
 End of Run: 02Jan2011, 00:00 Meteorologic Model: 100-yr
 Compute Time: 03Feb2020, 16:13:16 Control Specifications: 24-hr Storm

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
WT020	0.0671383	41.9	01Jan2011, 06:21	4.8
JWT020	0.0671383	41.9	01Jan2011, 06:21	4.8
RWT030	0.0671383	41.9	01Jan2011, 06:29	4.8
WT030	0.0764732	75.3	01Jan2011, 06:07	5.5
JWT030	0.1436115	85.4	01Jan2011, 06:09	10.3
RWT042	0.1436115	85.3	01Jan2011, 06:15	10.3
WT010	0.1353300	88.9	01Jan2011, 06:17	9.3
JWT010	0.1353300	88.9	01Jan2011, 06:17	9.3
RWT044	0.1353300	88.8	01Jan2011, 06:24	9.3
JWT042	0.2789415	167.0	01Jan2011, 06:21	19.6
RWT046	0.2789415	166.7	01Jan2011, 06:28	19.6
WT040	0.1850600	92.7	01Jan2011, 06:28	12.8
JWT044	0.4640015	259.4	01Jan2011, 06:28	32.4
RWT054	0.4640015	258.8	01Jan2011, 06:35	32.3
WT060	0.1956300	116.8	01Jan2011, 06:26	15.1
WT050	0.1899300	139.4	01Jan2011, 06:19	15.3
JWT050	0.8495615	475.4	01Jan2011, 06:31	62.7
RWT092	0.8495615	475.2	01Jan2011, 06:32	62.7
WT070	0.1711000	133.9	01Jan2011, 06:12	11.8
JWT070	0.1711000	133.9	01Jan2011, 06:12	11.8
RWT080	0.1711000	133.4	01Jan2011, 06:22	11.8
WT080	0.0691596	67.3	01Jan2011, 06:10	5.6
Sub Regional Pond SR1	1.0898211	513.2	01Jan2011, 06:40	78.4
JWT080	1.0898211	513.2	01Jan2011, 06:40	78.4
RWT094	1.0898211	512.4	01Jan2011, 06:45	78.3
WT100-REV	0.1292700	203.0	01Jan2011, 06:04	12.9

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
W26-REV	0.0720000	103.6	01Jan2011, 06:03	6.4
WS3-1	0.0720000	102.8	01Jan2011, 06:10	6.4
Paint Brush Hills Pond C	0.2012700	64.4	01Jan2011, 06:26	19.2
WT090	0.1533300	162.4	01Jan2011, 06:09	12.8
JWT090	1.4444211	595.9	01Jan2011, 06:44	110.2
RWT122	1.4444211	595.5	01Jan2011, 06:45	110.2
WT110	0.1942800	169.9	01Jan2011, 06:14	16.2
JWT110	1.6387011	651.0	01Jan2011, 06:43	126.4
RWT124	1.6387011	650.8	01Jan2011, 06:47	126.3
WT130-REV	0.1016250	130.0	01Jan2011, 06:11	10.9
Paint Brush Hills Pond A	0.1016250	53.8	01Jan2011, 06:32	10.9
WT120-REV	0.0430300	51.1	01Jan2011, 06:08	3.8
JWT120	1.7833561	703.6	01Jan2011, 06:46	140.9
RWT172	1.7833561	702.5	01Jan2011, 06:58	140.5
WT140-REV	0.1445300	194.2	01Jan2011, 06:12	16.8
JWT140	0.1445300	194.2	01Jan2011, 06:12	16.8
RWT150	0.1445300	193.3	01Jan2011, 06:22	16.8
WT150-REV	0.1308100	202.5	01Jan2011, 06:08	15.0
Paint Brush Hills Pond B1	0.2753400	235.6	01Jan2011, 06:29	31.8
W34B2-REV	0.0935900	141.8	01Jan2011, 06:07	10.2
Paint Brush Hills Pond B2	0.3689300	234.3	01Jan2011, 06:43	38.9
JWT150	0.3689300	234.3	01Jan2011, 06:43	38.9
RWT160	0.3689300	234.2	01Jan2011, 06:49	38.8
WT160-REV	0.0734800	109.9	01Jan2011, 06:06	7.5
JWT160	0.4424100	244.8	01Jan2011, 06:48	46.3
RWT174	0.4424100	244.7	01Jan2011, 06:56	46.2
WT170-REV	0.1060150	85.2	01Jan2011, 06:19	9.2
W34-CY-REV	0.0465469	38.1	01Jan2011, 06:16	3.8
JWT172	2.3783280	981.9	01Jan2011, 06:56	199.7
RWT176	2.3783280	981.6	01Jan2011, 06:57	199.7
Sub Regional Pond SR2	2.3783280	972.9	01Jan2011, 07:01	194.8

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
JWT174	2.3783280	972.9	01Jan2011, 07:01	194.8
RWT180	2.3783280	972.1	01Jan2011, 07:10	194.2
WT180-REV	0.0409400	29.3	01Jan2011, 06:19	3.2
JWT180	2.4192680	978.0	01Jan2011, 07:10	197.4
RWT202	2.4192680	977.3	01Jan2011, 07:21	196.8
WT200	0.3017100	186.8	01Jan2011, 06:30	26.0
WT190	0.0574561	74.7	01Jan2011, 06:05	5.0
The Meadows Pond #1	0.0574561	2.1	01Jan2011, 08:29	2.8
JWT190	0.0574561	2.1	01Jan2011, 08:29	2.8
RWT204	0.0574561	2.1	01Jan2011, 08:55	2.7
JWT200	2.7784341	1041.0	01Jan2011, 07:19	225.5
RWT210	2.7784341	1040.5	01Jan2011, 07:24	225.1
WT210	0.2654600	187.9	01Jan2011, 06:35	28.0
JWT210	3.0438941	1113.0	01Jan2011, 07:23	253.1
RWT232	3.0438941	1112.6	01Jan2011, 07:27	252.7
WT220	0.1895300	250.4	01Jan2011, 06:12	21.3
JWT220	0.1895300	250.4	01Jan2011, 06:12	21.3
RWT234	0.1895300	249.6	01Jan2011, 06:20	21.3
JWT232	3.2334241	1138.4	01Jan2011, 07:26	274.0
RWT236	3.2334241	1138.3	01Jan2011, 07:26	274.0
WT230	0.1981800	346.7	01Jan2011, 06:05	23.1
JWT234	3.4316041	1155.6	01Jan2011, 07:26	297.0
RWT240	3.4316041	1155.0	01Jan2011, 07:29	296.8
WT240	0.0761461	160.3	01Jan2011, 06:01	9.1
Regional Pond WU North	3.5077502	1160.9	01Jan2011, 07:30	304.7
Regional Pond WU Diversion	3.5077502	1122.2	01Jan2011, 07:30	261.4
Old Meridian	0.0335900	85.0	01Jan2011, 06:07	6.1
RWT-OM	0.0335900	84.2	01Jan2011, 06:12	6.1
Regional Pond WU South	3.5413402	997.3	01Jan2011, 07:47	255.2
RWT240_Diversion Reach	0.0000000	38.8	01Jan2011, 07:35	43.1
JWT240	3.5413402	1036.0	01Jan2011, 07:47	298.4

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
RWT250	3.5413402	1035.7	01Jan2011, 07:48	298.3
WT250	0.1469500	291.4	01Jan2011, 06:02	17.1
JWT250	3.6882902	1048.0	01Jan2011, 07:48	315.4
RWT260	3.6882902	1047.5	01Jan2011, 07:58	314.3
WT260	0.1388002	77.5	01Jan2011, 06:34	11.5
JWT260	3.8270904	1061.8	01Jan2011, 07:58	325.9
RWT291	3.8270904	1061.7	01Jan2011, 08:00	325.6
WT270	0.0324738	57.1	01Jan2011, 06:04	3.6
JWT270	0.0324738	57.1	01Jan2011, 06:04	3.6
RWT292	0.0324738	56.9	01Jan2011, 06:08	3.5
JWT292	3.8595642	1064.3	01Jan2011, 08:00	329.2
RWT295	3.8595642	1064.2	01Jan2011, 08:01	329.0
WT280	0.2669500	251.8	01Jan2011, 06:12	22.3
JWT280	0.2669500	251.8	01Jan2011, 06:12	22.3
RWT294	0.2669500	251.2	01Jan2011, 06:15	22.2
JWT294	4.1265142	1082.0	01Jan2011, 08:01	351.3
RWT296	4.1265142	1081.4	01Jan2011, 08:07	350.6
MT040	0.3084200	455.2	01Jan2011, 06:11	38.1
MT030	0.1566300	228.6	01Jan2011, 06:05	15.1
MT020	0.0902033	143.1	01Jan2011, 06:04	9.0
JMT020	0.0902033	143.1	01Jan2011, 06:04	9.0
RMT030	0.0902033	141.8	01Jan2011, 06:17	8.9
JMT030	0.2468333	294.4	01Jan2011, 06:07	24.0
RMT040	0.2468333	293.0	01Jan2011, 06:11	24.0
Woodmen Hills Pond H	0.5552533	751.7	01Jan2011, 06:11	61.7
JMT040	0.5552533	751.7	01Jan2011, 06:11	61.7
RMT050	0.5552533	745.8	01Jan2011, 06:14	61.7
MT050	0.1186100	109.7	01Jan2011, 06:18	11.4
JMT050	0.6738633	851.9	01Jan2011, 06:14	73.1
RMT064	0.6738633	847.0	01Jan2011, 06:21	73.0
MT010	0.2898900	206.3	01Jan2011, 06:24	25.0

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
The Meadows Pond #2	0.2898900	99.3	01Jan2011, 06:53	23.4
JMT010	0.2898900	99.3	01Jan2011, 06:53	23.4
RMT062	0.2898900	99.2	01Jan2011, 07:18	23.2
MT060	0.1941800	199.3	01Jan2011, 06:13	18.0
Sub Regional Pond SR4	1.1579333	727.4	01Jan2011, 06:35	108.8
JMT060	1.1579333	727.4	01Jan2011, 06:35	108.8
RMT070	1.1579333	725.8	01Jan2011, 06:40	108.6
MT070	0.1994800	165.4	01Jan2011, 06:22	19.1
JMT070	1.3574133	844.1	01Jan2011, 06:38	127.7
RMT080	1.3574133	843.3	01Jan2011, 06:40	127.7
MT080	0.0638371	191.9	01Jan2011, 06:00	11.0
Regional Pond MN	1.4212504	824.2	01Jan2011, 06:45	136.1
JMT080	1.4212504	824.2	01Jan2011, 06:45	136.1
RMT102	1.4212504	822.3	01Jan2011, 06:51	135.9
MT090	0.0435103	127.4	01Jan2011, 06:00	7.1
Woodmen Hills Pond #5	0.0435103	18.6	01Jan2011, 06:07	5.9
JMT090	0.0435103	18.6	01Jan2011, 06:07	5.9
RMT090	0.0435103	18.6	01Jan2011, 06:08	5.9
JMT104	0.0435103	18.6	01Jan2011, 06:08	5.9
RMT104	0.0435103	18.6	01Jan2011, 06:12	5.9
JMT102	1.4647607	837.8	01Jan2011, 06:51	141.8
RMT106	1.4647607	832.9	01Jan2011, 06:53	141.7
MT100	0.0557682	88.2	01Jan2011, 06:05	5.9
JMT106	1.5205289	840.1	01Jan2011, 06:53	147.6
RMT112	1.5205289	836.8	01Jan2011, 07:04	146.9
MT110	0.1163900	117.4	01Jan2011, 06:16	11.5
JMT110	1.6369189	859.1	01Jan2011, 07:04	158.4
RMT114	1.6369189	857.8	01Jan2011, 07:09	158.2
WT290	0.1037800	110.3	01Jan2011, 06:09	8.7
Regional Pond R1	5.8672131	1425.7	01Jan2011, 08:04	509.8
JWT296	5.8672131	1425.7	01Jan2011, 08:04	509.8

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
RWT314	5.8672131	1425.4	01Jan2011, 08:09	509.0
WT300	0.0970199	91.6	01Jan2011, 06:12	8.1
JWT300	0.0970199	91.6	01Jan2011, 06:12	8.1
RWT312	0.0970199	91.1	01Jan2011, 06:29	8.1
WT310	0.2774200	246.7	01Jan2011, 06:13	22.3
JWT310	6.2416530	1449.6	01Jan2011, 08:09	539.4
RWT320	6.2416530	1448.8	01Jan2011, 08:15	538.3
WT320	0.2061400	200.6	01Jan2011, 06:11	17.2
JWT320	6.4477930	1461.0	01Jan2011, 08:14	555.5
RWT352	6.4477930	1460.1	01Jan2011, 08:24	554.2
ET020	0.2131700	360.5	01Jan2011, 06:06	24.8
ET010	0.1451300	198.3	01Jan2011, 06:11	16.4
Paint Brush Hills Pond #4	0.1451300	150.9	01Jan2011, 06:20	16.3
JET010	0.1451300	150.9	01Jan2011, 06:20	16.3
RET020	0.1451300	150.0	01Jan2011, 06:37	16.3
Sub Regional Pond SR6	0.3583000	195.4	01Jan2011, 06:41	37.9
JET020	0.3583000	195.4	01Jan2011, 06:41	37.9
RET030	0.3583000	194.9	01Jan2011, 07:02	37.5
ET030	0.2042800	242.0	01Jan2011, 06:15	23.0
JET030	0.5625800	266.0	01Jan2011, 06:43	60.5
RET040	0.5625800	265.2	01Jan2011, 06:50	60.3
Woodmen Hills Pond #1 North	0.7117200	263.5	01Jan2011, 07:09	75.5
ET040	0.1491400	165.7	01Jan2011, 06:14	15.3
Woodmen Hills Pond #1 South	0.7117200	261.1	01Jan2011, 07:18	69.5
JET040	0.7117200	261.1	01Jan2011, 07:18	69.5
RET050	0.7117200	261.1	01Jan2011, 07:23	69.4
ET050	0.1171900	197.1	01Jan2011, 06:03	11.6
Woodmen Hills Pond #2	0.8289100	250.3	01Jan2011, 07:46	79.3
JET050	0.8289100	250.3	01Jan2011, 07:46	79.3
RET060	0.8289100	250.3	01Jan2011, 07:53	79.1
ET060	0.2854300	529.3	01Jan2011, 06:01	29.3

