ALBERT A. WEBB ASSOCIATES



# MECCA/NORTH SHORE AREA STORMWATER MASTER PLAN

Prepared for

WATER DISTRICT

April 2015

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Prepared For:
Coachella Valley Water District

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**Joseph C. Caldwell, P.E.**
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# SECTION 1 – Introduction

## Project Introduction

Albert A. Webb Associates (WEBB) has been authorized by the Coachella Valley Water District (CVWD) to prepare a Stormwater Master Plan (SMP) study for the Eastern Coachella Valley Area. The SMP analysis is broken down into two Regions - the Oasis/Valley Floor Region and the Mecca/North Shore Region. This portion of the SMP addresses the Mecca and North Shore Regions.

WEBB initially prepared an alternative analysis report entitled *"Preliminary Alternative Development Study for Mecca North/Shore Region"* dated March 13, 2013 (Ref.1). The purpose of that study was to investigate several alternative channel types and alignments for the Mecca and North Shore regions. Two channel types were considered; 1) earthen trapezoidal and; 2) fully-lined concrete trapezoidal. Two alignments were considered; 1) Alternative 1 Alignment; and 2) Alternative 2 Alignment. Regarding channel type, the study concluded that fully-lined concrete channels and underground reinforced concrete pipes and boxes are the preferred alternative. This option requires less right-of-way (ROW), less costly operation & maintenance (O&M), and less risk of groundwater intrusion. Regarding alignments, Alternative 2 was selected as the recommended alternative due to fewer railroad and highway crossings. The results of the study were reviewed by CVWD and WEBB was authorized to proceed with the recommended alternative (Alternative 2A in the study).

A refined SMP level hydrologic analysis was prepared for each drainage system. Synthetic unit hydrographs were developed for the 100-year storm event following the methodologies in the CVWD Development Design Manual (Ref.2) and the Riverside County Flood Control and Water Conservation District (RCFC&WCD) Hydrology Manual (Ref.3). On March 25, 2013, CVWD adopted Ordinance 1234.1, which changed their stormwater policies. Section 2.i (b) states that Depth Area Reduction Factors (DARFs) from the USACE (1980)/Bechtel (1997) report shall be utilized in reducing point rainfall values. For watershed areas less than 10 square miles, there is no reduction in point rainfall (DARF = 1.0).

A detailed hydraulic analysis was performed to determine the SMP facility sizes. The "Standard Step Method" was used for sizing the open channels. Confluences and sudden contractions (such as culvert headwalls) were analyzed using "Pressure and Momentum" calculations.

Open channels are sized to contain the 100-year discharge with 3-feet of freeboard when the 100-year water surface elevations are below adjacent ground elevations (incised channels). However in certain situations (high backwater conditions), the 100-year water surface elevations are above the adjacent ground elevations causing a levee condition. A 4-foot freeboard was used for channels in levee condition.

Underground pipes were limited to a maximum diameter of 96 inches (8-feet) and the hydraulic grade lines were kept 2-feet below the existing ground surface. Single and multi-cell reinforced concrete boxes (RCB) were used at street crossings. The maximum cell height was limited to 7-feet with a minimum cover of 2-feet.

A planning level capital cost analysis was prepared for the construction of the proposed SMP facilities. An O&M cost analysis was also performed. O&M costs were based on a 40-year life cycle and converted to net present value.

An overall SMP facility map was prepared showing facility locations, sizes, and flow rates. In addition, detailed SMP plan and profile sheets were prepared for each facility. The facilities were laid out on 11"X17" sheets at a scale of 1" = 500'.

## Project Description

The Mecca and North Shore Regions are located in the east portion of the Coachella Valley in Riverside County, California. The project study area is bound on the north by Avenue 52/Detention Channel No. 2, on the northeast by the Coachella Canal/United States Bureau of Reclamation (USBR) East Side Dike, on the south by the Salton Sea and the Riverside County/Imperial County line, and to the west by the Coachella Valley Stormwater Channel (CVSC), (see Figure 1).

The Mecca Region consists mostly of agriculture areas at the present time with minor areas of residential and commercial developments concentrated near Highway 111. The risk of flooding to the Mecca Region is from local drainage areas, as well as the CVSC floodplain. Numerous unimproved open channels in the area have limited flow capacities and undersized culverts. These facilities are currently unable to provide 100-year flood protection from the local drainage areas. In addition, approximately 17 miles of the CVSC from Avenue 52 to the Salton Sea exists as an unlined earthen channel. Because of the limited channel capacity and the unstable/unlined channel banks, the CVSC poses a riverine flooding hazard. Major overbank flows from CVSC are expected during the 100-year and greater storms, creating up to a 2-mile wide floodplain through the Mecca and Oasis areas. A draft flood hazard map for the Oasis and surrounding areas is included in the "Oasis Area Drainage Study Final Report" dated July 2014, prepared by Tetra Tech showing the potential flood hazards which can be expected.

A large part of the North Shore Region is in an undeveloped natural condition, although there are some agricultural areas in the western portion just north of the Salton Sea and some rural residential areas scattered throughout the central portion. The flood risk to the North Shore area is from local drainage area flooding and from flows which cross the Coachella Canal and East Side Dike through siphon under-crossings.

The USBR East Side Dike System intercepts runoff east of the Coachella Canal and conveys it to the CVSC through three detention channels (Detention Channel No. 3 is located outside of the study area near Avenue 44). The dike and three detention channels were built in 1947 by the USBR to protect the Coachella Canal/East Side System from floodwaters discharged from the upstream canyons. Stored flows are released through the detention channels which convey the runoff to the CVSC. The USBR design plans for the three detention channels indicated a design discharge of 3,000 cfs with 3-feet freeboard. It should be noted that there is no flood frequency assigned to this discharge therefore, the level of protection the detention channels provide cannot be stated in terms of frequency of occurrence (e.g., adequate to convey the 100-year discharge). It is assumed for purposes of this study, under current conditions the detention channels are not a source of flooding. An evaluation of Detention Channel #1 needs to be performed and improvements made as necessary so it will pass the required

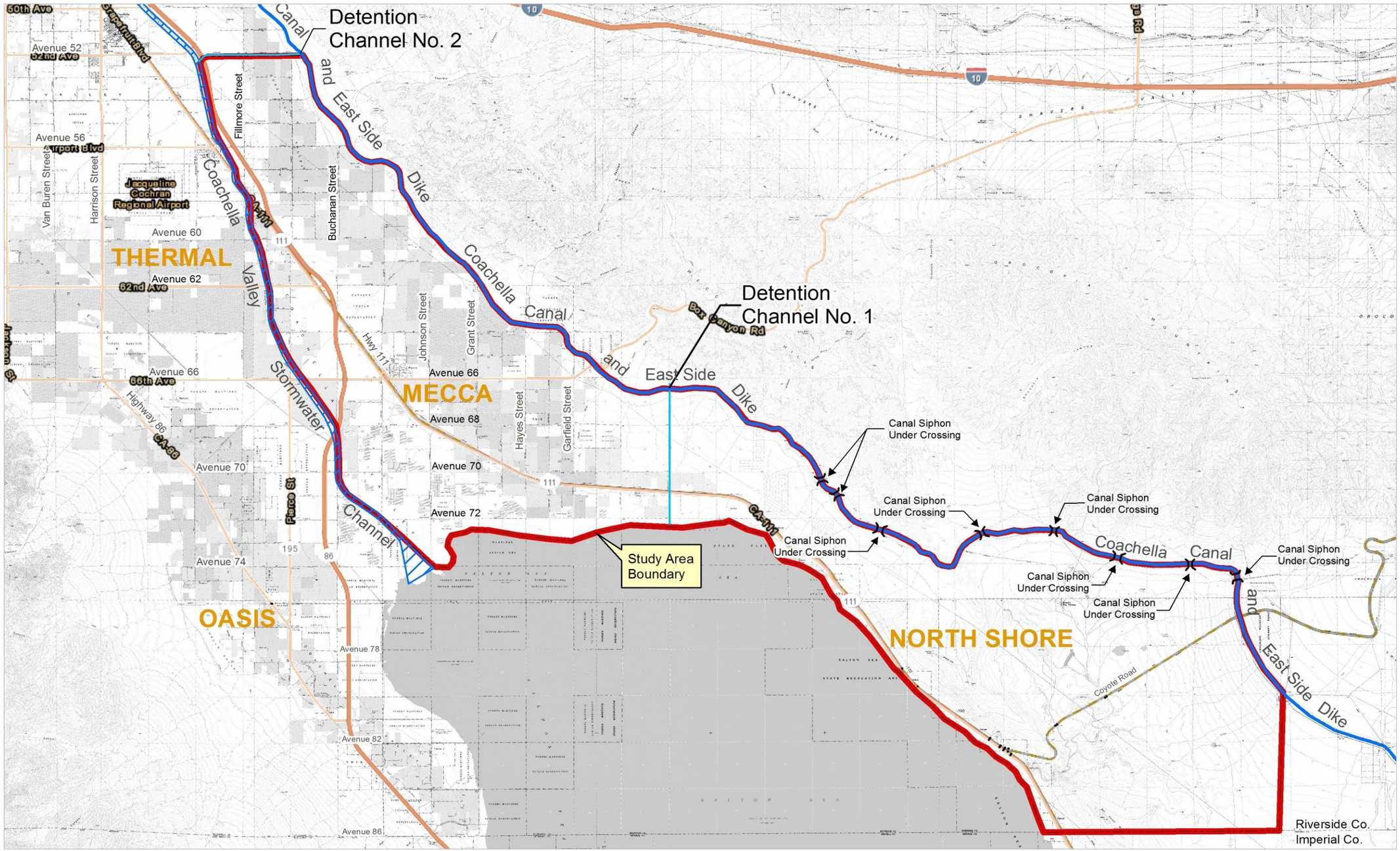
100-year flows with freeboard. Detention Channel #1 is currently the termination point for Line J and transports the flood flows into the Salton Sea.