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
Woodmen Hills Pond #3	1.1143400	360.9	01Jan2011, 06:06	105.9
JET060	1.1143400	360.9	01Jan2011, 06:06	105.9
RET070	1.1143400	356.7	01Jan2011, 06:16	105.6
ET070	0.2497500	461.0	01Jan2011, 06:02	27.3
JET070	1.3640900	636.4	01Jan2011, 06:04	132.9
RET080	1.3640900	517.5	01Jan2011, 06:23	131.3
ET080	0.2916400	517.9	01Jan2011, 06:07	37.1
Woodmen Hills Pond #4	1.6557300	288.0	01Jan2011, 07:00	139.2
JET080	1.6557300	288.0	01Jan2011, 07:00	139.2
RET090	1.6557300	287.3	01Jan2011, 07:03	139.0
ET090	0.1242400	133.0	01Jan2011, 06:22	14.9
JET090	1.7799700	330.8	01Jan2011, 06:59	153.9
RET100	1.7799700	330.7	01Jan2011, 07:01	153.8
ET100	0.0480615	72.0	01Jan2011, 06:02	4.0
JET100	1.8280315	335.4	01Jan2011, 07:01	157.8
RET110	1.8280315	335.2	01Jan2011, 07:05	157.6
ET110	0.2260300	198.8	01Jan2011, 06:12	17.5
JET110	2.0540615	362.1	01Jan2011, 07:03	175.1
RET120	2.0540615	361.3	01Jan2011, 07:09	174.7
ET120	0.1091300	89.4	01Jan2011, 06:14	8.5
JET120	2.1631915	403.2	01Jan2011, 06:17	183.2
RET152	2.1631915	402.2	01Jan2011, 06:24	182.9
ET130	0.1348100	85.4	01Jan2011, 06:27	11.2
JET130	0.1348100	85.4	01Jan2011, 06:27	11.2
RET140	0.1348100	84.7	01Jan2011, 06:54	11.1
ET140	0.2675900	122.8	01Jan2011, 06:46	22.2
JET140	0.4024000	204.8	01Jan2011, 06:51	33.3
RET154	0.4024000	204.4	01Jan2011, 07:05	33.2
JET152	2.5655915	572.3	01Jan2011, 07:10	216.1
RET156	2.5655915	572.0	01Jan2011, 07:14	215.8
ET150	0.1777300	136.2	01Jan2011, 06:18	14.3

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
JET154	2.7433215	595.8	01Jan2011, 07:12	230.1
RET162	2.7433215	595.1	01Jan2011, 07:25	228.9
ET160	0.1889200	137.2	01Jan2011, 06:23	16.3
JET160	2.9322415	633.6	01Jan2011, 06:38	245.2
RET164	2.9322415	629.0	01Jan2011, 06:47	244.7
WT350	0.3037700	276.7	01Jan2011, 06:14	26.3
JWT352	9.6838045	2089.5	01Jan2011, 07:39	825.3
RWT354	9.6838045	2089.4	01Jan2011, 07:39	825.2
WT330	0.3266800	249.3	01Jan2011, 06:19	27.2
JWT330	0.3266800	249.3	01Jan2011, 06:19	27.2
RWT344	0.3266800	248.4	01Jan2011, 06:25	27.2
WT340	0.2780000	147.3	01Jan2011, 06:37	23.1
JWT354	10.2884845	2167.5	01Jan2011, 07:38	875.5
RWT372	10.2884845	2164.7	01Jan2011, 07:44	874.3
WT360	0.0656830	54.8	01Jan2011, 06:15	5.3
JWT360	0.0656830	54.8	01Jan2011, 06:15	5.3
RWT374	0.0656830	54.6	01Jan2011, 06:24	5.3
Regional Pond R2	10.3541675	2167.7	01Jan2011, 07:45	876.2
JWT372	10.3541675	2167.7	01Jan2011, 07:45	876.2
RWT376	10.3541675	2161.8	01Jan2011, 07:55	874.1
WT370	0.2147600	123.3	01Jan2011, 06:12	11.5
JWT374_OUTLET	10.5689275	2171.9	01Jan2011, 07:55	885.5
FS010	0.1220000	74.9	01Jan2011, 06:16	7.7
JFS010_OUTLET	0.1220000	74.9	01Jan2011, 06:16	7.7

Project: Aug15_Working_Falcon_DBPS_S

Simulation Run: FU 100-yr Reservoir: Regional Pond WU South

Start of Run: 01Jan2011, 00:00 Basin Model: Falcon_DBPS_Future

End of Run: 02Jan2011, 00:00 Meteorologic Model: 100-yr

Compute Time: 03Feb2020, 16:13:16 Control Specifications: 24-hr Storm

Volume Units: AC-FT

Computed Results

Peak Inflow :	1126.7 (CFS)	Date/Time of Peak Inflow :	01Jan2011, 07:30
Peak Outflow :	997.3 (CFS)	Date/Time of Peak Outflow :	01Jan2011, 07:47
Total Inflow :	267.5 (AC-FT)	Peak Storage :	39.0 (AC-FT)
Total Outflow :	255.2 (AC-FT)	Peak Elevation :	6828.0 (FT)

Project: Aug15_Working_Falcon_DBPS_SSimulation Run: FU 5-yr

Start of Run: 01Jan2011, 00:00 Basin Model: Falcon_DBPS_Future
 End of Run: 02Jan2011, 00:00 Meteorologic Model: 5-yr
 Compute Time: 03Feb2020, 16:18:12 Control Specifications: 24-hr Storm

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
WT020	0.0671383	10.3	01Jan2011, 06:23	1.4
JWT020	0.0671383	10.3	01Jan2011, 06:23	1.4
RWT030	0.0671383	10.3	01Jan2011, 06:34	1.4
WT030	0.0764732	19.5	01Jan2011, 06:08	1.6
JWT030	0.1436115	20.0	01Jan2011, 06:09	3.0
RWT042	0.1436115	19.9	01Jan2011, 06:18	3.0
WT010	0.1353300	21.2	01Jan2011, 06:19	2.6
JWT010	0.1353300	21.2	01Jan2011, 06:19	2.6
RWT044	0.1353300	21.2	01Jan2011, 06:29	2.6
JWT042	0.2789415	37.2	01Jan2011, 06:24	5.6
RWT046	0.2789415	37.2	01Jan2011, 06:35	5.6
WT040	0.1850600	21.9	01Jan2011, 06:31	3.6
JWT044	0.4640015	58.9	01Jan2011, 06:34	9.2
RWT054	0.4640015	58.7	01Jan2011, 06:43	9.2
WT060	0.1956300	30.1	01Jan2011, 06:29	4.5
WT050	0.1899300	37.3	01Jan2011, 06:21	4.7
JWT050	0.8495615	108.6	01Jan2011, 06:38	18.4
RWT092	0.8495615	108.5	01Jan2011, 06:39	18.4
WT070	0.1711000	32.6	01Jan2011, 06:13	3.4
JWT070	0.1711000	32.6	01Jan2011, 06:13	3.4
RWT080	0.1711000	32.5	01Jan2011, 06:28	3.3
WT080	0.0691596	18.5	01Jan2011, 06:12	1.7
Sub Regional Pond SR1	1.0898211	113.8	01Jan2011, 06:50	21.9
JWT080	1.0898211	113.8	01Jan2011, 06:50	21.9
RWT094	1.0898211	113.7	01Jan2011, 06:58	21.8
WT100-REV	0.1292700	67.7	01Jan2011, 06:05	4.5

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
W26-REV	0.0720000	33.7	01Jan2011, 06:04	2.1
WS3-1	0.0720000	33.4	01Jan2011, 06:13	2.1
Paint Brush Hills Pond C	0.2012700	14.0	01Jan2011, 06:38	6.5
WT090	0.1533300	46.0	01Jan2011, 06:10	4.0
JWT090	1.4444211	133.8	01Jan2011, 06:57	32.3
RWT122	1.4444211	133.7	01Jan2011, 07:01	32.3
WT110	0.1942800	47.0	01Jan2011, 06:16	5.1
JWT110	1.6387011	144.0	01Jan2011, 07:00	37.4
RWT124	1.6387011	144.0	01Jan2011, 07:08	37.3
WT130-REV	0.1016250	43.5	01Jan2011, 06:12	3.9
Paint Brush Hills Pond A	0.1016250	9.3	01Jan2011, 06:49	3.9
WT120-REV	0.0430300	14.8	01Jan2011, 06:09	1.2
JWT120	1.7833561	154.4	01Jan2011, 07:08	42.4
RWT172	1.7833561	154.2	01Jan2011, 07:18	42.2
WT140-REV	0.1445300	65.2	01Jan2011, 06:14	6.1
JWT140	0.1445300	65.2	01Jan2011, 06:14	6.1
RWT150	0.1445300	64.9	01Jan2011, 06:24	6.1
WT150-REV	0.1308100	71.3	01Jan2011, 06:08	5.5
Paint Brush Hills Pond B	10.2753400	110.4	01Jan2011, 06:15	11.6
W34B2-REV	0.0935900	49.1	01Jan2011, 06:08	3.7
Paint Brush Hills Pond B	20.3689300	20.1	01Jan2011, 07:15	13.8
JWT150	0.3689300	20.1	01Jan2011, 07:15	13.8
RWT160	0.3689300	20.0	01Jan2011, 07:24	13.8
WT160-REV	0.0734800	36.3	01Jan2011, 06:07	2.6
JWT160	0.4424100	37.3	01Jan2011, 06:07	16.4
RWT174	0.4424100	36.9	01Jan2011, 06:20	16.3
WT170-REV	0.1060150	24.0	01Jan2011, 06:21	2.9
W34-CY-REV	0.0465469	10.7	01Jan2011, 06:18	1.2
JWT172	2.3783280	181.3	01Jan2011, 07:17	62.6
RWT176	2.3783280	181.2	01Jan2011, 07:18	62.6
Sub Regional Pond SR2	2.3783280	171.7	01Jan2011, 07:30	59.3

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
JWT174	2.3783280	171.7	01Jan2011, 07:30	59.3
RWT180	2.3783280	171.6	01Jan2011, 07:45	59.0
WT180-REV	0.0409400	7.6	01Jan2011, 06:21	1.0
JWT180	2.4192680	172.6	01Jan2011, 07:45	59.9
RWT202	2.4192680	172.6	01Jan2011, 08:03	59.5
WT200	0.3017100	52.2	01Jan2011, 06:33	8.3
WT190	0.0574561	22.5	01Jan2011, 06:06	1.6
The Meadows Pond #1	0.0574561	0.6	01Jan2011, 10:18	0.9
JWT190	0.0574561	0.6	01Jan2011, 10:18	0.9
RWT204	0.0574561	0.6	01Jan2011, 10:56	0.8
JWT200	2.7784341	182.8	01Jan2011, 08:02	68.6
RWT210	2.7784341	182.7	01Jan2011, 08:10	68.3
WT210	0.2654600	59.7	01Jan2011, 06:38	9.8
JWT210	3.0438941	194.3	01Jan2011, 08:09	78.2
RWT232	3.0438941	194.3	01Jan2011, 08:16	77.9
WT220	0.1895300	84.8	01Jan2011, 06:13	7.8
JWT220	0.1895300	84.8	01Jan2011, 06:13	7.8
RWT234	0.1895300	84.4	01Jan2011, 06:25	7.7
JWT232	3.2334241	200.7	01Jan2011, 08:16	85.7
RWT236	3.2334241	200.7	01Jan2011, 08:16	85.7
WT230	0.1981800	124.0	01Jan2011, 06:06	8.5
JWT234	3.4316041	205.6	01Jan2011, 08:15	94.2
RWT240	3.4316041	205.4	01Jan2011, 08:21	94.0
WT240	0.0761461	61.0	01Jan2011, 06:02	3.4
Regional Pond WU North	3.5077502	206.4	01Jan2011, 08:23	96.3
Regional Pond WU Diversion	3.5077502	169.3	01Jan2011, 08:23	64.8
Old Meridian	0.0335900	38.2	01Jan2011, 06:09	2.8
RWT-OM	0.0335900	37.8	01Jan2011, 06:14	2.8
Regional Pond WU South	3.5413402	144.6	01Jan2011, 08:49	57.2
RWT240_Diversion Reach	0.0000000	37.1	01Jan2011, 08:29	31.4
JWT240	3.5413402	180.6	01Jan2011, 08:47	88.6

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
RWT250	3.5413402	180.6	01Jan2011, 08:48	88.5
WT250	0.1469500	107.5	01Jan2011, 06:03	6.3
JWT250	3.6882902	183.2	01Jan2011, 08:48	94.9
RWT260	3.6882902	183.1	01Jan2011, 09:04	94.3
WT260	0.1388002	21.0	01Jan2011, 06:36	3.6
JWT260	3.8270904	185.4	01Jan2011, 09:03	97.9
RWT291	3.8270904	185.3	01Jan2011, 09:07	97.8
WT270	0.0324738	20.0	01Jan2011, 06:04	1.3
JWT270	0.0324738	20.0	01Jan2011, 06:04	1.3
RWT292	0.0324738	19.9	01Jan2011, 06:10	1.3
JWT292	3.8595642	185.9	01Jan2011, 09:07	99.0
RWT295	3.8595642	185.8	01Jan2011, 09:09	99.0
WT280	0.2669500	70.1	01Jan2011, 06:14	6.9
JWT280	0.2669500	70.1	01Jan2011, 06:14	6.9
RWT294	0.2669500	70.0	01Jan2011, 06:17	6.9
JWT294	4.1265142	189.2	01Jan2011, 09:09	105.9
RWT296	4.1265142	189.1	01Jan2011, 09:17	105.5
MT040	0.3084200	163.5	01Jan2011, 06:12	14.5
MT030	0.1566300	73.4	01Jan2011, 06:06	5.1
MT020	0.0902033	47.3	01Jan2011, 06:05	3.1
JMT020	0.0902033	47.3	01Jan2011, 06:05	3.1
RMT030	0.0902033	46.8	01Jan2011, 06:21	3.1
JMT030	0.2468333	93.6	01Jan2011, 06:07	8.1
RMT040	0.2468333	92.8	01Jan2011, 06:12	8.1
Woodmen Hills Pond H	0.5552533	242.5	01Jan2011, 06:16	22.5
JMT040	0.5552533	242.5	01Jan2011, 06:16	22.5
RMT050	0.5552533	242.2	01Jan2011, 06:19	22.5
MT050	0.1186100	33.2	01Jan2011, 06:20	3.8
JMT050	0.6738633	275.4	01Jan2011, 06:19	26.3
RMT064	0.6738633	273.1	01Jan2011, 06:29	26.2
MT010	0.2898900	57.8	01Jan2011, 06:26	8.0

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
The Meadows Pond #2	0.2898900	20.8	01Jan2011, 07:07	6.5
JMT010	0.2898900	20.8	01Jan2011, 07:07	6.5
RMT062	0.2898900	20.8	01Jan2011, 07:45	6.4
MT060	0.1941800	59.3	01Jan2011, 06:14	5.9
Sub Regional Pond SR4	1.1579333	141.8	01Jan2011, 06:52	36.1
JMT060	1.1579333	141.8	01Jan2011, 06:52	36.1
RMT070	1.1579333	141.3	01Jan2011, 06:58	36.0
MT070	0.1994800	49.8	01Jan2011, 06:24	6.4
JMT070	1.3574133	162.4	01Jan2011, 06:56	42.4
RMT080	1.3574133	162.3	01Jan2011, 06:58	42.3
MT080	0.0638371	91.5	01Jan2011, 06:00	5.0
Regional Pond MN	1.4212504	160.0	01Jan2011, 07:04	44.9
JMT080	1.4212504	160.0	01Jan2011, 07:04	44.9
RMT102	1.4212504	159.5	01Jan2011, 07:12	44.7
MT090	0.0435103	59.3	01Jan2011, 06:00	3.2
Woodmen Hills Pond #5	0.0435103	2.2	01Jan2011, 08:01	2.3
JMT090	0.0435103	2.2	01Jan2011, 08:01	2.3
RMT090	0.0435103	2.2	01Jan2011, 08:01	2.3
JMT104	0.0435103	2.2	01Jan2011, 08:01	2.3
RMT104	0.0435103	2.2	01Jan2011, 08:07	2.3
JMT102	1.4647607	161.7	01Jan2011, 07:12	47.1
RMT106	1.4647607	159.8	01Jan2011, 07:15	47.0
MT100	0.0557682	29.8	01Jan2011, 06:06	2.1
JMT106	1.5205289	161.8	01Jan2011, 07:15	49.1
RMT112	1.5205289	161.1	01Jan2011, 07:36	48.5
MT110	0.1163900	36.3	01Jan2011, 06:18	3.9
JMT110	1.6369189	165.3	01Jan2011, 07:36	52.4
RMT114	1.6369189	165.0	01Jan2011, 07:43	52.3
WT290	0.1037800	31.2	01Jan2011, 06:10	2.7
Regional Pond R1	5.8672131	259.0	01Jan2011, 09:19	153.4
JWT296	5.8672131	259.0	01Jan2011, 09:19	153.4

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
RWT314	5.8672131	259.0	01Jan2011, 09:26	152.7
WT300	0.0970199	25.5	01Jan2011, 06:14	2.5
JWT300	0.0970199	25.5	01Jan2011, 06:14	2.5
RWT312	0.0970199	25.4	01Jan2011, 06:34	2.5
WT310	0.2774200	67.1	01Jan2011, 06:14	6.9
JWT310	6.2416530	263.5	01Jan2011, 09:26	162.1
RWT320	6.2416530	263.3	01Jan2011, 09:33	161.4
WT320	0.2061400	56.1	01Jan2011, 06:13	5.4
JWT320	6.4477930	265.9	01Jan2011, 09:33	166.8
RWT352	6.4477930	265.8	01Jan2011, 09:42	165.9
ET020	0.2131700	128.1	01Jan2011, 06:07	9.2
ET010	0.1451300	67.4	01Jan2011, 06:12	5.9
Paint Brush Hills Pond #4	0.1451300	48.8	01Jan2011, 06:22	5.9
JET010	0.1451300	48.8	01Jan2011, 06:22	5.9
RET020	0.1451300	48.7	01Jan2011, 06:37	5.9
Sub Regional Pond SR6	0.3583000	19.9	01Jan2011, 07:26	13.5
JET020	0.3583000	19.9	01Jan2011, 07:26	13.5
RET030	0.3583000	19.7	01Jan2011, 08:14	13.1
ET030	0.2042800	81.2	01Jan2011, 06:17	8.4
JET030	0.5625800	81.2	01Jan2011, 06:17	21.5
RET040	0.5625800	80.9	01Jan2011, 06:28	21.4
Woodmen Hills Pond #1 North	0.7117200	103.5	01Jan2011, 06:35	26.6
ET040	0.1491400	52.6	01Jan2011, 06:15	5.3
Woodmen Hills Pond #1 South	0.7117200	32.8	01Jan2011, 07:14	21.7
JET040	0.7117200	32.8	01Jan2011, 07:14	21.7
RET050	0.7117200	32.8	01Jan2011, 07:22	21.6
ET050	0.1171900	66.6	01Jan2011, 06:03	4.0
Woodmen Hills Pond #2	0.8289100	29.6	01Jan2011, 08:07	23.9
JET050	0.8289100	29.6	01Jan2011, 08:07	23.9
RET060	0.8289100	29.6	01Jan2011, 08:19	23.7
ET060	0.2854300	185.5	01Jan2011, 06:02	10.2

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
Woodmen Hills Pond #3	1.1143400	82.1	01Jan2011, 06:08	31.5
JET060	1.1143400	82.1	01Jan2011, 06:08	31.5
RET070	1.1143400	81.0	01Jan2011, 06:18	31.2
ET070	0.2497500	164.1	01Jan2011, 06:03	9.8
JET070	1.3640900	164.5	01Jan2011, 06:03	41.0
RET080	1.3640900	123.5	01Jan2011, 06:29	40.2
ET080	0.2916400	192.2	01Jan2011, 06:08	14.3
Woodmen Hills Pond #4	1.6557300	26.7	01Jan2011, 14:58	26.8
JET080	1.6557300	26.7	01Jan2011, 14:58	26.8
RET090	1.6557300	26.7	01Jan2011, 15:03	26.6
ET090	0.1242400	46.0	01Jan2011, 06:23	5.6
JET090	1.7799700	50.6	01Jan2011, 06:24	32.2
RET100	1.7799700	50.6	01Jan2011, 06:28	32.1
ET100	0.0480615	22.3	01Jan2011, 06:02	1.3
JET100	1.8280315	53.2	01Jan2011, 06:28	33.3
RET110	1.8280315	53.1	01Jan2011, 06:35	33.1
ET110	0.2260300	52.7	01Jan2011, 06:13	5.3
JET110	2.0540615	86.0	01Jan2011, 06:13	38.4
RET120	2.0540615	85.1	01Jan2011, 06:19	38.1
ET120	0.1091300	23.5	01Jan2011, 06:16	2.5
JET120	2.1631915	107.9	01Jan2011, 06:19	40.7
RET152	2.1631915	107.7	01Jan2011, 06:25	40.4
ET130	0.1348100	23.2	01Jan2011, 06:30	3.5
JET130	0.1348100	23.2	01Jan2011, 06:30	3.5
RET140	0.1348100	23.1	01Jan2011, 07:00	3.5
ET140	0.2675900	33.4	01Jan2011, 06:49	6.9
JET140	0.4024000	55.3	01Jan2011, 06:56	10.4
RET154	0.4024000	55.2	01Jan2011, 07:19	10.3
JET152	2.5655915	108.6	01Jan2011, 06:26	50.8
RET156	2.5655915	108.3	01Jan2011, 06:30	50.6
ET150	0.1777300	36.6	01Jan2011, 06:20	4.4

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
JET154	2.7433215	138.8	01Jan2011, 06:29	55.0
RET162	2.7433215	135.5	01Jan2011, 06:54	54.2
ET160	0.1889200	38.5	01Jan2011, 06:25	5.2
JET160	2.9322415	154.7	01Jan2011, 06:53	59.4
RET164	2.9322415	154.3	01Jan2011, 06:58	59.2
WT350	0.3037700	78.7	01Jan2011, 06:16	8.4
JWT352	9.6838045	344.4	01Jan2011, 08:16	233.5
RWT354	9.6838045	344.4	01Jan2011, 08:16	233.5
WT330	0.3266800	68.2	01Jan2011, 06:21	8.5
JWT330	0.3266800	68.2	01Jan2011, 06:21	8.5
RWT344	0.3266800	67.9	01Jan2011, 06:30	8.5
WT340	0.2780000	40.0	01Jan2011, 06:39	7.2
JWT354	10.2884845	362.9	01Jan2011, 07:18	249.1
RWT372	10.2884845	362.5	01Jan2011, 07:22	248.5
WT360	0.0656830	14.8	01Jan2011, 06:17	1.6
JWT360	0.0656830	14.8	01Jan2011, 06:17	1.6
RWT374	0.0656830	14.7	01Jan2011, 06:32	1.6
Regional Pond R2	10.3541675	364.1	01Jan2011, 07:24	246.9
JWT372	10.3541675	364.1	01Jan2011, 07:24	246.9
RWT376	10.3541675	362.6	01Jan2011, 07:34	245.7
WT370	0.2147600	23.4	01Jan2011, 06:15	2.8
JWT374_OUTLET	10.5689275	365.7	01Jan2011, 07:34	248.5
FS010	0.1220000	16.6	01Jan2011, 06:18	2.1
JFS010_OUTLET	0.1220000	16.6	01Jan2011, 06:18	2.1

Project: Aug15_Working_Falcon_DBPS_S
Simulation Run: FU 5-yr Reservoir: Regional Pond WU South

Start of Run:	01Jan2011, 00:00	Basin Model:	Falcon_DBPS_Future
End of Run:	02Jan2011, 00:00	Meteorologic Model:	5-yr
Compute Time:	03Feb2020, 16:18:12	Control Specifications:	24-hr Storm

Volume Units: AC-FT

Computed Results

Peak Inflow :	171.1 (CFS)	Date/Time of Peak Inflow :	01Jan2011, 08:23
Peak Outflow :	144.6 (CFS)	Date/Time of Peak Outflow :	01Jan2011, 08:49
Total Inflow :	67.6 (AC-FT)	Peak Storage :	17.5 (AC-FT)
Total Outflow :	57.2 (AC-FT)	Peak Elevation :	6823.7 (FT)

Project: Aug15_Working_Falcon_DBPS_SSimulation Run: FU 2-yr

Start of Run: 01Jan2011, 00:00 Basin Model: Falcon_DBPS_Future
 End of Run: 02Jan2011, 00:00 Meteorologic Model: 2-yr
 Compute Time: 03Feb2020, 16:15:59 Control Specifications: 24-hr Storm

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
WT020	0.0671383	4.4	01Jan2011, 06:25	0.7
JWT020	0.0671383	4.4	01Jan2011, 06:25	0.7
RWT030	0.0671383	4.4	01Jan2011, 06:39	0.7
WT030	0.0764732	8.6	01Jan2011, 06:09	0.8
JWT030	0.1436115	8.7	01Jan2011, 06:09	1.5
RWT042	0.1436115	8.7	01Jan2011, 06:20	1.5
WT010	0.1353300	8.8	01Jan2011, 06:21	1.3
JWT010	0.1353300	8.8	01Jan2011, 06:21	1.3
RWT044	0.1353300	8.8	01Jan2011, 06:33	1.3
JWT042	0.2789415	15.1	01Jan2011, 06:26	2.8
RWT046	0.2789415	15.1	01Jan2011, 06:40	2.8
WT040	0.1850600	9.1	01Jan2011, 06:34	1.8
JWT044	0.4640015	23.9	01Jan2011, 06:39	4.5
RWT054	0.4640015	23.8	01Jan2011, 06:50	4.5
WT060	0.1956300	13.6	01Jan2011, 06:30	2.3
WT050	0.1899300	17.3	01Jan2011, 06:23	2.4
JWT050	0.8495615	42.8	01Jan2011, 06:47	9.3
RWT092	0.8495615	42.7	01Jan2011, 06:49	9.3
WT070	0.1711000	13.6	01Jan2011, 06:15	1.6
JWT070	0.1711000	13.6	01Jan2011, 06:15	1.6
RWT080	0.1711000	13.6	01Jan2011, 06:34	1.6
WT080	0.0691596	8.7	01Jan2011, 06:13	0.9
Sub Regional Pond SR1	1.0898211	41.9	01Jan2011, 07:03	10.4
JWT080	1.0898211	41.9	01Jan2011, 07:03	10.4
RWT094	1.0898211	41.9	01Jan2011, 07:14	10.3
WT100-REV	0.1292700	37.0	01Jan2011, 06:05	2.5