CVWD plans to certify the East Side Dike System through the Federal Emergency Management Agency (FEMA). Based upon this, the areas east of the Coachella Canal were not considered part of the watershed tributary area. However, there are sites where flows cross under the Coachella Canal through siphons, potentially affecting portions of the North Shore Region. Watershed areas upstream of the siphons have been included as part of these tributary drainage areas.

Nine major drainage systems were refined as part of the alternative analysis evaluation to route local stormwater flows generated from the Mecca/North Shore Regions. Five of these systems (Lines A to E) drain to the CVSC. One facility (Line J) drains to Detention Channel No. 1. The other three, (Lines F, I, and K) drain directly into the Salton Sea (see Figure 2). Drainage areas at their respected outfalls vary in size from approximately 2- to 12-square miles.

Flooding from the CVSC was not considered as part of this report as ultimate CVSC improvements will eliminate such flooding. Proposed CVSC improvements are addressed in a separate report entitled "Coachella Valley Stormwater Channel Alternatives Study Final Report", August 2014, prepared by Tetra Tech (Ref.4). The downstream water levels used in the SMP assume that the CVSC Alternatives Project is in place.

## Figure1 - Vicinity Map



## Design Criteria

The design criteria for this SMP were developed by WEBB in conjunction with CVWD. WEBB collaborated closely with CVWD staff to establish parameters for the hydrologic and hydraulic analysis of this SMP. Point rainfall values, modeling software, channel construction materials, channel roughness "n-values", freeboard requirements, preliminary plan and profile scales, and sheet sizes were discussed in advanced and agreed upon at the beginning of the project to ensure that all necessary parameters and methodologies are consistent with CVWD stormwater policies and expectations.

On March 25, 2013, CVWD adopted Ordinance 1234.1 which changed their stormwater policies. The following analysis standards were applied in the development of the SMP facilities:

### Hydrology

#### Precipitation

NOAA Atlas 14 Volume 6 Version 2 was used for the study area.

#### Hydrology Model

The Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS) computer program was used to conduct the hydrology analysis for the study area.

#### Precipitation Intensity Pattern

Input hyetographs for calculation of the 100-year peak flows were constructed by nesting the 100-year depths for different durations. The frequency storm option in HEC-HMS was used to construct the synthetic storm.

#### Point Rainfall Reduction

For watershed areas that exceed 10-square miles, the USACE 1980/Bechtel (1997) Depth Area Reduction Factors (DARFs) were used. For watershed areas less than 10-square miles, a DARF of 1.0 was used (See Appendix A).

### Hydraulics and Facility Sizing

#### Hydraulic Model

The Water Surface Pressure Gradient (WSPG) program was utilized in sizing the open channels and underground conduits.

#### Reinforced Concrete Pipes (RCPs)

Minimum slope: s = 0.0025
Manning's n = 0.013
Manhole spacing: 400-feet (for cost estimating purposes)
RCP have at least 2-feet of cover and their hydraulic grade lines were at least 2-feet below the existing ground surface.

Reinforced Concrete Box (RCB)
Minimum slope: s = 0.0025
Manning's n = 0.014
RCB shall have at least 2-feet of cover and their hydraulic grade lines were at least 2-feet below the existing ground surface.

Concrete Lined Trapezoidal Channels
Minimum slope: s = 0.0010
Sideslope: 1.5:1
Manning's n = 0.015
Minimum base width: 6-feet
Freeboard Criterion:
Incised Channels: 3-feet freeboard
Leveed Channels: 4-feet freeboard

## Proposed SMP Facilities

The Mecca/North Shore SMP consists of nine major drainage systems. Line A through E drain to CVSC, Line J drains to Detention Channel No. 1, and Lines F, I, and K drain directly into the Salton Sea (see Figure 2).

Line A Storm Drain System is located in Watershed A and consists of a mainline and one lateral. Line A01 begins at Pierce Street and runs westerly along Avenue 54, crosses Fillmore Street, Highway 86, and outlets to the CVSC. The overall distance is approximately 1.8 miles. Lateral A01-01 begins at Avenue 53 and runs southerly along Fillmore Street and confluences with Line A01 near the intersection of Avenue 54 and Fillmore Street. The overall distance is approximately 0.5 miles.

Line B Storm Drain System is located in Watershed B and consists of a mainline and two laterals. Line B01 begins approximately 0.3 miles west of Buchanan Street and runs along the north side of Avenue 56(Airport Boulevard), crossing Pierce Street, Fillmore Street, Highway 86, southbound Highway 86 onramp, and outlets to the CVSC. The overall distance is 2.2 miles. Lateral B01-01 begins at 0.2 miles north of Avenue 55 and runs southerly along the Fillmore Street, crosses Avenue 55, and confluences with Line B01 near the intersection of Avenue 56 and Fillmore Street. The overall distance is 0.7 miles. Lateral B01-02 begins at 0.2 miles north of Avenue 55 extension, runs along Pierce Street, and ends at the confluence with Line B01. The overall distance is 0.7 miles.

Line C Storm Drain System is located in Watershed C and consists of a mainline and two laterals. Line C01 begins 0.8 miles east of Buchanan Street and runs along Avenue 58 where it makes a 90 degree turn along Pierce Street to the south. The storm drain continues along Pierce Street and makes a 90 degree turn to the west crossing Avenue 58, Highway 86, SPRR and Highway 111, then outlets to the CVSC. The overall distance is 2.2 miles. Lateral C01-01 begins at Avenue 57 extension and runs along the east side (approx. 300' e/o) of Pierce Street and ends near the intersection of Avenue 58 and Pierce Street at the confluence with Line C01, for a distance of approximately 0.5 miles. Lateral C01-02 begins at Avenue 57,

runs along Buchanan Street, and ends near the intersection of Avenue 58 and Buchanan Street at the confluence with Line C01. The overall channel distance is approximately 0.5 miles.

Line D Storm Drain System is located in Watershed D and consists of a single mainline. Line D01 begins at Avenue 62 and runs south along the west side of Pierce Street, crosses Avenue 63, and then turns 90 degrees to the east at Avenue 64. The channel continues along the north side of Avenue 64 for about 2,000 feet, turns 90 degrees, crosses Avenue 64, turns 90 degrees again, and runs along the south side of Avenue 64, continuing easterly for another 2,000 feet. Line D01 then turns southerly and runs along the west side of Highway 86 for about 2,000 feet. The channel then follows the alignment of the existing Buchanan Street Stormwater Channel to the south, crosses Avenue 66 and confluences with the CVSC.

Line E Storm Drain System is located in Watershed E and consists of a mainline and three laterals. Line E01 begins at the Avenue 59 extension and runs southerly along the east side of Lincoln Street, crossing Avenue 60, crossing Avenue 62 at a 45 degree angle, and then running along the west side of Lincoln Street. The channel continues southerly past Avenue 64, then crosses under Hammond Road/SPRR/Highway 111 in a long underground box culvert, and transitions back to an open channel just south of Avenue 66 on the east side of Lincoln Street. The channel continues southerly along the west side of Lincoln Street and ends at a low water crossing structure (Arizona crossing) at Avenue 70. A low flow channel has been provided which connects with the existing Lincoln Street Stormwater Channel to allow small flows to drain to the CVSC. It should be noted that the high 100-year water surface elevation in the CVSC and across its associated floodplain made it impractical to extend a 100-year capacity channel to the confluence.

Lateral E01-01 begins just north of the Avenue 59 extension and runs southerly along the east side of Pierce Street, crossing Avenue 60, and then runs along the eastern side of Highway 86, crosses Avenue 62, and continues along the east side of Highway 86 in a southerly direction. The channel continues for another 3,000 feet then turns about 40 degrees to the east and follows along the east side of Highway 111/SPRR for 8,000 feet to the confluence of Line E01. Lateral E01-02 begins at the north side of Avenue 59 and runs southerly along the east side of Buchanan Street, crossing Avenue 59, Avenue 60, and Avenue 62, then confluencing with Line C01-01 near the intersection of Highway 86 and Highway 111. The overall length of Lateral E01-02 is approximately 2.1 miles. Lateral E01-03 begins at Johnson Street and runs westerly along the north side of 64$^{Th}$ Avenue, crossing Lincoln Street, and ends at the confluence with Line E01. The overall distance of Lateral E01-03 is approximately 1 mile.