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
W26-REV	0.0720000	18.4	01Jan2011, 06:04	1.2
WS3-1	0.0720000	18.1	01Jan2011, 06:15	1.2
Paint Brush Hills Pond C	0.2012700	10.4	01Jan2011, 06:34	3.7
WT090	0.1533300	22.1	01Jan2011, 06:11	2.1
JWT090	1.4444211	54.5	01Jan2011, 07:12	16.1
RWT122	1.4444211	54.5	01Jan2011, 07:17	16.1
WT110	0.1942800	22.3	01Jan2011, 06:17	2.7
JWT110	1.6387011	58.6	01Jan2011, 07:16	18.7
RWT124	1.6387011	58.6	01Jan2011, 07:26	18.7
WT130-REV	0.1016250	24.0	01Jan2011, 06:13	2.3
Paint Brush Hills Pond A	0.1016250	4.8	01Jan2011, 06:53	2.3
WT120-REV	0.0430300	7.2	01Jan2011, 06:09	0.6
JWT120	1.7833561	63.9	01Jan2011, 07:26	21.6
RWT172	1.7833561	63.8	01Jan2011, 07:38	21.5
WT140-REV	0.1445300	35.7	01Jan2011, 06:14	3.6
JWT140	0.1445300	35.7	01Jan2011, 06:14	3.6
RWT150	0.1445300	35.5	01Jan2011, 06:25	3.6
WT150-REV	0.1308100	40.8	01Jan2011, 06:09	3.3
Paint Brush Hills Pond B	0.2753400	58.7	01Jan2011, 06:19	6.8
W34B2-REV	0.0935900	27.9	01Jan2011, 06:08	2.2
Paint Brush Hills Pond B	0.3689300	9.8	01Jan2011, 07:30	8.0
JWT150	0.3689300	9.8	01Jan2011, 07:30	8.0
RWT160	0.3689300	9.8	01Jan2011, 07:40	8.0
WT160-REV	0.0734800	19.7	01Jan2011, 06:07	1.5
JWT160	0.4424100	20.1	01Jan2011, 06:07	9.5
RWT174	0.4424100	19.8	01Jan2011, 06:23	9.4
WT170-REV	0.1060150	11.6	01Jan2011, 06:22	1.6
W34-CY-REV	0.0465469	5.2	01Jan2011, 06:19	0.6
JWT172	2.3783280	81.2	01Jan2011, 06:39	33.1
RWT176	2.3783280	81.1	01Jan2011, 06:40	33.1
Sub Regional Pond SR2	2.3783280	66.8	01Jan2011, 08:06	30.0

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
JWT174	2.3783280	66.8	01Jan2011, 08:06	30.0
RWT180	2.3783280	66.8	01Jan2011, 08:25	29.7
WT180-REV	0.0409400	3.4	01Jan2011, 06:22	0.5
JWT180	2.4192680	67.2	01Jan2011, 08:25	30.2
RWT202	2.4192680	67.1	01Jan2011, 08:51	29.9
WT200	0.3017100	25.3	01Jan2011, 06:34	4.4
WT190	0.0574561	11.3	01Jan2011, 06:07	0.9
The Meadows Pond #1	0.0574561	0.3	01Jan2011, 13:19	0.4
JWT190	0.0574561	0.3	01Jan2011, 13:19	0.4
RWT204	0.0574561	0.3	01Jan2011, 14:16	0.4
JWT200	2.7784341	70.6	01Jan2011, 08:50	34.8
RWT210	2.7784341	70.6	01Jan2011, 09:00	34.6
WT210	0.2654600	31.9	01Jan2011, 06:39	5.6
JWT210	3.0438941	74.5	01Jan2011, 08:59	40.2
RWT232	3.0438941	74.5	01Jan2011, 09:08	40.0
WT220	0.1895300	47.1	01Jan2011, 06:14	4.5
JWT220	0.1895300	47.1	01Jan2011, 06:14	4.5
RWT234	0.1895300	46.9	01Jan2011, 06:26	4.5
JWT232	3.2334241	76.6	01Jan2011, 09:08	44.5
RWT236	3.2334241	76.6	01Jan2011, 09:09	44.5
WT230	0.1981800	71.3	01Jan2011, 06:06	5.0
JWT234	3.4316041	84.5	01Jan2011, 06:43	49.5
RWT240	3.4316041	84.0	01Jan2011, 06:48	49.4
WT240	0.0761461	36.4	01Jan2011, 06:02	2.1
Regional Pond WU North	3.5077502	89.8	01Jan2011, 06:10	50.3
Regional Pond WU Diversion	3.5077502	62.4	01Jan2011, 06:10	27.5
Old Meridian	0.0335900	24.6	01Jan2011, 06:09	1.9
RWT-OM	0.0335900	24.3	01Jan2011, 06:16	1.8
Regional Pond WU South	3.5413402	31.1	01Jan2011, 10:35	19.2
RWT240_Diversion Reach	0.0000000	27.1	01Jan2011, 06:16	22.8
JWT240	3.5413402	51.8	01Jan2011, 10:19	42.0

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
RWT250	3.5413402	51.8	01Jan2011, 10:20	42.0
WT250	0.1469500	63.0	01Jan2011, 06:03	3.7
JWT250	3.6882902	63.4	01Jan2011, 06:03	45.7
RWT260	3.6882902	61.1	01Jan2011, 06:24	45.4
WT260	0.1388002	9.9	01Jan2011, 06:38	1.9
JWT260	3.8270904	69.2	01Jan2011, 06:24	47.3
RWT291	3.8270904	68.9	01Jan2011, 06:29	47.1
WT270	0.0324738	11.3	01Jan2011, 06:05	0.7
JWT270	0.0324738	11.3	01Jan2011, 06:05	0.7
RWT292	0.0324738	11.2	01Jan2011, 06:11	0.7
JWT292	3.8595642	71.9	01Jan2011, 06:29	47.9
RWT295	3.8595642	71.5	01Jan2011, 06:31	47.8
WT280	0.2669500	33.4	01Jan2011, 06:15	3.7
JWT280	0.2669500	33.4	01Jan2011, 06:15	3.7
RWT294	0.2669500	33.4	01Jan2011, 06:18	3.7
JWT294	4.1265142	94.0	01Jan2011, 06:30	51.5
RWT296	4.1265142	91.9	01Jan2011, 06:40	51.2
MT040	0.3084200	94.6	01Jan2011, 06:13	8.8
MT030	0.1566300	39.0	01Jan2011, 06:06	2.8
MT020	0.0902033	25.8	01Jan2011, 06:05	1.7
JMT020	0.0902033	25.8	01Jan2011, 06:05	1.7
RMT030	0.0902033	25.4	01Jan2011, 06:20	1.7
JMT030	0.2468333	50.1	01Jan2011, 06:10	4.5
RMT040	0.2468333	49.3	01Jan2011, 06:16	4.5
Woodmen Hills Pond H	0.5552533	107.8	01Jan2011, 06:25	13.2
JMT040	0.5552533	107.8	01Jan2011, 06:25	13.2
RMT050	0.5552533	107.4	01Jan2011, 06:28	13.2
MT050	0.1186100	17.0	01Jan2011, 06:21	2.1
JMT050	0.6738633	123.1	01Jan2011, 06:27	15.3
RMT064	0.6738633	121.2	01Jan2011, 06:40	15.2
MT010	0.2898900	27.9	01Jan2011, 06:27	4.3

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
The Meadows Pond #2	0.2898900	5.4	01Jan2011, 07:46	3.1
JMT010	0.2898900	5.4	01Jan2011, 07:46	3.1
RMT062	0.2898900	5.4	01Jan2011, 08:41	3.0
MT060	0.1941800	29.9	01Jan2011, 06:15	3.2
Sub Regional Pond SR4	1.1579333	27.0	01Jan2011, 08:03	19.7
JMT060	1.1579333	27.0	01Jan2011, 08:03	19.7
RMT070	1.1579333	26.9	01Jan2011, 08:11	19.6
MT070	0.1994800	25.4	01Jan2011, 06:25	3.6
JMT070	1.3574133	30.5	01Jan2011, 08:10	23.2
RMT080	1.3574133	30.5	01Jan2011, 08:14	23.2
MT080	0.0638371	62.4	01Jan2011, 06:00	3.4
Regional Pond MN	1.4212504	31.5	01Jan2011, 08:17	24.1
JMT080	1.4212504	31.5	01Jan2011, 08:17	24.1
RMT102	1.4212504	31.5	01Jan2011, 08:28	23.9
MT090	0.0435103	39.9	01Jan2011, 06:00	2.1
Woodmen Hills Pond #5	0.0435103	1.4	01Jan2011, 08:02	1.5
JMT090	0.0435103	1.4	01Jan2011, 08:02	1.5
RMT090	0.0435103	1.4	01Jan2011, 08:02	1.5
JMT104	0.0435103	1.4	01Jan2011, 08:02	1.5
RMT104	0.0435103	1.4	01Jan2011, 08:09	1.5
JMT102	1.4647607	32.9	01Jan2011, 08:28	25.5
RMT106	1.4647607	32.8	01Jan2011, 08:30	25.4
MT100	0.0557682	16.5	01Jan2011, 06:06	1.2
JMT106	1.5205289	33.4	01Jan2011, 08:30	26.6
RMT112	1.5205289	33.3	01Jan2011, 09:07	26.0
MT110	0.1163900	18.9	01Jan2011, 06:19	2.2
JMT110	1.6369189	34.4	01Jan2011, 09:07	28.2
RMT114	1.6369189	34.4	01Jan2011, 09:17	28.0
WT290	0.1037800	15.0	01Jan2011, 06:11	1.4
Regional Pond R1	5.8672131	85.0	01Jan2011, 10:59	73.8
JWT296	5.8672131	85.0	01Jan2011, 10:59	73.8

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
RWT314	5.8672131	85.0	01Jan2011, 11:10	73.2
WT300	0.0970199	12.2	01Jan2011, 06:15	1.3
JWT300	0.0970199	12.2	01Jan2011, 06:15	1.3
RWT312	0.0970199	12.1	01Jan2011, 06:39	1.3
WT310	0.2774200	31.3	01Jan2011, 06:16	3.6
JWT310	6.2416530	87.0	01Jan2011, 11:10	78.1
RWT320	6.2416530	87.0	01Jan2011, 11:19	77.5
WT320	0.2061400	26.8	01Jan2011, 06:14	2.8
JWT320	6.4477930	88.2	01Jan2011, 11:20	80.4
RWT352	6.4477930	88.2	01Jan2011, 11:31	79.7
ET020	0.2131700	73.4	01Jan2011, 06:07	5.4
ET010	0.1451300	37.5	01Jan2011, 06:12	3.5
Paint Brush Hills Pond #4	0.1451300	29.4	01Jan2011, 06:21	3.5
JET010	0.1451300	29.4	01Jan2011, 06:21	3.5
RET020	0.1451300	29.3	01Jan2011, 06:37	3.5
Sub Regional Pond SR6	0.3583000	9.3	01Jan2011, 07:43	7.9
JET020	0.3583000	9.3	01Jan2011, 07:43	7.9
RET030	0.3583000	9.3	01Jan2011, 08:37	7.6
ET030	0.2042800	44.9	01Jan2011, 06:17	4.9
JET030	0.5625800	44.9	01Jan2011, 06:17	12.5
RET040	0.5625800	44.6	01Jan2011, 06:30	12.4
Woodmen Hills Pond #1 North	0.1491400	60.8	01Jan2011, 06:33	15.4
ET040	0.1491400	27.9	01Jan2011, 06:16	3.0
Woodmen Hills Pond #1 South	0.7117200	9.6	01Jan2011, 12:57	12.0
JET040	0.7117200	9.6	01Jan2011, 12:57	12.0
RET050	0.7117200	9.6	01Jan2011, 13:08	11.8
ET050	0.1171900	36.5	01Jan2011, 06:03	2.2
Woodmen Hills Pond #2	0.8289100	10.4	01Jan2011, 13:06	12.5
JET050	0.8289100	10.4	01Jan2011, 13:06	12.5
RET060	0.8289100	10.4	01Jan2011, 13:21	12.3
ET060	0.2854300	105.0	01Jan2011, 06:02	5.8

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
Woodmen Hills Pond #3	1.1143400	12.6	01Jan2011, 13:03	15.7
JET060	1.1143400	12.6	01Jan2011, 13:03	15.7
RET070	1.1143400	12.6	01Jan2011, 13:18	15.5
ET070	0.2497500	93.5	01Jan2011, 06:03	5.7
JET070	1.3640900	93.6	01Jan2011, 06:03	21.2
RET080	1.3640900	64.9	01Jan2011, 06:31	20.7
ET080	0.2916400	113.3	01Jan2011, 06:08	8.7
Woodmen Hills Pond #4	1.6557300	9.8	02Jan2011, 00:00	12.0
JET080	1.6557300	9.8	02Jan2011, 00:00	12.0
RET090	1.6557300	9.8	02Jan2011, 00:00	11.9
ET090	0.1242400	26.0	01Jan2011, 06:24	3.3
JET090	1.7799700	29.2	01Jan2011, 06:25	15.3
RET100	1.7799700	29.1	01Jan2011, 06:30	15.2
ET100	0.0480615	11.4	01Jan2011, 06:02	0.7
JET100	1.8280315	30.6	01Jan2011, 06:30	15.8
RET110	1.8280315	30.6	01Jan2011, 06:38	15.7
ET110	0.2260300	24.0	01Jan2011, 06:15	2.7
JET110	2.0540615	41.4	01Jan2011, 06:32	18.4
RET120	2.0540615	41.4	01Jan2011, 06:39	18.2
ET120	0.1091300	10.7	01Jan2011, 06:17	1.3
JET120	2.1631915	49.7	01Jan2011, 06:21	19.5
RET152	2.1631915	49.5	01Jan2011, 06:29	19.4
ET130	0.1348100	10.9	01Jan2011, 06:31	1.8
JET130	0.1348100	10.9	01Jan2011, 06:31	1.8
RET140	0.1348100	10.9	01Jan2011, 07:06	1.8
ET140	0.2675900	15.9	01Jan2011, 06:51	3.6
JET140	0.4024000	25.8	01Jan2011, 07:01	5.5
RET154	0.4024000	25.7	01Jan2011, 07:27	5.4
JET152	2.5655915	53.7	01Jan2011, 07:01	24.8
RET156	2.5655915	53.5	01Jan2011, 07:06	24.7
ET150	0.1777300	17.0	01Jan2011, 06:21	2.3

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
JET154	2.7433215	62.3	01Jan2011, 06:34	27.0
RET162	2.7433215	59.6	01Jan2011, 07:07	26.4
ET160	0.1889200	18.6	01Jan2011, 06:26	2.8
JET160	2.9322415	66.8	01Jan2011, 07:06	29.2
RET164	2.9322415	66.5	01Jan2011, 07:12	29.1
WT350	0.3037700	38.3	01Jan2011, 06:17	4.5
JWT352	9.6838045	132.6	01Jan2011, 08:22	113.3
RWT354	9.6838045	132.6	01Jan2011, 08:22	113.3
WT330	0.3266800	32.2	01Jan2011, 06:23	4.5
JWT330	0.3266800	32.2	01Jan2011, 06:23	4.5
RWT344	0.3266800	32.0	01Jan2011, 06:34	4.5
WT340	0.2780000	18.9	01Jan2011, 06:42	3.8
JWT354	10.2884845	141.3	01Jan2011, 08:22	121.5
RWT372	10.2884845	141.2	01Jan2011, 08:27	121.1
WT360	0.0656830	6.9	01Jan2011, 06:18	0.8
JWT360	0.0656830	6.9	01Jan2011, 06:18	0.8
RWT374	0.0656830	6.9	01Jan2011, 06:36	0.8
Regional Pond R2	10.3541675	141.9	01Jan2011, 08:29	118.7
JWT372	10.3541675	141.9	01Jan2011, 08:29	118.7
RWT376	10.3541675	141.7	01Jan2011, 08:38	117.9
WT370	0.2147600	7.2	01Jan2011, 06:17	1.2
JWT374_OUTLET	10.5689275	142.5	01Jan2011, 08:38	119.1
FS010	0.1220000	6.3	01Jan2011, 06:20	1.0
JFS010_OUTLET	0.1220000	6.3	01Jan2011, 06:20	1.0

Project: Aug15_Working_Falcon_DBPS_S
Simulation Run: FU 2-yr Reservoir: Regional Pond WU South

Start of Run:	01Jan2011, 00:00	Basin Model:	Falcon_DBPS_Future
End of Run:	02Jan2011, 00:00	Meteorologic Model:	2-yr
Compute Time:	03Feb2020, 16:15:59	Control Specifications:	24-hr Storm

Volume Units: AC-FT

Computed Results

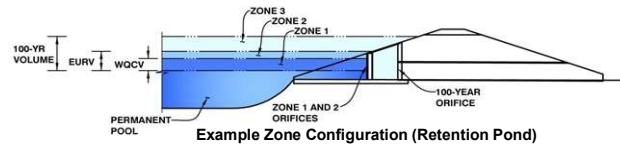
Peak Inflow :	83.8 (CFS)	Date/Time of Peak Inflow :	01Jan2011, 06:11
Peak Outflow :	31.1 (CFS)	Date/Time of Peak Outflow :	01Jan2011, 10:35
Total Inflow :	29.3 (AC-FT)	Peak Storage :	12.5 (AC-FT)
Total Outflow :	19.2 (AC-FT)	Peak Elevation :	6822.6 (FT)

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

Project: **Challenger Homes**

Basin ID: Detention and Water Quality Pond WU



Required Volume Calculation

Selected BMP Type =	EDB	
Watershed Area =	2312.70	acres
Watershed Length =	27.984	ft
Watershed Slope =	0.020	ft/ft
Watershed Imperviousness =	7.33%	percent
Percentage Hydrologic Soil Group A =	100.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Desired WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	Castle Pines -	City Office
Water Quality Capture Volume (WQCV) =	9.856	acre-feet
Excess Urban Runoff Volume (EURV) =	11.418	acre-feet
2-yr Runoff Volume (P1 = 0.84 in.) =	5.205	acre-feet
5-yr Runoff Volume (P1 = 1.12 in.) =	7.573	acre-feet
10-yr Runoff Volume (P1 = 1.36 in.) =	10.562	acre-feet
25-yr Runoff Volume (P1 = 1.72 in.) =	17.920	acre-feet
50-yr Runoff Volume (P1 = 2.01 in.) =	37.919	acre-feet
100-yr Runoff Volume (P1 = 2.31 in.) =	83.576	acre-feet
500-yr Runoff Volume (P1 = 3.07 in.) =	203.707	acre-feet
Approximate 2-yr Detention Volume =	4.786	acre-feet
Approximate 5-yr Detention Volume =	6.972	acre-feet
Approximate 10-yr Detention Volume =	9.691	acre-feet
Approximate 25-yr Detention Volume =	14.807	acre-feet
Approximate 50-yr Detention Volume =	22.296	acre-feet
Approximate 100-yr Detention Volume =	41.280	acre-feet

Optional User Override 1-hr Precipitation

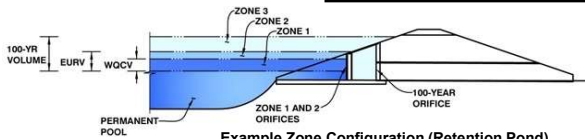
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Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Project: Thompson Thrift

Basin ID: Detention and Water Quality Pond



Example Zone Configuration (Retention Pond)

	Stage (ft)	Zone Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	5.66	9.856	Orifice Plate
Zone 2 (EURV)	6.02	1.562	
Zone 3 (100-year)	12.16	29.862	
		41.280	Total

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)
Underdrain Orifice Diameter =	N/A	inches

Calculated Parameters for Underdrain

Underdrain Orifice Area =	N/A	ft ²
Underdrain Orifice Centroid =	N/A	feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate =	5.66	ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing =	N/A	inches
Orifice Plate: Orifice Area per Row =	15.87	sq. inches (use rectangular openings)

Calculated Parameters for Plate

WQ Orifice Area per Row =	1.102E-01	ft ²
Elliptical Half-Width =	N/A	feet
Elliptical Slot Centroid =	N/A	feet
Elliptical Slot Area =	N/A	ft ²

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.00	2.00	3.00	4.00	5.00		
Orifice Area (sq. inches)	15.87	15.87	15.87	15.87	15.87	15.87		

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Not Selected	Not Selected	
Invert of Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Diameter =			inches

Calculated Parameters for Vertical Orifice

	Not Selected	Not Selected	
Vertical Orifice Area =			ft ²
Vertical Orifice Centroid =			feet

User Input: Overflow Weir (Dropbox) and Grate (Flat or Sloped)

	Not Selected	Not Selected	
Overflow Weir Front Edge Height, Ho =	6.00		ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	30.00		feet
Overflow Weir Slope =	3.80		H:V (enter zero for flat grate)
Horiz. Length of Weir Sides =	5.50		feet
Overflow Grate Open Area % =	100%		%, grate open area/total area
Debris Clogging % =	50%		%

Calculated Parameters for Overflow Weir

	Not Selected	Not Selected	
Height of Grate Upper Edge, H _u =	7.45		feet
Over Flow Weir Slope Length =	5.69		feet
Grate Open Area / 100-yr Orifice Area =			should be ≥ 4
Overflow Grate Open Area w/o Debris =	170.62		ft ²
Overflow Grate Open Area w/ Debris =	85.31		ft ²

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Not Selected	Not Selected	
Depth to Invert of Outlet Pipe =			ft (distance below basin bottom at Stage = 0 ft)
Circular Orifice Diameter =			inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

	Not Selected	Not Selected	
Outlet Orifice Area =			ft ²
Outlet Orifice Centroid =			feet
Half-Central Angle of Restrictor Plate on Pipe =	N/A	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	12.70	ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length =	200.00	feet
Spillway End Slopes =	4.00	H:V
Freeboard above Max Water Surface =	0.00	feet

Calculated Parameters for Spillway

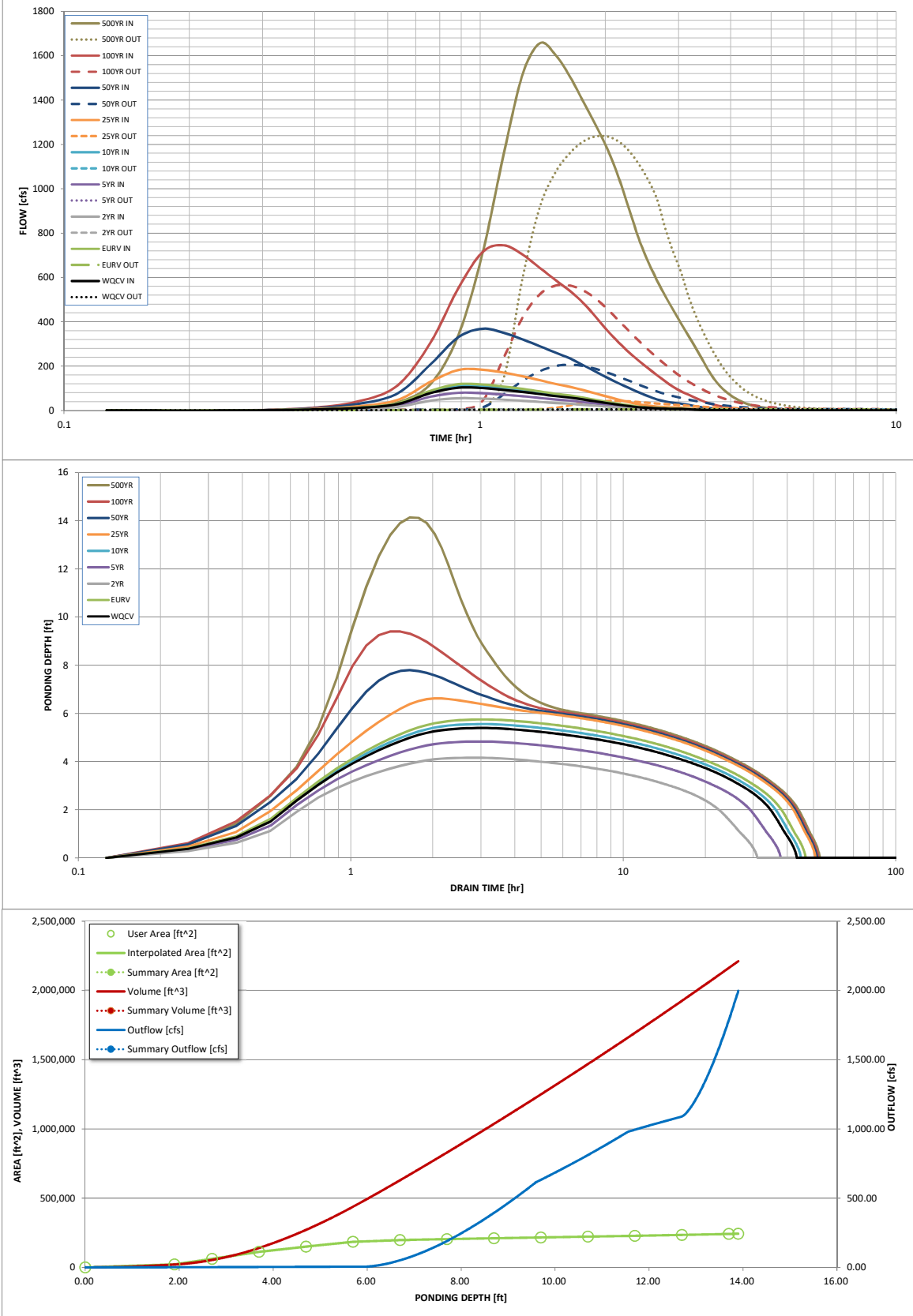
Spillway Design Flow Depth=	1.13	feet
Stage at Top of Freeboard =	13.83	feet
Basin Area at Top of Freeboard =	5.56	acres

Routed Hydrograph Results

	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period =									
One-Hour Rainfall Depth (in) =	0.53	1.07	0.84	1.12	1.36	1.72	2.01	2.31	3.07
Calculated Runoff Volume (acre-ft) =	9.856	11.418	5.205	7.573	10.562	17.920	37.919	83.576	203.707
OPTIONAL Override Runoff Volume (acre-ft) =									
Inflow Hydrograph Volume (acre-ft) =	9.847	11.406	5.199	7.568	10.553	17.912	37.899	83.471	203.592
Predevelopment Unit Peak Flow, q (cfs/acre) =	0.00	0.00	0.00	0.00	0.01	0.01	0.11	0.27	0.68
Predevelopment Peak Q (cfs) =	0.0	0.0	0.8	5.4	13.1	32.6	251.4	632.0	1583.9
Peak Inflow Q (cfs) =	102.7	118.4	55.2	79.5	109.8	183.9	368.6	744.9	1657.0
Peak Outflow Q (cfs) =	5.1	5.5	3.6	4.3	5.3	43.0	206.5	563.4	1236.5
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	0.8	0.4	1.3	0.8	0.9	0.8
Structure Controlling Flow =	Plate	Plate	Plate	Plate	Plate	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	N/A
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	0.0	0.0	0.0	-0.1
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	37	40	27	32	38	42	39	32	20
Time to Drain 99% of Inflow Volume (hours) =	40	43	29	35	42	46	44	41	35
Maximum Ponding Depth (ft) =	5.39	5.75	4.16	4.83	5.56	6.62	7.79	9.40	14.13
Area at Maximum Ponding Depth (acres) =	3.99	4.25	2.96	3.54	4.12	4.50	4.69	4.92	5.57
Maximum Volume Stored (acre-ft) =	8.783	10.228	4.459	6.673	9.431	14.034	19.463	27.150	50.761

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)



S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

UD-Detention, Version 3.07 (February 2017)

Basin ID: Channel and Pre-Pond Area

The diagram illustrates a retention pond configuration with three distinct zones. Zone 1 is the bottom-most layer, Zone 2 is the middle layer, and Zone 3 is the top-most layer. A 100-year orifice is located at the bottom of the pond. The water level is indicated by a horizontal line labeled '100-YR VOLUME'. The elevation of the water level is labeled 'EURV'. The elevation of the bottom of the pond is labeled 'WOCV'. The area below the water level is labeled 'PERMANENT POOL'. The area above the water level is labeled '100-YR ORIFICE'. The diagram also shows a cross-section of the pond with a sloped side and a vertical wall on the left.