Line F Storm Drain System is located in Watershed F and consists of a mainline and three laterals. Line F01 begins at Avenue 62 and runs southerly along the east side of Johnson Street, crossing Avenue 64, Avenue 66, Hammond Road/SPRR/Highway 111, and then following the alignment of the existing Johnson Street Stormwater Channel. The channel runs along the Johnson Street Stormwater Channel alignment, crosses Avenue 70, and continues for another 2,000 feet. It then flares out and daylights to existing ground. It was determined, due to the high water surface elevation in the CVSC and across its associated floodplain at the projected confluence point that it was not practical to tie into the CVSC. The overall length of Line F01 is 4.8 miles. Lateral F01-01 begins just east of the Hayes Street and Avenue 68 intersection and runs westerly along the north side of Avenue 68, crossing Hayes Street and Grant Street, and then confluences with Line F01. The overall length of Lateral F01-01 is approximately 2-miles. Lateral F01-02 begins at Avenue 64 and runs southerly along the east side of Grant Street, crosses Avenue 64, Avenue 65, and Avenue 66, and confluences with Lateral F01-01 near the intersection of Grant Street and Avenue 66. The overall length of Lateral F01-02 is 2-miles. Lateral F01-03 begins just

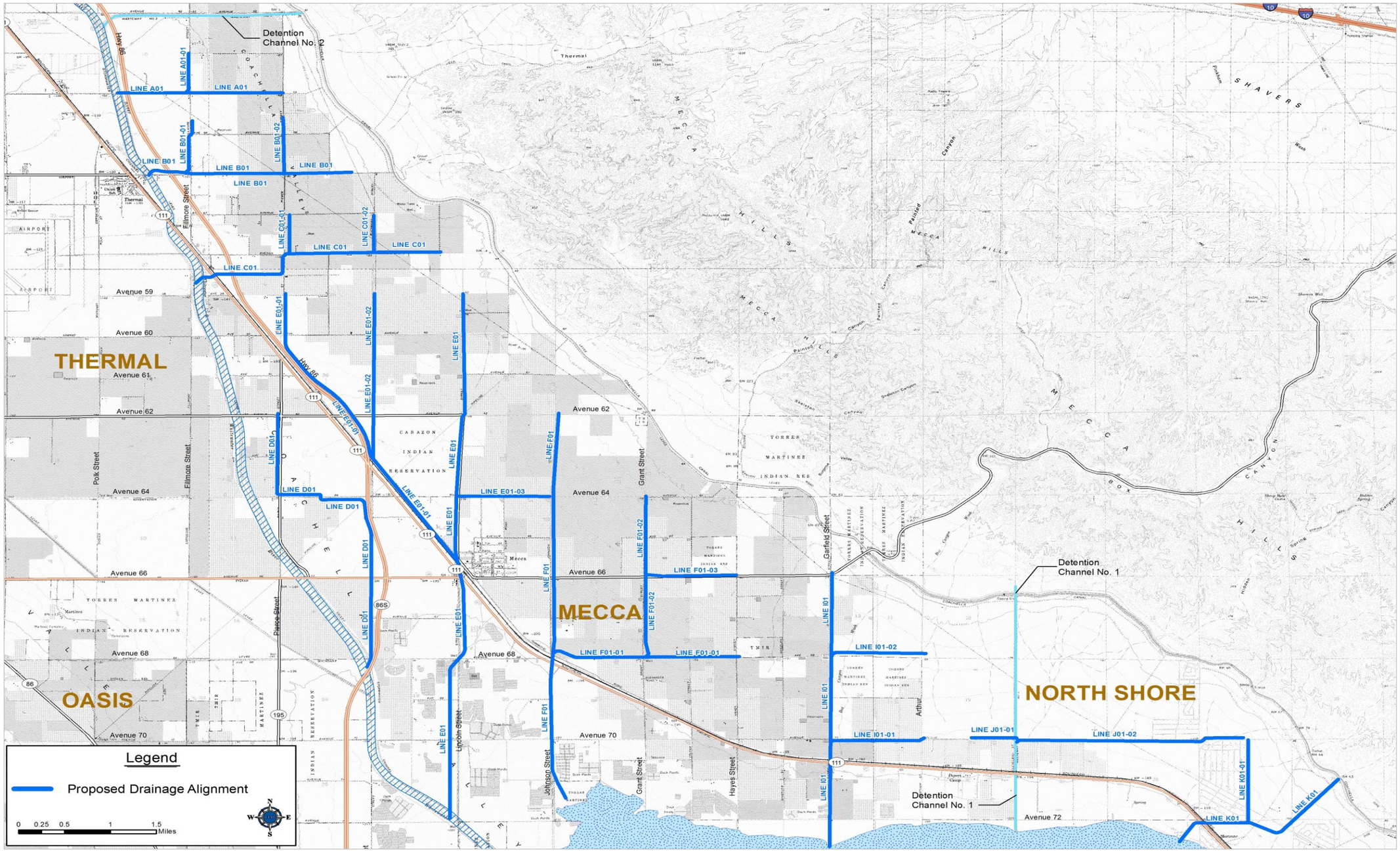
east of Hayes Avenue and runs westerly along the north side of Avenue 66, and ends at the confluence with Lateral F01-02. The overall length of the channel is approximately 1-mile.

Line I Storm Drain System is located in Watershed I and consists of a mainline and two laterals. Line I01 begins at Avenue 66 (Box Canyon Road) and runs southerly along the east side of Garfield Street, crossing Avenue 66, Avenue 67 extension, Avenue 68 extension, Avenue 69 extension, Avenue 70, SPRR/Highway 111, and then out letting to the Salton Sea. The overall length of Line I01 is 3.4 miles. Lateral I01-01 begins at Arthur Street and runs westerly along the south side of Avenue 70 and ends at the confluence with Line I01. The overall distance of Lateral I01-01 is 1-mile. Lateral I01-02 begins just east of Arthur Street and ends at the confluence with Line I01. This line runs on the north side of the Avenue 68 extension. The overall distance of Lateral I01-02 is approximately 1-mile.

Line J Storm Drain System consists of two laterals that drain directly into the existing Detention Channel No. 1. Lateral J01-01 starts at approximately 0.5 miles west of Detention Channel No. 1 (Cleveland Street), runs easterly along the north side of Avenue 70, and confluences with Detention Channel No. 1. Lateral J01-02 begins at approximately 0.5 mile east of Vander Veer Road along the north side of Avenue 70 and runs westerly toward Detention Channel No. 1. The channel crosses under Avenue 70 at a 45 degree angle, then runs parallel to the south side of Avenue 70, and ends at the confluence with Detention Channel No. 1. The overall length of the channel is 2.5 miles.

Line K Storm Drain System is located in Watershed K and consists of one mainline and one lateral. Line K01 begins just west of the Coachella Canal and runs southwesterly for approximately 0.8 miles, crosses Club View Drive, and runs westerly along the south side of Avenue 72 for approximately three quarters of a mile. The channel then crosses under SPRR/Highway 111, turns southerly for about 0.3 miles, and ends at the Salton Sea. The overall distance of Line K01 is just over 2-miles. Lateral K01-01 begins at Avenue 70 and runs southerly along the east side of Sea View Way for 1-mile. The channel crosses Avenue 72 then immediately joins with Line K01. The overall length of lateral K01-01 is just over 1-mile.

## FIgure 2 – Mecca /North Shore SMP Facility Map



# SECTION 2 – Hydrology Analysis

## Hydrologic Modeling Approach

The rainfall runoff analysis used in this study utilized a 6-hour synthetic storm and the unit hydrograph method. HEC-HMS developed by the US Army Corps of Engineers Hydrologic Engineering Center was used in determining the peak 100-year discharges. CVWD recommends the use of HEC-HMS hydrologic modeling software per the February 2010 Development Design Manual (DDM).

The 100-year storm (hyetograph) was developed from point rainfall depths for durations ranging from 5-minutes to 6-hours from NOAA Atlas 14 (Ref.5). The input hyetograph for calculating the 100-year peak flows was constructed by nesting the 100-year rainfall depths for the different durations. The frequency storm option in HEC-HMS was utilized in constructing the synthetic storm. The intensity position of 50% was selected to determine where the peak rainfall intensity occurred. Using 50% result in a balanced storm pattern with the peak intensity occurring 3-hours after the beginning of the 6-hour duration storm (Ref.6). Depth-Area Reduction Factors are calculated in accordance with CVWD Ordinance No. 1234.1, dated March 25, 2013.

Initial and constant loss rates were calculated in accordance with the RCFCD&WCD Hydrology Manual. The initial loss method is very simple, but still appropriate for watersheds that lack detailed soil information. The initial loss specifies the amount of incoming precipitation that will be infiltrated or stored in the watershed before surface runoff begins. There is no recovery of the initial loss during periods without precipitation. The constant loss rate determines the rate of infiltration that will occur after the initial loss is satisfied and is applied throughout the storm duration.

The USACE Whitewater River dimensionless S-graph was used to determine sub-basin specific synthetic unit hydrographs.

## Watershed Delineations

Nine major watersheds were refined as part of the hydrologic analysis. Five of these watersheds (A to E) drain to the CVSC, J drains to Detention Channel No. 1 and F, I, and K drain directly into the Salton Sea. The watersheds at their respected outfalls vary in size from approximately 2- to 12-square miles (See Exhibit 1).