Required Volume Calculation

Selected BMP Type =	EDB	
Watershed Area =	2291.20	acres
Watershed Length =	27.984	feet
Watershed Slope =	0.020	ft/ft
Watershed Imperviousness =	7.33%	percent
Percentage Hydrologic Soil Group A =	100.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Desired WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	Castle Pines -	City Office
Water Quality Capture Volume (WQCV) =	9.764	acre-feet
Excess Urban Runoff Volume (EURV) =	11.312	acre-feet
2-yr Runoff Volume (P1 = 0.84 in.) =	5.157	acre-feet
5-yr Runoff Volume (P1 = 1.12 in.) =	7.503	acre-feet
10-yr Runoff Volume (P1 = 1.36 in.) =	10.464	acre-feet
25-yr Runoff Volume (P1 = 1.72 in.) =	17.753	acre-feet
50-yr Runoff Volume (P1 = 2.01 in.) =	37.566	acre-feet
100-yr Runoff Volume (P1 = 2.31 in.) =	82.799	acre-feet
500-yr Runoff Volume (P1 = 3.07 in.) =	201.813	acre-feet
Approximate 2-yr Detention Volume =	4.741	acre-feet
Approximate 5-yr Detention Volume =	6.907	acre-feet
Approximate 10-yr Detention Volume =	9.601	acre-feet
Approximate 25-yr Detention Volume =	14.669	acre-feet
Approximate 50-yr Detention Volume =	22.089	acre-feet
Approximate 100-yr Detention Volume =	40.896	acre-feet

Optional User Override 1-hr Precipitation

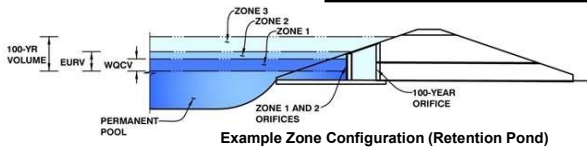
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Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Project: **Thompson Thrift**

Basin ID: **Detention and Water Quality Pond**



Example Zone Configuration (Retention Pond)

	Stage (ft)	Zone Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)		9.764	Orifice Plate
Zone 2			
Zone 3			
		9.764	Total

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth = ft (distance below the filtration media surface)
Underdrain Orifice Diameter = inches

Calculated Parameters for Underdrain

Underdrain Orifice Area = ft²
Underdrain Orifice Centroid = feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice = ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate = ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing = inches
Orifice Plate: Orifice Area per Row = sq. inches (use rectangular openings)

Calculated Parameters for Plate

WQ Orifice Area per Row = ft²
Elliptical Half-Width = feet
Elliptical Slot Centroid = feet
Elliptical Slot Area = ft²

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.00	2.00	3.00	4.00	5.00		
Orifice Area (sq. inches)	15.87	15.87	15.87	15.87	15.87	15.87		

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

Invert of Vertical Orifice = ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice = ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Diameter = inches

Calculated Parameters for Vertical Orifice

Vertical Orifice Area = ft²
Vertical Orifice Centroid = feet

User Input: Overflow Weir (Dropbox) and Grate (Flat or Sloped)

Overflow Weir Front Edge Height, H_o = ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length = feet
Overflow Weir Slope = H:V (enter zero for flat grate)
Horiz. Length of Weir Sides = feet
Overflow Grate Open Area % = %
Debris Clogging % = %

Calculated Parameters for Overflow Weir

Height of Grate Upper Edge, H_u = feet
Over Flow Weir Slope Length = feet
Grate Open Area / 100-yr Orifice Area = should be ≥ 4
Overflow Grate Open Area w/o Debris = ft²
Overflow Grate Open Area w/ Debris = ft²

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

Depth to Invert of Outlet Pipe = ft (distance below basin bottom at Stage = 0 ft)
Circular Orifice Diameter = inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

Outlet Orifice Area = ft²
Outlet Orifice Centroid = feet
Half-Central Angle of Restrictor Plate on Pipe = radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage = ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length = feet
Spillway End Slopes = H:V
Freeboard above Max Water Surface = feet

Calculated Parameters for Spillway

Spillway Design Flow Depth = feet
Stage at Top of Freeboard = feet
Basin Area at Top of Freeboard = acres

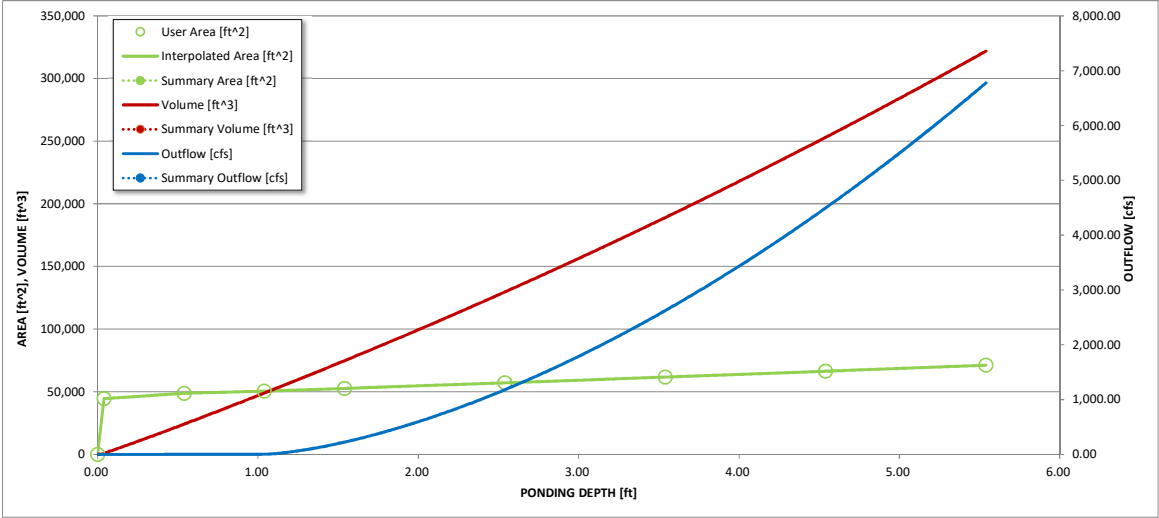
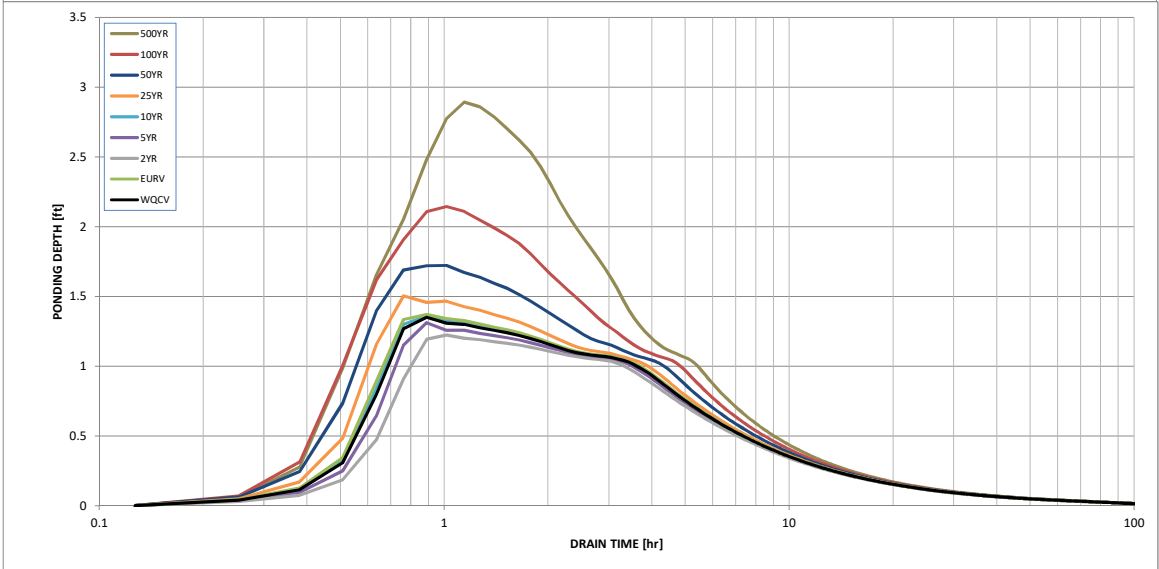
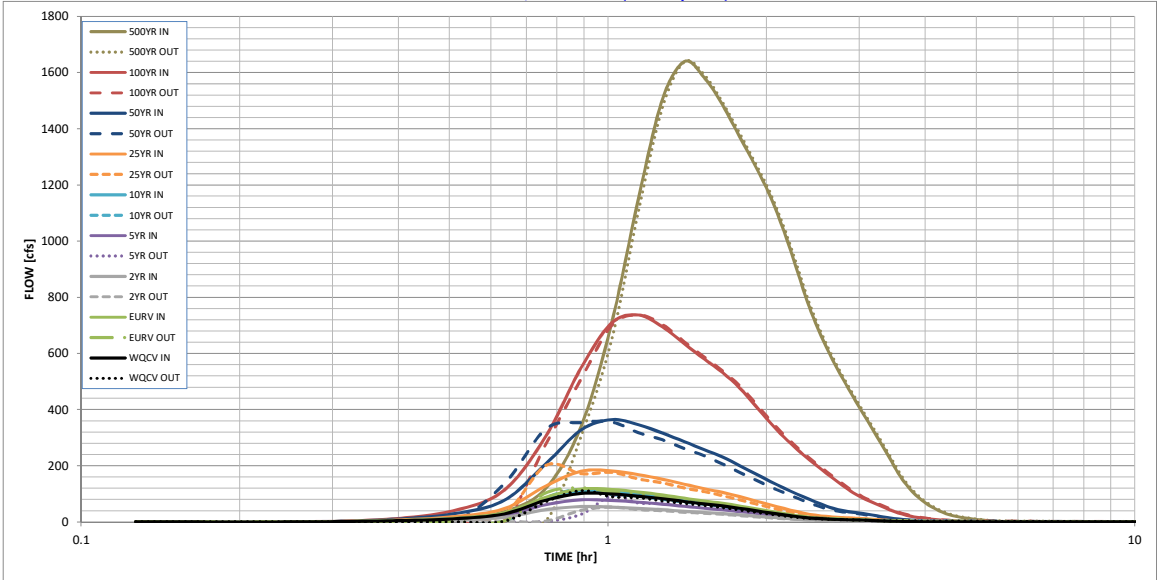
Routed Hydrograph Results

	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period =									
One-Hour Rainfall Depth (in) =	0.53	1.07	0.84	1.12	1.36	1.72	2.01	2.31	3.07
Calculated Runoff Volume (acre-ft) =	9.764	11.312	5.157	7.503	10.464	17.753	37.566	82.799	201.813
OPTIONAL Override Runoff Volume (acre-ft) =									
Inflow Hydrograph Volume (acre-ft) =	9.756	11.304	5.148	7.496	10.451	17.740	37.540	82.749	201.703
Predevelopment Unit Peak Flow, q (cfs/acre) =	0.00	0.00	0.00	0.00	0.01	0.01	0.11	0.27	0.68
Predevelopment Peak Q (cfs) =	0.0	0.0	0.7	5.4	13.0	32.3	249.1	626.2	1569.1
Peak Inflow Q (cfs) =	101.5	117.0	54.5	78.6	108.5	181.6	364.4	736.9	1639.4
Peak Outflow Q (cfs) =	111.1	121.5	52.7	92.0	116.0	201.0	355.9	736.7	1638.2
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	17.1	8.9	6.2	1.4	1.2	1.0
Structure Controlling Flow =	Spillway	Spillway	Spillway	Spillway	Spillway	Spillway	Spillway	Spillway	Spillway
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	12	10	18	14	11	7	4	1	1
Time to Drain 99% of Inflow Volume (hours) =	25	23	37	30	24	17	10	6	3
Maximum Ponding Depth (ft) =	1.35	1.37	1.22	1.31	1.36	1.50	1.72	2.14	2.89
Area at Maximum Ponding Depth (acres) =	1.19	1.19	1.18	1.19	1.19	1.20	1.23	1.27	1.35
Maximum Volume Stored (acre-ft) =	1.489	1.500	1.335	1.441	1.489	1.668	1.936	2.460	3.441

What is this for?

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)



S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Summary Stage-Area-Volume-Discharge Relationships

The user can create a summary S-A-V-D by entering the desired stage increments and the remainder of the table will populate automatically.

The user should graphically compare the summary S-A-V-D table to the full S-A-V-D table in the chart to confirm it captures all key transition points.

[illegible]

Design Values

Angular D_{50} dia. = 11.7 in.
 Rock_{chute} thickness = 23.5 in.
 Inlet apron length = 10 ft.
 Outlet apron length = 15 ft.
 Radius = 33 ft.