Watershed delineations were based primarily on Light Detection and Ranging (LiDAR) data, supplemented with United States Geological Survey (USGS) 7.5 minute topographical data for areas outside of the LiDAR coverage. LiDAR data (provided by CVWD) was used in determining the watershed boundaries for the western portion of the study (west of Grant Street). It consisted of 2-foot contours and is referenced as Airborne 1 May 2010 LiDAR. For the remainder of the study area (east of Grant Street), USGS 7.5 minute topographical maps were used.

The Coachella Valley Canal/USBR East Side Dike System forms the upstream drainage divide along the northeast side of the study area, providing protection from the undeveloped hills and mountains to the east. Floodwaters generated from the Chocolate Mountains east of the USBR East Side Dike are temporarily stored behind the dikes, and then released through the two existing detention channels which convey the flows to the CVSC or Salton Sea.

West of the USBR Dike, surface water runoff generally is unconfined sheet flow traveling in a southwesterly direction across agricultural fields toward the Southern Pacific Railroad and Highway 111. Drainage area delineations were developed assuming that the local streets and proposed drainage facilities provide adequate conveyance capacity to intercept 100% of the surface runoff from the 100-year storm event. It was also assumed that the existing culverts (with the exception of Detention Channel No. 1 culvert), across the railroad, Highway 111, and Highway 86 are insufficient to convey the 100-year discharges and were ignored. The railroad, Highway 111, and Highway 86 were assumed to act as drainage divides and used as watershed and subarea boundaries.

## Watershed Lag Time

Watershed lag is defined as the elapsed time in hours from the beginning of unit effective rainfall to the instant that the summation hydrograph for the concentration point of an area reaches 50 percent of ultimate discharge. Lag times for each watershed was calculated using the equation on Plate E-3 of the RCFC&WCD Hydrology Manual. They were calculated from the physical characteristics of the watersheds by the empirical formula:

$$Lag = 24\overline{n}\left[\frac{L.Lca}{\sqrt{S}}\right]^{(.38)}$$

Where:

| | | |
|---|---|---|
| $Lag$ | = | Lag time in hours |
| $\overline{n}$ | = | The visually estimated basin roughness coefficient |
| $L$ | = | Length of longest watercourse (miles) |
| $Lca$ | = | Length along longest watercourse, measured upstream to a point opposite the centroid of the area (miles) |
| $S$ | = | Overall slope of the longest watercourse between headwater and the collection point (feet per miles) |

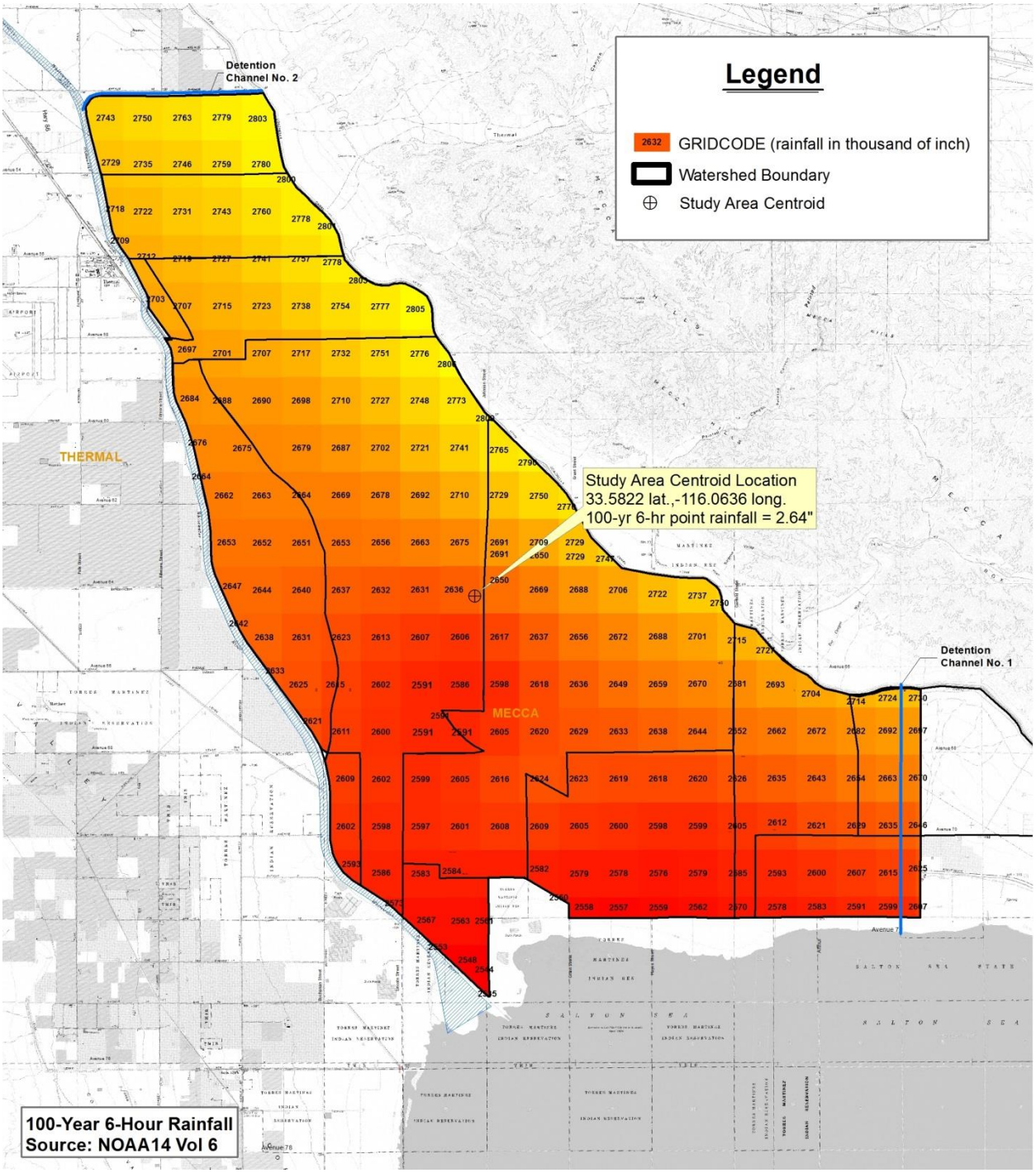
Watershed sub-basin parameters used in the lag calculations can be found in Appendix B.

## Precipitation Data

Precipitation within the Mecca/North Shore study area varies very little due to the lack of orographic effects. The 100-year 6-hour rainfall varies between 2.76 (northern Mecca) and 2.64 inches (southern Mecca/North Shore), depending on its location (see Figure 3). Rainfall depths used in this study were selected from the National Atmospheric and Oceanic Administration (NOAA) Atlas 14 precipitation values. These values were obtained using NOAA's Hydrometeorological Design Studies Center – Precipitation Frequency Data Server (PFDS) located at http://hdsc.nws.noaa.gov/hdsc/pfds.

The centroid of the study area was used as the point of interest for determining rainfall depths. The coordinates of the study area centroid were calculated (33.5822 N. Latitude, 116.0636 W. Longitude) and used to obtain point precipitation estimates for the 5-minute, 15-minute, 1-hour, 2-hour, 3-hour, and 6-hour durations for the 100-year return period. The point rainfall values are summarized in Table 2-1. Output from NOAA's PFDS is included in Appendix C.

## Figure 3 - 100-Year 6-Hour Rainfall Map



| Table 2-1: NOAA 14 100-Year Point Rainfall Depth in Inches[1] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Study Location | Centroid Location | | 5-min (in) | 15-min (in) | 1-hr (in) | 2-hr (in) | 3-hr (in) | 6-hr (in) |
| Mecca/North Shore | Latitude (33.5822) | Longitude (-116.0636) | 0.357 | 0.618 | 1.23 | 1.66 | 1.99 | 2.64 |

[1]Precipitation frequency estimates are the mean values based on the partial duration series

## Depth-Area Reduction Factor

Depth area reduction factors (DARFs) were applied to drainage areas that exceeded 10 square miles in accordance with CVWD Ordinance No. 1234.1. DARFs are ratios that are applied to convert point rainfall to an equivalent uniform depth over the entire watershed. The "Without Project" Hydrology Report Thousand Palms Area, Whitewater River Basin prepared by Bechtel (1997) Depth-Area Reduction Factor (DARF) Curve (see Appendix A) was used to determine the DARFs. Table 2-2 summarizes the DARFs used in this study.

| Table 2-2: Depth-Area Reduction Factors (DARFs) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Watershed Name | A | B | C | D | E | F | I | J | K |
| Drainage Area (sq mi) | 2.16 | 2.57 | 3.06 | 4.08 | 12.19 | 10.70 | 3.34 | 2.10 | 8.13 |
| DARFs | 1.00 | 1.00 | 1.00 | 1.00 | 0.90 | 0.91 | 1.00 | 1.00 | 1.00 |

## Land Use, Hydrologic Soils, and Loss Rates

Precipitation loss rate calculations are based on the hydrologic soil type, land use/ground cover, and the Antecedent Moisture Condition (AMC) which is the relative wetness of a watershed just prior to a flood producing storm. During a storm event, actual loss rates tend to decrease with time, although in design hydrology, a constant average loss rate is assumed. RCFC&WCD methodology uses a runoff index (RI) which takes into account the soil type, cover type and quality, and AMC for each soil-cover complex within a study watershed to determine an infiltration rate for the pervious areas. The infiltration rate is a constant loss rate applied throughout the storm duration. RI values were estimated using Plate E-6.1 and the corresponding infiltration rates were taken from Plate E-6.2 of the RCFC&WCD Hydrology Manual. As recommended in the RCFC&WCD Hydrology Manual, an AMC II condition was used in determining the infiltration rates for the 100-year storm, and an initial loss rate of zero was used.

The land use generally defines the impervious fraction of an area, while the hydrologic soil type defines the absorption rate of the native soil. The hydrologic land use map was developed using the existing condition land uses shown in the National Agriculture Imagery Program (NAIP) 2011 aerial photo (Exhibit 2). For hydrologic modeling purposes, the land uses are classified based on their percent imperviousness and ground cover type. Five land use (cover type) classifications were developed for the study area (see Exhibit 3) along with their associated RI numbers (see Table 2-3). Local development standards require that projects will be required to mitigate increase in runoff to match existing conditions. Consequently, modeling of existing conditions will also be appropriate for future development conditions.

| Table 2-3: Land Use-Soil Type and Runoff Index (RI) Classifications | | | | |
|---|---|---|---|---|
| Land Use/ Cover Type | % Impervious | Runoff Index (RI) | | |
| | | Soil Type A | Soil Type B | Soil Type D |
| Natural/Barren | 0 | 78 | 86 | 93 |
| Commercial/Barren(1) | 90 | 78 | 86 | 93 |
| Residential/Barren(1) | 50 | 78 | 86 | 93 |
| Natural/Open Brush-Poor Condition | 0 | 62 | 76 | 88 |
| Agricultural/Fallow Condition | 0 | 76 | 85 | 92 |

(1) Evaluation of the aerial photo indicated majority of the urban landscaping consisted of non- irrigated areas (typical of desert communities) and were classified "barren Cover type"

The Natural Resources Conservation Service's (NRCS), formerly called the U.S. Soil Conservation Service (SCS), detailed soil surveys were used to determine the hydrologic soil types for the study area. In general, mountainous areas are Soil Type D, which have the highest runoff potential. Lower elevations and valley areas are either Soil Type A or Soil Type B, which have the lowest runoff potential (see Exhibit 4). For areas outside of the detailed NRCS soil surveys, the STATSGO2 data were used. The STATSGO2 is a digital general soil association map developed by the National Cooperative Soil Survey. It consists of a broad based inventory of soils and non-soil areas that occur in a repeatable pattern on the landscape and that can be cartographically shown at the scale mapped. This was the best available soil data for the areas east of the Coachella Canal.

Loss rates vary with each land use and soil type combination. As stated earlier, the RCFC&WCD methodology was used for estimating the loss rates. Many of the sub-basins consisted of multiple land uses and soil types, making it difficult to manually sum up all of the different combinations. Using the spatial analysis capabilities of the ArcView Geographic Information System (GIS) Computer Program makes this otherwise laborious task manageable. Unique soil-land use polygons are constructed and an analysis is performed to determine an area-averaged RI Value for each sub-basin. Plate E-6.2 of the RCFCD&WCD Hydrology Manual is used to convert the RI Values to infiltration rates for the pervious portions of the sub-basins. The soil land use summary, area-averaged RI and corresponding infiltration rate for each sub-basin are included in Appendix D.

## Channel Routing

Channel routing is used in hydrologic models when the watershed is modeled with multiple sub-basins and runoff from the upper sub-basins must be routed through a channel, or system of channels to the outlet. For the Mecca/North Shore Region, the recommended method is Kinematic Wave routing. The Kinematic Wave method is a simplified form of the equation of motion (Ref. 7). A basic assumption inherent to this method is that bed slope equals friction slope. It is formulated for a discrete set of predefined geometric conveyance elements as follows:

- Circular
- Triangular
- Rectangular
- Trapezoidal

The Kinematic Wave method only provides hydrograph translation, not attenuation. The rate of translation is determined from the physical characteristic of the reach and the number of routing increments (sub-reaches). The Kinematic Wave routing parameters used in this study are summarized in Appendix E.

## Hydrology Analysis Results

The peak discharges at selected concentration points are listed in Table 2-4. The HEC-HMS model schematic and summary table output are included in Appendix F. Intermediate discharges used in the hydraulic analysis were interpolated between the upstream and downstream concentration points.

Table 2-4: 100-Year Peak Discharge Summary Table

| Drainage System Name | Concentration Point ID | Location | Area (sq mi) | Discharge (cfs) |
|---|---|---|---|---|
| A01 | A1 | Pierce St. | 0.38 | 349 |
| A01 | CP_A3 | Fillmore St. | 1.37 | 1204 |
| A01 | CP_A4 | CVSC | 2.16 | 1485 |
| A01-01 | A2 | Avenue 53 | 0.48 | 448 |
| B01 | B1 | w/o Buchanan St. | 0.36 | 391 |
| B01 | CP_B3 | Pierce St | 0.92 | 932 |
| B01 | CP_B5 | Fillmore St. | 1.95 | 1863 |
| B01 | CP_B6 | CVSC | 2.57 | 2146 |
| B01-01 | B4 | Avenue 55 | 0.51 | 485 |
| B01-02 | B2 | Avenue 55 | 0.31 | 335 |
| C01 | CP_C3 | Buchanan St. | 0.94 | 991 |
| C01 | CP_C5 | Pierce St. | 1.91 | 1868 |
| C01 | CP_C7 | Highway 86 | 2.97 | 2721 |
| C01 | CP_C8 | CVSC | 3.06 | 2772 |
| C01-01 | C5 | Avenue 57 | 0.48 | 473 |
| C01-02 | C3 | Avenue 57 | 0.23 | 264 |
| D01 | D1 | Avenue 62 | 0.78 | 519 |
| D01 | CP_D2 | Avenue 64 | 1.16 | 702 |
| D01 | CP_D3 | Pierce St. | 1.87 | 1127 |
| D01 | CP_D5 | Highway 86 | 2.54 | 1440 |
| D01 | CP_D6 | Avenue 66 | 3.63 | 2072 |
| D01 | CP_D7 | CVSC | 4.08 | 2272 |
| E01 | E1 | Avenue 59 | 0.27 | 298 |
| E01 | CP_E2 | Avenue 60 | 0.71 | 749 |
| E01 | CP_E3 | Avenue 62 | 1.72 | 1636 |
| E01 | CP_E6 | Avenue 64 | 2.75 | 2340 |
| E01 | CP_E17 | Lateral E01-01 | 8.87 | 6643 |
| E01 | CP_E18 | Avenue 66 | 9.56 | 6985 |
| E01 | CP_E20 | Avenue 68 | 11.26 | 7064 |
| E01 | CP_E22 | CVSC | 12.19 | 7353 |
| E01-01 | E12 | Avenue 59 | 0.48 | 459 |
| E01-01 | CP_E13 | Avenue 60 | 1.28 | 1128 |
| E01-01 | CP_E15A | Lateral E01-02 | 3.97 | 3211 |
| E01-01 | CP_E16 | Avenue 64 | 4.61 | 3684 |

| Table 2-4: 100-Year Peak Discharge Summary Table (Cont.) | | | | |
|---|---|---|---|---|
| Drainage System Name | Concentration Point ID | Location | Area (sq mi) | Discharge (cfs) |
| E01-02 | E9 | Avenue 59 | 0.48 | 453 |
| E01-02 | CP_E10 | Avenue 60 | 0.98 | 904 |
| E01-02 | CP_E11 | Avenue 62 | 1.96 | 1664 |
| E01-03 | E5 | Dale Kiler Rd. | 0.26 | 238 |
| F01 | F1 | Avenue 62 | 0.58 | 634 |
| F01 | CP_F2 | Avenue 64 | 1.61 | 1508 |
| F01 | CP_F10 | Avenue 66 | 2.63 | 2202 |
| F01 | CP_F11 | Lateral F01-01 | 8.56 | 6761 |
| F01 | CP_F12 | Avenue 70 | 9.25 | 7059 |
| F01 | CP_F13 | Avenue 71 | 10.70 | 7059 |
| F01-01 | F7 | Hayes St. | 1.02 | 868 |
| F01-01 | CP_F8 | Colfax St. | 1.52 | 1218 |
| F01-01 | CP_F9 | Lateral F01-02 | 4.51 | 3559 |
| F01-02 | F3 | Avenue 64 | 0.44 | 474 |
| F01-02 | CP_F5 | Avenue 65 | 0.94 | 873 |
| F01-02 | CP_F6 | Lateral F01-03 | 2.47 | 1998 |
| F01-03 | F4 | Hayes St. | 1.04 | 861 |
| I01 | I1 | Box Canyon Rd. | 0.23 | 297 |
| I01 | CP_I2 | Avenue 67 (ext) | 0.48 | 529 |
| I01 | CP_I3 | Lateral I01-02 | 1.35 | 1352 |
| I01 | CP_I8 | I01-01 | 3.09 | 2665 |
| I01 | CP_I9 | Salton Sea Outlet | 3.34 | 2776 |
| I01-01 | I6 | Arthur St. | 0.71 | 608 |
| I01-01 | CP_I7 | Unnamed Rd. | 1.22 | 957 |
| I01-02 | I5 | Arthur St. | 0.12 | 133 |
| I01-02 | CP_I4 | Unnamed Rd. | 0.60 | 606 |
| J01-01 | J4 | Detention Ch. No. 1 | 0.97 | 757 |
| J01-02 | J1 | Vander Veer Rd | 1.48 | 1377 |
| J01-02 | CP_J2 | e/o Winward Dr. | 2.10 | 1794 |
| K01 | K1 | Coachella Canal | 5.39 | 2509 |
| K01 | CP_K3 | Lateral K01-01 | 7.56 | 3268 |
| K01 | CP_K4 | Highway 111 | 8.13 | 3432 |
| K01-01 | K2 | Via Costa Brava | 1.63 | 1060 |

# SECTION 3 – Hydraulic Analysis

## Introduction

The proposed alignments and storm drain facilities presented in this study are master plan level designs and will need to be reviewed during the design phase of each system to ensure the most efficient solution is developed for each facility.