Will bedding be used? Yes

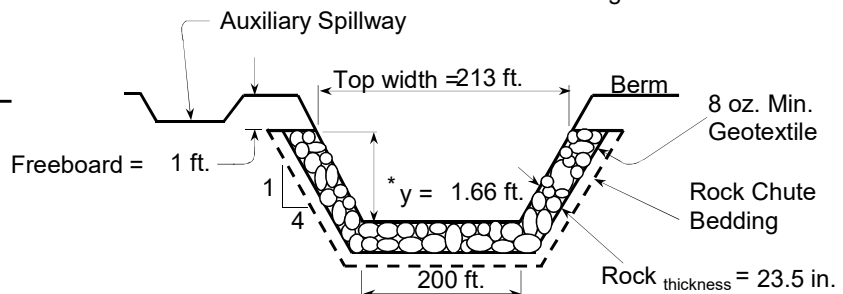
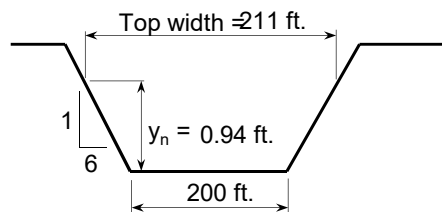
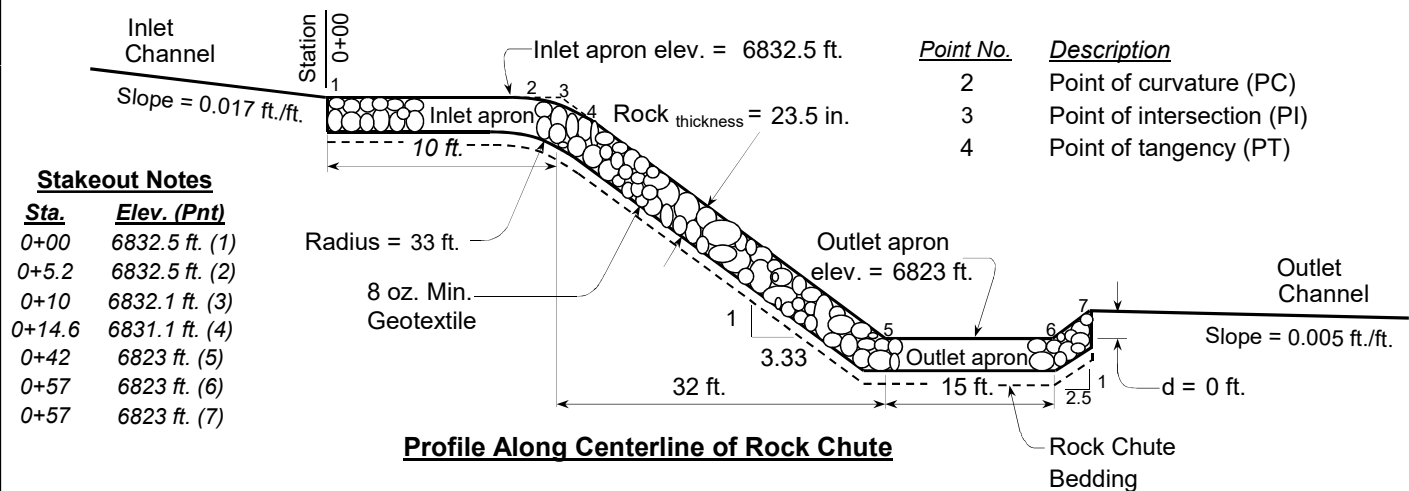
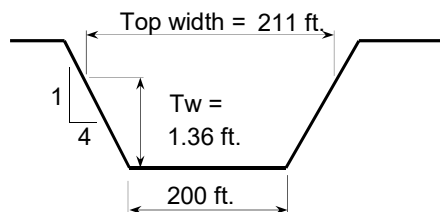
Rock Gradation Envelope

% Passing **Diameter, in. (weight, lbs.)**

D_{100} ----- 18 - 23 (394 - 934)
 D_{85} ----- 15 - 21 (256 - 681)
 D_{50} ----- 12 - 18 (117 - 394)
 D_{10} ----- 9 - 15 (60 - 256)

Coefficient of Uniformity, $(D_{60})/(D_{10}) \leq 2.0$ **Quantities^a**

Angular Rock = 935 yd³
 Geotextile (8 oz.)^b = 1486 yd²
 Bedding (6 in.) = 250 yd³
 Excavation = 0 yd³
 Earthfill = 0 yd³
 Seeding = 0.0 acres

Notes: ^a Rock, bedding, and geotextile quantities are determined from x-section below (neglect radius).^b Geotextile shall be overlapped (18-in. minimum) and anchored (18-in. minimum along sides and 24-in. minimum on the ends) --- quantity not included.* Use H_p throughout chute but not less than z_2 .**Inlet Channel Cross Section****Rock Chute Cross Section****Outlet Channel Cross Section****Profile, Cross Sections, and Quantities**

Project: Pond WU - Riprap Weir

Location: County

U.S. Department of Agriculture
Natural Resources Conservation Service
Designed: Aaron Johnston

Approved by: _____

Drawn: NRCS Standard Dwg.

Title: _____

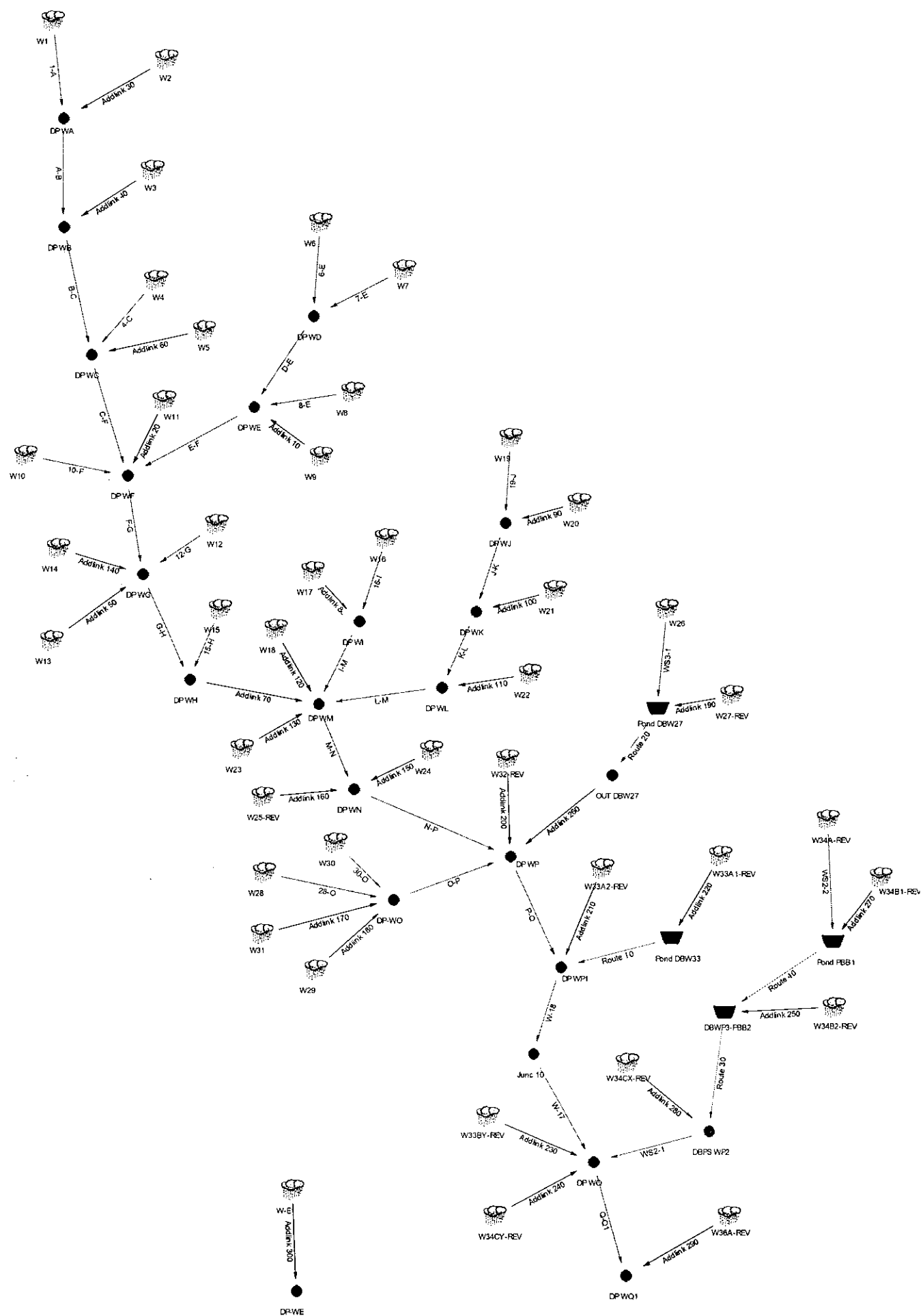
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of



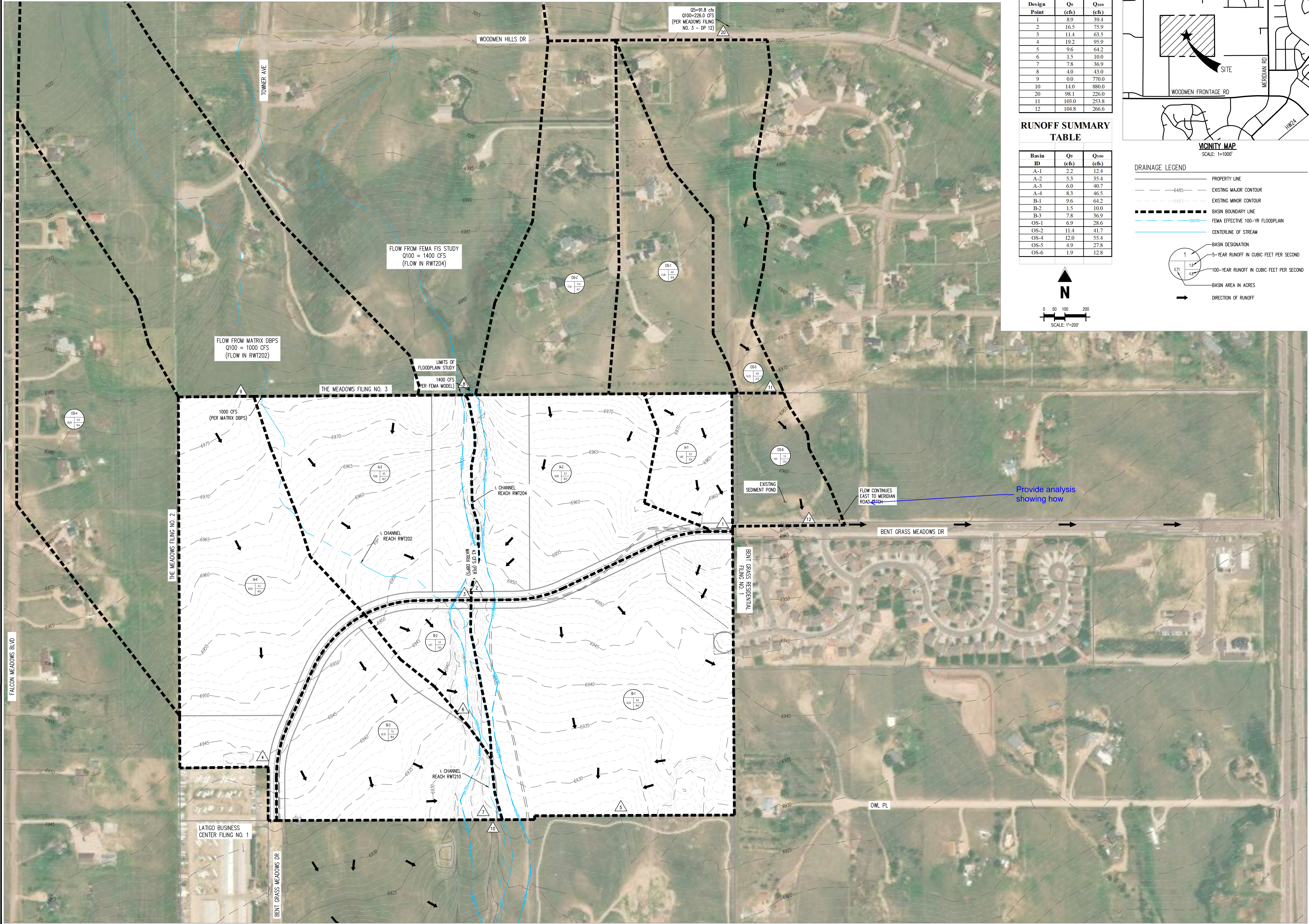
**FALCON AREA DRAINAGE BASIN -
EXISTING SCS ANALYSIS BASIN SUMMARY**

BASIN ID	BASIN AREA (ac.)	WEIGHTED C _N	Time of Concentration (hrs.)
W1	30.66	60.0	0.1552
W2	17.79	60.0	0.2560
W3	31.87	61.0	0.2224
W4	3.46	62.0	0.0833
W5	10.18	60.0	0.1200
W6	31.10	60.0	0.1360
W7	13.89	60.0	0.1184
W8	18.30	60.0	0.1104
W9	25.73	61.0	0.1552
W10	27.58	61.0	0.1536
W11	20.10	60.0	0.1232
W12	25.47	60.0	0.1520
W13	71.87	61.0	0.2912
W14	30.27	61.0	0.2160
W15	56.38	61.0	0.2256
W16	18.69	61.0	0.1472
W17	11.78	60.0	0.1360
W18	80.06	60.0	0.3024
W19	27.39	61.0	0.1328
W20	20.16	61.0	0.1136
W21	86.21	60.0	0.2496
W22	5.50	63.0	0.0880
W23	15.62	60.0	0.1792
W24	28.29	60.0	0.2240
W25-REV	53.59	63.7	0.2640
W26	46.08	63.0	0.1456
W27-REV	82.73	68.0	0.3152
W28	25.41	63.0	0.2048
W29	26.18	63.0	0.2320
W30	32.58	63.0	0.1968
W31	7.87	63.0	0.1168
W32-REV	67.00	62.0	0.2720
W33A1-REV	65.04	70.0	0.3216
W33A2-REV	27.52	65.0	0.3117
W33BY-REV	67.85	63.6	0.4467
W34A-REV	83.72	71.8	0.2544
W34B1-REV	92.05	73.7	0.3472
W34B2-REV	59.50	69.8	0.2350
W34CX-REV	47.03	69.2	0.2100
W34CY-REV	29.79	62.1	0.4000
W36A-REV	26.20	61.0	0.4367
W-E1	62.63	61.0	0.4600

**FALCON AREA DRAINAGE BASIN -
EXISTING SCS ANALYSIS REACH SUMMARY**

Reach ID	Mannings n	Reach Slope (%)	Reach Length (ft.)	Base Width (ft.)	Side slopes
1-A	0.035	2.63%	1519	5	4:1
A-B	0.035	1.51%	464	5	4:1
B-C	0.035	2.79%	823	5	4:1
4-C	0.035	4.82%	1078	5	4:1
C-F	0.035	4.49%	557	10	4:1
6-E	0.035	3.72%	592	5	4:1
7-E	0.035	14.66%	464	5	4:1
D-E	0.035	4.79%	1044	5	4:1
8-E	0.035	5.04%	1449	5	4:1
E-F	0.035	0.38%	789	5	4:1
10-F	0.035	3.88%	824	5	4:1
F-G	0.035	2.11%	2319	10	4:1
12-G	0.035	3.07%	2478	5	4:1
G-H	0.035	2.17%	2632	15	4:1
15-H	0.035	2.89%	1763	5	4:1
16-I	0.035	3.50%	1345	5	4:1
I-M	0.035	3.70%	2650	15	4:1
19-J	0.035	3.29%	881	5	4:1
J-K	0.035	2.35%	3061	5	4:1
K-L	0.035	2.46%	487	5	4:1
L-M	0.035	2.97%	1786	5	4:1
M-N	0.035	1.49%	1345	20	4:1
N-P	0.035	1.70%	1589	20	4:1
28-O	0.035	2.08%	1345	5	4:1
30-O	0.035	0.74%	1078	5	4:1
O-P	0.035	2.26%	2169	5	4:1
WS3-1	0.040	1.93%	3400	2	2:1
P-Q	0.035	1.82%	1925	25	4:1
W-18	0.035	1.50%	750	25	4:1
W-17	0.035	2.00%	1750	25	4:1
WS2-2	0.035	2.18%	1560	20	4:1
WS2-1	0.040	2.00%	3150	10	2:1
Q-Q1	0.035	2.20%	2940	25	4:1

APPENDIX G
Drainage Map

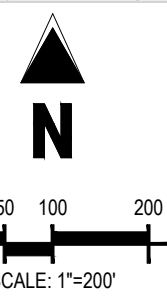


DESIGN POINT SUMMARY TABLE

Design Point	Qs (cfs)	Q100 (cfs)
1	8.9	39.4
2	16.5	75.9
3	11.4	63.5
4	19.2	95.9
5	9.6	64.2
6	1.5	10.0
7	7.8	36.9
8	4.0	43.0
9	0.0	770.0
10	14.0	880.0
20	98.1	226.0
11	103.0	253.8
12	104.8	266.6

RUNOFF SUMMARY TABLE

Basin ID	Qs (cfs)	Q100 (cfs)
A-1	2.2	12.4
A-2	5.3	35.4
A-3	6.0	40.7
A-4	8.3	46.5
B-1	9.6	64.2
B-2	1.5	10.0
B-3	7.8	36.9
OS-1	6.9	28.6
OS-2	11.4	41.7
OS-4	12.0	55.4
OS-5	4.9	27.8
OS-6	1.9	12.8



VICINITY MAP

SCALE: 1"=1000'

DRAINAGE LEGEND

- PROPERTY LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- BASIN BOUNDARY LINE
- FEMA EFFECTIVE 100-YR FLOODPLAIN
- CENTERLINE OF STREAM
- BASIN DESIGNATION
- 5-YEAR RUNOFF IN CUBIC FEET PER SECOND
- 100-YEAR RUNOFF IN CUBIC FEET PER SECOND
- BASIN AREA IN ACRES
- DIRECTION OF RUNOFF

Galloway

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CHALLENGER
HOMES

DRAINAGE PLAN
BENT GRASS RESIDENTIAL FILING NO. 2
FOR
CHALLENGER COMMUNITIES, LLC

BENT GRASS MEADOWS DRIVE & MERIDIAN ROAD
FALCON, CO - EL PASO COUNTY

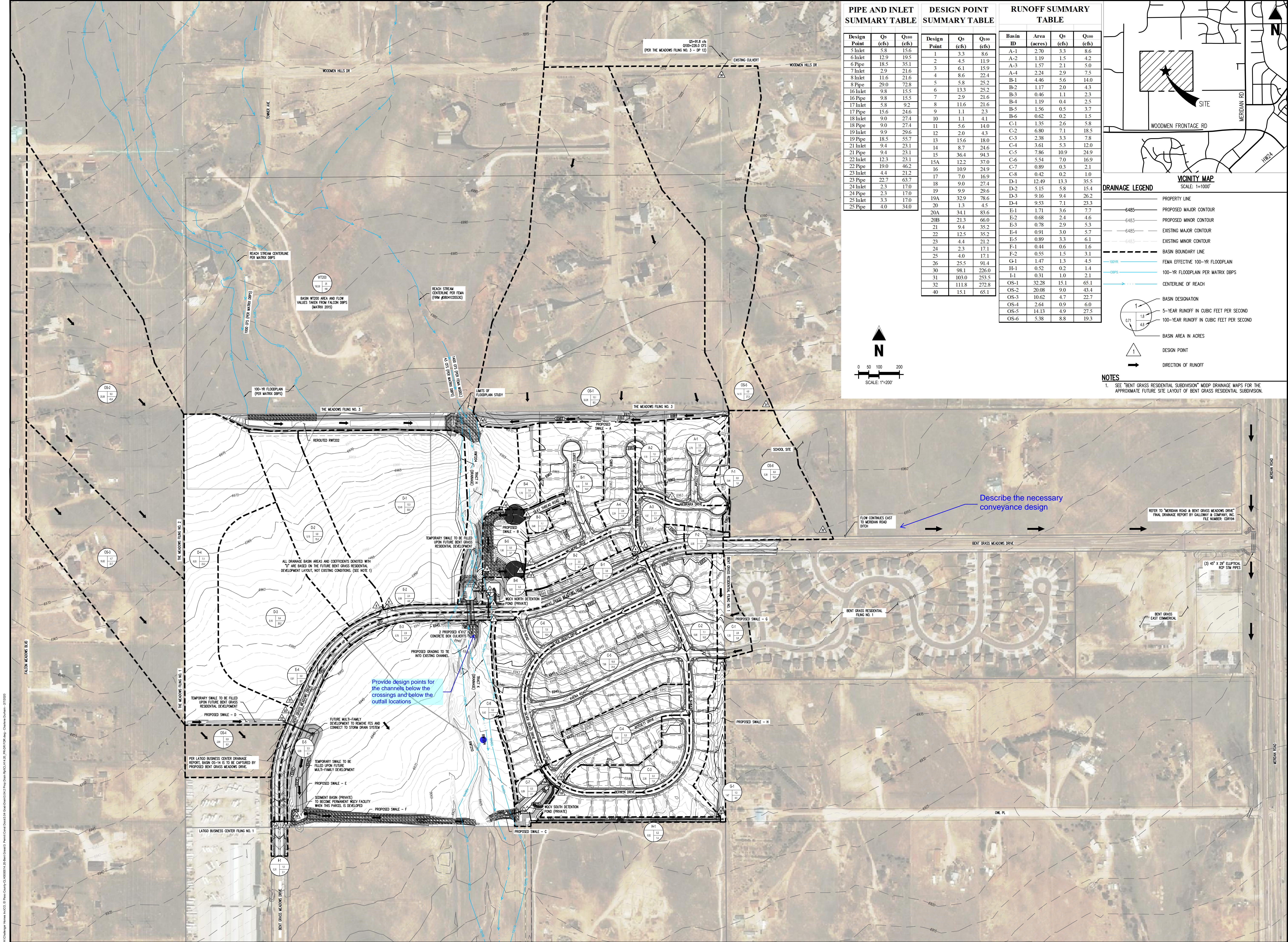
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Project No:	CLH000014.20
Drawn By:	CMWJ
Checked By:	SMB
Date:	OCTOBER 2019

EXISTING DRAINAGE MAP

DR-1

Sheet 1 of 3



PIPE AND INLET SUMMARY TABLE			
Design Point	Qs (cfs)	Q100 (cfs)	
5 Inlet	5.8	15.6	
6 Inlet	12.9	19.5	
6 Pipe	18.5	35.1	
7 Inlet	2.9	21.6	
8 Inlet	11.6	21.6	
8 Pipe	29.0	72.8	
16 Inlet	9.5	15.5	
16 Pipe	9.8	15.5	
17 Inlet	5.8	9.2	
17 Pipe	15.6	24.6	
18 Inlet	9.0	27.4	
18 Pipe	9.0	27.4	
19 Inlet	9.9	29.6	
19 Pipe	18.5	55.7	
21 Inlet	9.4	23.1	
21 Pipe	9.4	23.1	
22 Inlet	12.3	23.1	
22 Pipe	19.0	46.2	
23 Inlet	4.4	21.2	
23 Pipe	22.7	63.7	
24 Inlet	2.3	17.0	
24 Pipe	2.3	17.0	
25 Inlet	3.3	17.0	
25 Pipe	4.0	34.0	

DESIGN POINT SUMMARY TABLE			
Design Point	Qs (cfs)	Q100 (cfs)	
1	3.3	8.6	
2	4.5	11.9	
3	6.1	15.9	
4	8.6	22.4	
5	5.8	25.2	
6	13.3	25.2	
7	2.9	21.6	
8	11.6	21.6	
9	1.1	2.3	
10	1.1	4.1	
11	5.6	14.0	
12	2.0	4.3	
13	15.6	18.0	
14	8.7	24.6	
15	36.4	94.3	
15A	12.2	37.0	
16	10.9	24.9	
17	7.0	16.9	
18	9.0	27.4	
19	9.9	29.6	
19A	32.9	78.6	
20	1.3	4.5	
20A	34.1	83.6	
20B	21.3	66.0	
21	9.4	35.2	
22	12.5	35.2	
23	4.4	21.2	
24	2.3	17.1	
25	4.0	17.1	
26	25.5	91.4	
30	98.1	226.0	
31	103.0	253.5	
32	111.8	272.8	
40	15.1	65.1	

RUNOFF SUMMARY TABLE			
Basin ID	Area (acres)	Qs (cfs)	Q100 (cfs)
A-1	2.70	3.3	8.6
A-2	1.19	1.5	4.2
A-3	1.57	2.1	5.0
A-4	2.24	2.9	7.5
B-1	4.46	5.6	14.0
B-2	1.17	2.0	4.3
B-3	0.46	1.1	2.3
B-4	1.19	0.4	2.5
B-5	1.56	0.5	3.7
B-6	0.62	0.2	1.5
C-1	1.35	2.6	5.8
C-2	6.80	7.1	18.5
C-3	2.38	3.3	7.8
C-4	3.61	5.3	12.0
C-5	7.86	10.9	24.9
C-6	5.54	7.0	16.9
C-7	0.89	0.3	2.1
C-8	0.42	0.2	1.0
D-1	12.49	13.3	35.5
D-2	5.15	5.8	15.4
D-3	9.16	9.4	26.2
D-4	9.53	7.1	23.3
E-1	1.71	3.6	7.7
E-2	0.68	2.4	4.6
E-3	0.78	2.9	5.3
E-4	0.91	3.0	5.7
E-5	0.89	3.3	6.1
F-1	0.44	0.6	1.6
F-2	0.55	1.5	3.1
G-1	1.47	1.3	4.5
H-1	0.52	0.2	1.4
I-1	0.31	1.0	2.1
OS-1	32.28	15.1	65.1
OS-2	20.08	9.0	43.4
OS-3	10.62	4.7	22.7
OS-4	2.64	0.9	6.0
OS-5	14.13	4.9	27.5
OS-6	5.38	8.8	19.3

VICINITY MAP
SCALE: 1"=1000'

DRAINAGE LEGEND

- PROPERTY LINE
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- BASIN BOUNDARY LINE
- FEMA EFFECTIVE 100-YR FLOODPLAIN
- 100-YR FLOODPLAIN PER MATRIX DBPS
- CENTERLINE OF REACH
- BASIN DESIGNATION
- 5-YEAR RUNOFF IN CUBIC FEET PER SECOND
- 100-YEAR RUNOFF IN CUBIC FEET PER SECOND
- BASIN AREA IN ACRES
- DESIGN POINT
- DIRECTION OF RUNOFF

NOTES

1. SEE "BENT GRASS RESIDENTIAL SUBDIVISION" MOOP DRAINAGE MAPS FOR THE APPROXIMATE FUTURE SITE LAYOUT OF BENT GRASS RESIDENTIAL SUBDIVISION.

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CHALLENGER HOMES

DRAINAGE PLAN
BENT GRASS RESIDENTIAL FILING NO. 2
FOR
CHALLENGER COMMUNITIES, LLC
BENT GRASS MEADOWS DRIVE & MERIDIAN ROAD
FALCON, CO - EL PASO COUNTY

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Project No: CLH000014.20
Drawn By: CMWJ
Checked By: SMB
Date: OCTOBER 2019

OVERALL BASIN PLAN - FDR

DR-2
Sheet 2 of 3