The Water Surface Pressure Gradient (WSPG) computer program, Version 14.06, developed by CivilDesign Corporation, was used in performing the hydraulic calculations for this study. The program computes and plots uniform and non-uniform steady flow water surface profiles and pressure gradients in open or closed conduits with irregular or regular shaped sections. The flow in the system is allowed to alternate between supercritical, subcritical, or pressure flow in a sequence.

Because WSPG is a one-dimensional hydraulic model, it neglects the transverse velocity/momentum component and the transverse variations in water surface in its calculations. At the junction of two supercritical channels, cross waves can form. In order to evaluate these complex flow effects, a two-dimensional hydraulic model may be needed to accurately analyze these situations.

## Water Surface Control Elevations

The starting water surface elevations for Lines A01, C01, and D01 were taken from the proposed conditions (100-year Alt 5) HEC-RAS analysis of the CVSC prepared by Tetra Tech, March 2014. A summary table and the Tetra Tech output file are included in Appendix I.

For Line B01 (subcritical flow channel), the HEC-RAS water surface elevation of -128.07 (Sta. 616+92 CVSC) was below Line B's critical depth elevation and therefore to be conservative, Line B01's normal depth elevation was used as the starting water surface elevation.

For Line E01, high 100-Year water surface elevations in the CVSC (Sta. 143+37) and its associated floodplain made it impractical to extend a 100-year capacity channel to the CVSC. The starting water surface elevation was determined using weir flow calculations for the 100-year discharge at the Avenue 70 low-water crossing.

For Line F01, high water surface elevations in the CVSC made it impractical to tie into the CVSC. The channel was terminated downstream of Avenue 70 by increasing the channel width and decreasing the channel depth to achieve a wide, shallow, non-scouring flow at its outlet. Normal depth calculations were used to determine the starting water surface elevation at its outlet.

Starting water surface elevations for Lines J01-01 and J01-02 were taken from the Detention Channel No. 1 design plans at Sta. 97+62 and 100+17, respectively (see Appendix K).

For channels discharging directly into the Salton Sea (Lines I01 and K01), starting water surface elevations were based on a water surface elevation of -230 ft, as estimated from the 2010 LiDAR data and 2012 Eagle Aerial Imaging aerial photo.

## Open Channels

The following freeboard requirements for open channels are in conformance with CVWD Ordinance 1234.1 When the 100-year water surface within the channel is below adjacent ground elevations (incised channels), 3-feet of freeboard is required. When the 100-year water surface is above adjacent ground elevations (leveed channels), 4-feet of freeboard is required. No allowance for additional freeboard on curved portions of the channel where superelevation of the water surface occurs has been added. Channel heights on the outside of curves will need to be extended to account for superelevation during the preliminary/final design phase.

All open channel sections are concrete lined on the sides and bottom, with a minimum channel slope of 0.0010, 1.5:1 side slopes, a minimum bottom width (B) of 6-feet, and Manning's "n" of 0.015. The channel height (D) is the hydraulic depth plus 3-feet of freeboard for incised channels, or, plus 4-feet of freeboard for leveed channels, and rounded to the next highest 0.5-foot increment. Open channels will have a 20-foot wide service road on each bank. The concrete lining thickness will be 6 inches of Class "A" Concrete. All open channels will be fenced for safety and security reasons (see Figure 4). Where open channels cross major roads, culverts will be necessary to convey the flows. Reinforced concrete box (RCB) culverts were proposed when the capacity of a 96-inch reinforced concrete pipe (RCP) was exceeded by the 100-year discharge and/or limited by height restrictions of the existing ground.

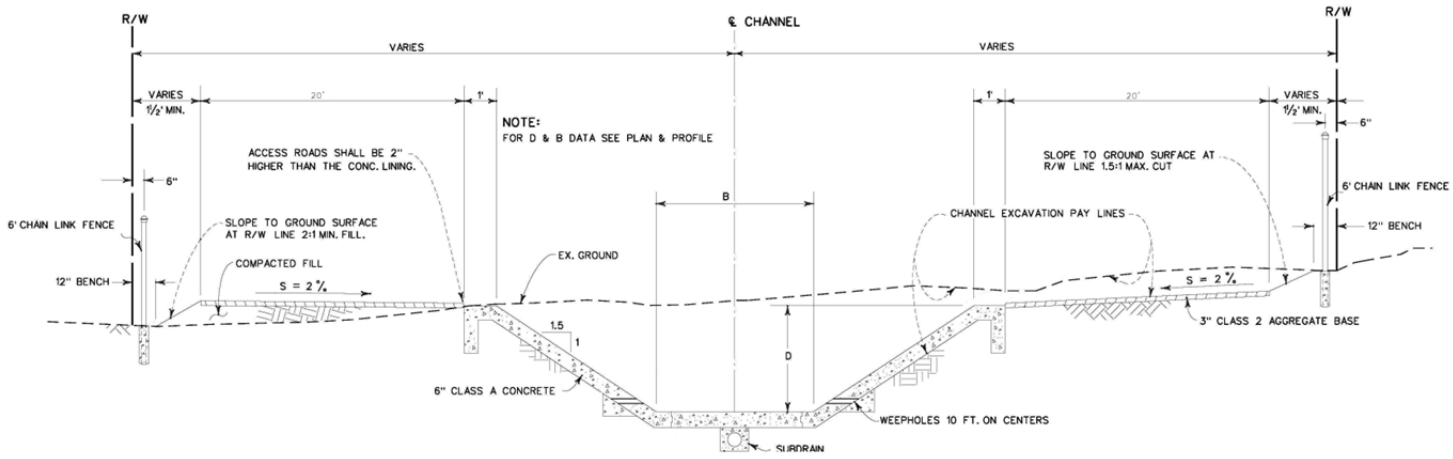



**Figure 4 – Typical Concrete Trapezoidal Channel**

## Closed Conduits

Reinforced concrete pipes (RCP) were proposed when the capacity of a 96-inch diameter or narrower pipe can convey the 100-year peak flow. When a 96-inch RCP's hydraulic capacity is exceeded, open channels were used. RCPs should have at least 2-feet of cover and the hydraulic grade line should be a minimum of 2-feet below the existing ground surface. The minimum conduit slopes are 0.0025 and were hydraulically analyzed using a Manning's "n" value of 0.013. Nominal 6-inch diameter increments were used in selecting the proposed pipe sizes.

Single and multi-cell reinforced concrete boxes (RCBs) were used for most culvert crossings due to the capacity limitations of RCPs. A minimum culvert slope of 0.0025 was used and was hydraulically analyzed using a Manning's "n" value of 0.014. RCBs should have at least 2-feet of cover and the hydraulic grade line should be a minimum of 2-feet below the existing ground surface. RCB sizes were based on Caltrans Standard Plans D80 and D81 Cast-In-Place Single and Double Reinforced Concrete Box Culverts.

## Hydraulic Analysis Results

The results of the hydraulic analysis are presented as Hydraulic Grade Line (HGL) profiles on the Plan and Profile sheets in Section 4. The HGL profiles along with the existing ground and top of channel profiles provides a visual presentation of the channel designs, as well as identifying constraints associated with roads and other man made features. WSPG input and output files are included Appendix H.

Detention Channel No. 1 may need to be upgraded from Avenue 70 to the Salton Sea outlet to convey the additional flows that J01-01 and J01-02 add to the system. Laterals J01-01 and J01-02 will contribute approximately 3,400 cfs of surface runoff to the existing Detention Channel No. 1. Inlet control calculations (see Appendix J) indicate that the maximum inflow to the channel from the upstream detention area is approximately 2,700 cfs. Design plans for the channel (USBR plan no. 212-d-6728) indicated a design flow rate of 3,000 cfs with 3-feet of freeboard (see Appendix K). A more detailed analysis will be needed to determine the timing of the peak flow rate from the detention area east of the Coachella Canal verses the J01-01 and J01-02 Systems. This will establish an appropriate 100-year design peak flow and determine if expansion of the downstream detention channel is required.

The East Side Dike System is currently not accredited by FEMA, but CVWD intends to certify the levee/dike system. During the certification studies further analysis of Detention Channel No.1 should be performed to determine the channel design discharge.

Known irrigation lines are displayed on the plan and profiles contained in Section 4. Many of these lines appear to be in conflict with the proposed storm drain systems. The constraint these irrigation lines will have on the design of the proposed storm drain systems was not evaluated during the development of the SMP. During the next stage of design it is anticipated that the irrigation facilities will be relocated or otherwise addressed.

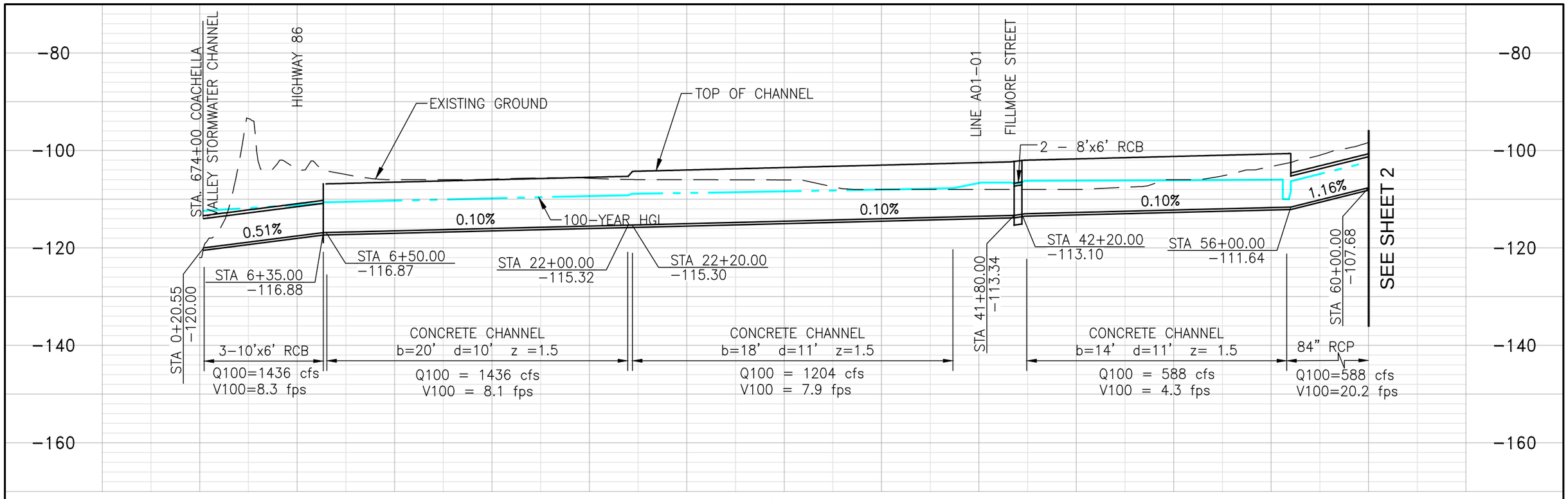
# SECTION 4 – SMP Exhibit Map and Plan and Profile Sheets

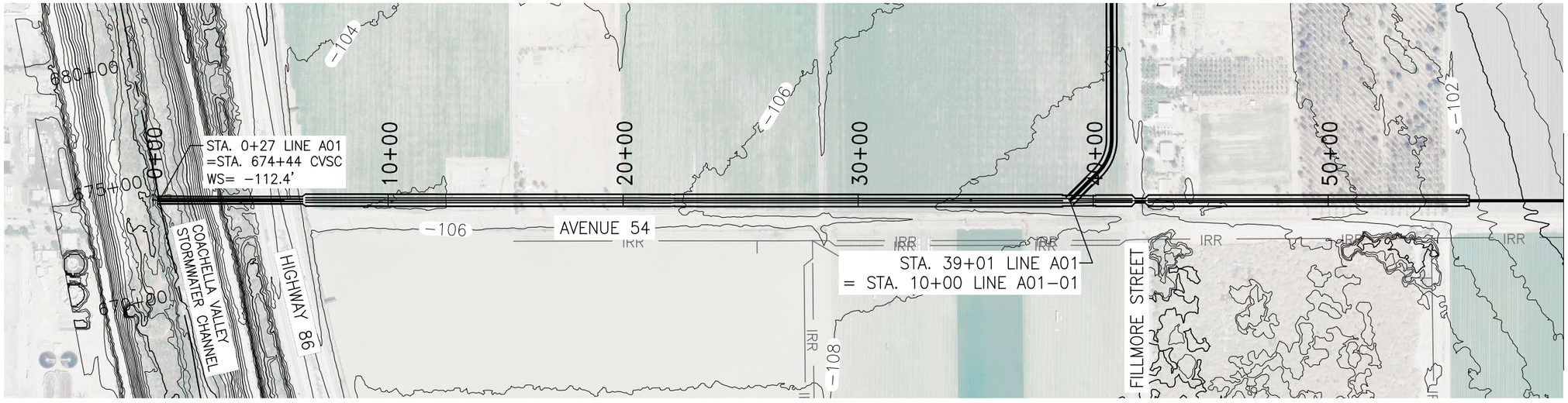
## SMP Exhibit Map

An Overall SMP Facility Map (Exhibit 5) has been prepared for the Mecca/North Shore study area. The exhibit shows the facility locations, sizes, and 100-year peak flows.

## Plan and Profile Sheets

Results of the WSPG analysis are presented on the SMP Plan and Profile Sheets (Exhibit 6). Preliminary plan and profile sheets were prepared for each SMP facility showing the existing ground, hydraulic grade line, channel stationing and invert elevations, and road crossings. Channel dimensions and hydraulic properties are summarized on a reach-by-reach basis. Channel alignments, stationing, and channel footprints are shown on the plan views. The plans and profiles are on 11” x 17” sheets at a scale of 1” = 500’.




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# LINE A01
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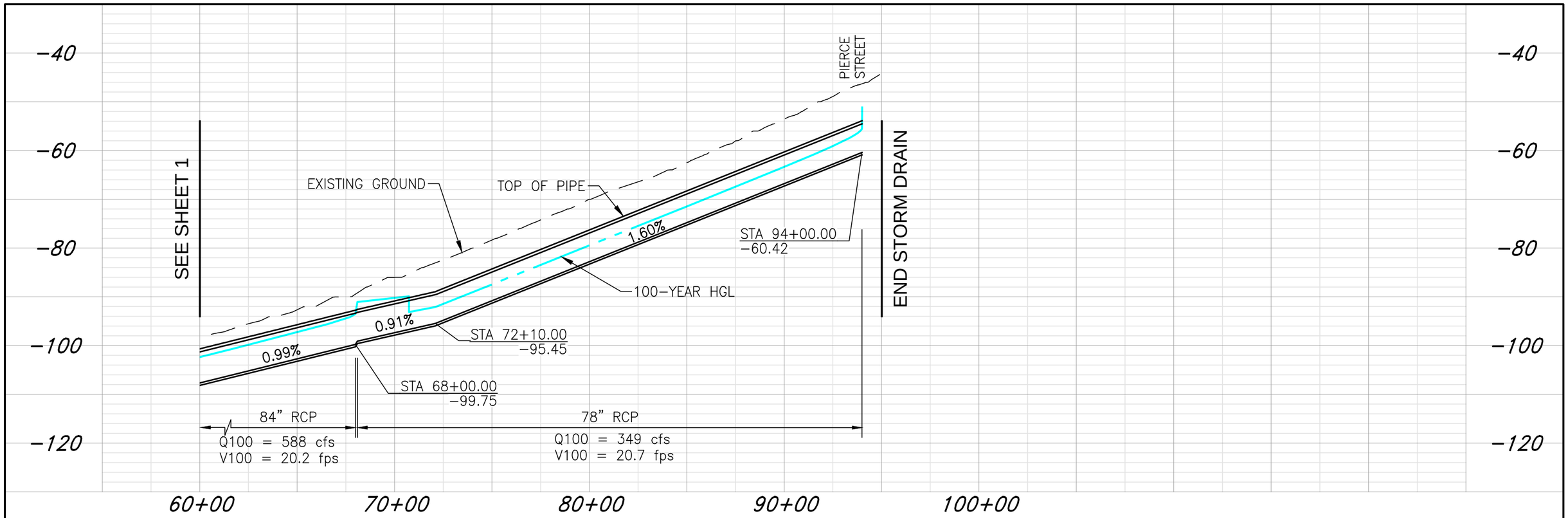
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EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE A01**
**STA 0+00 - STA 60+00**

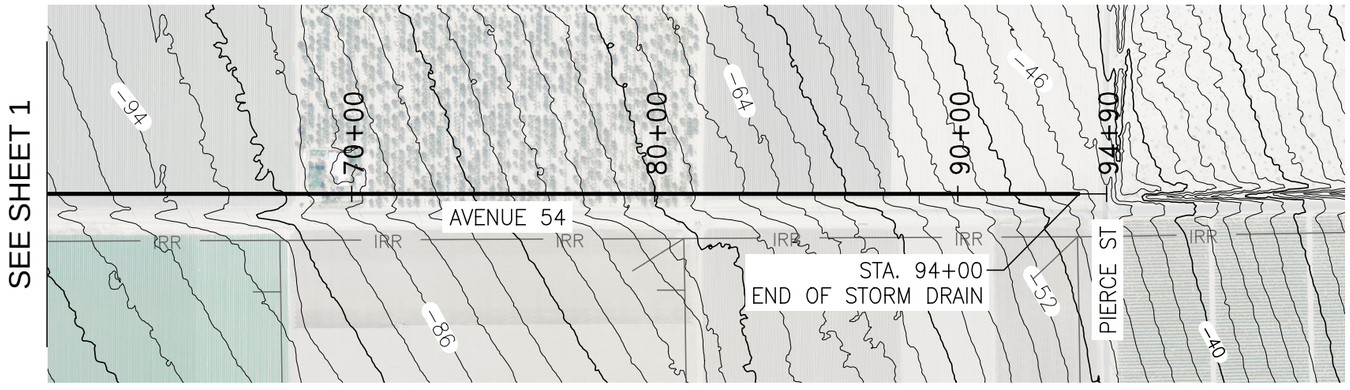
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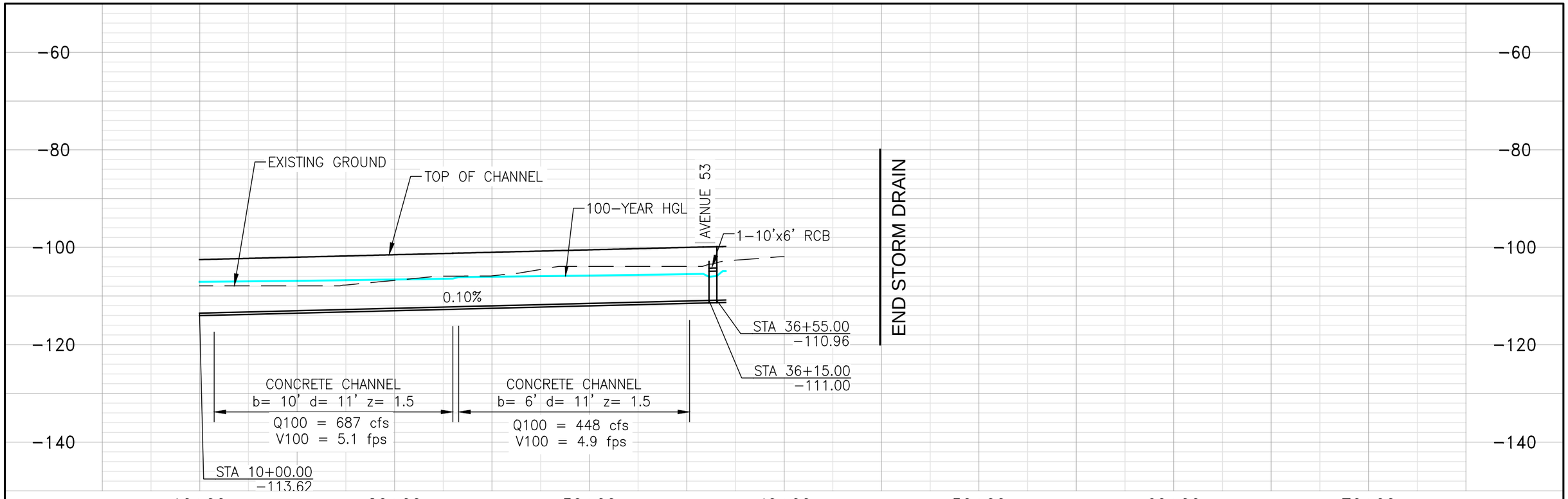
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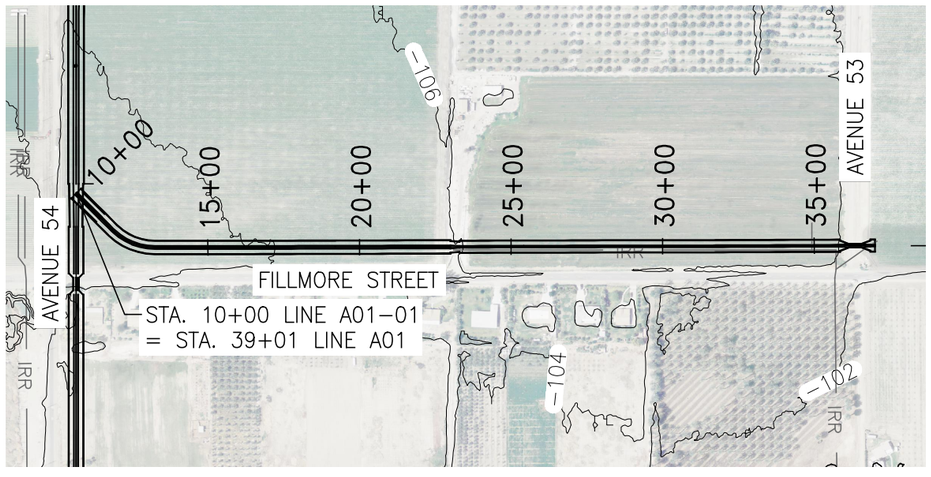
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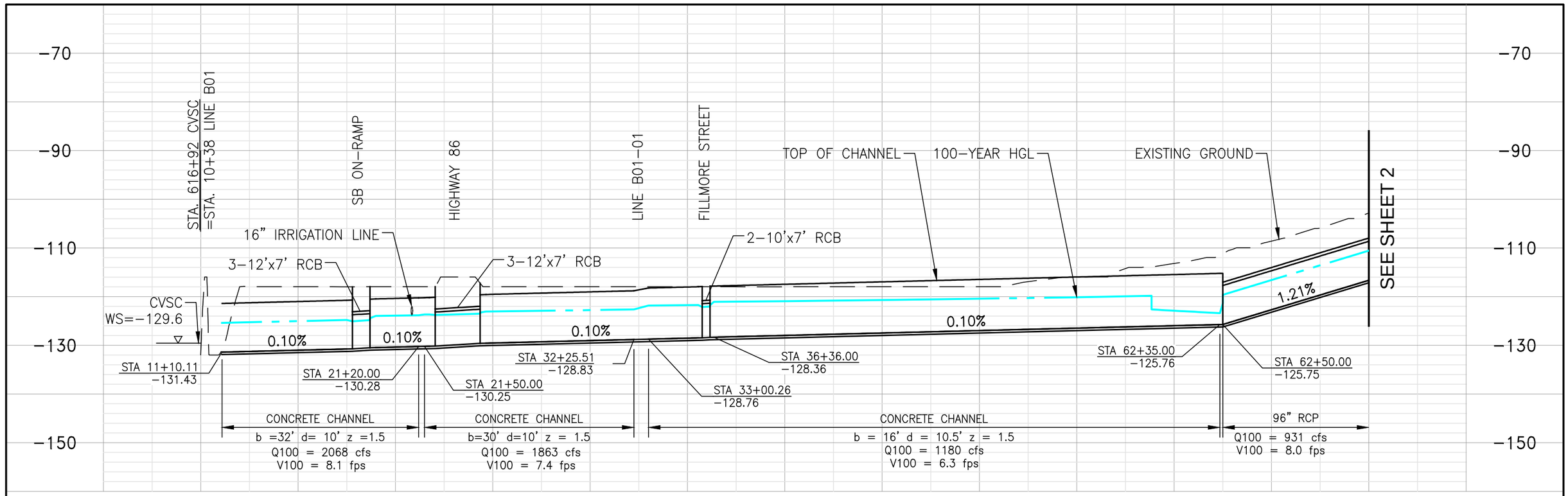
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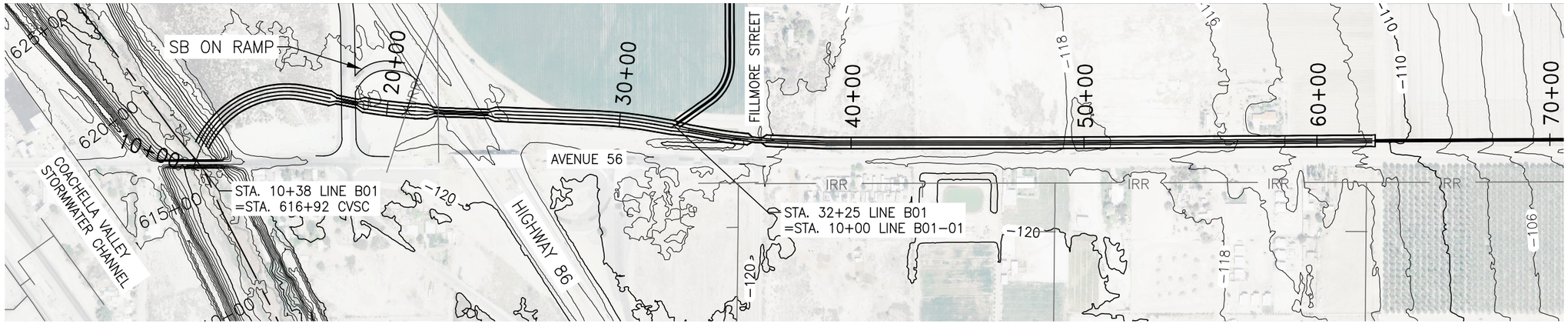
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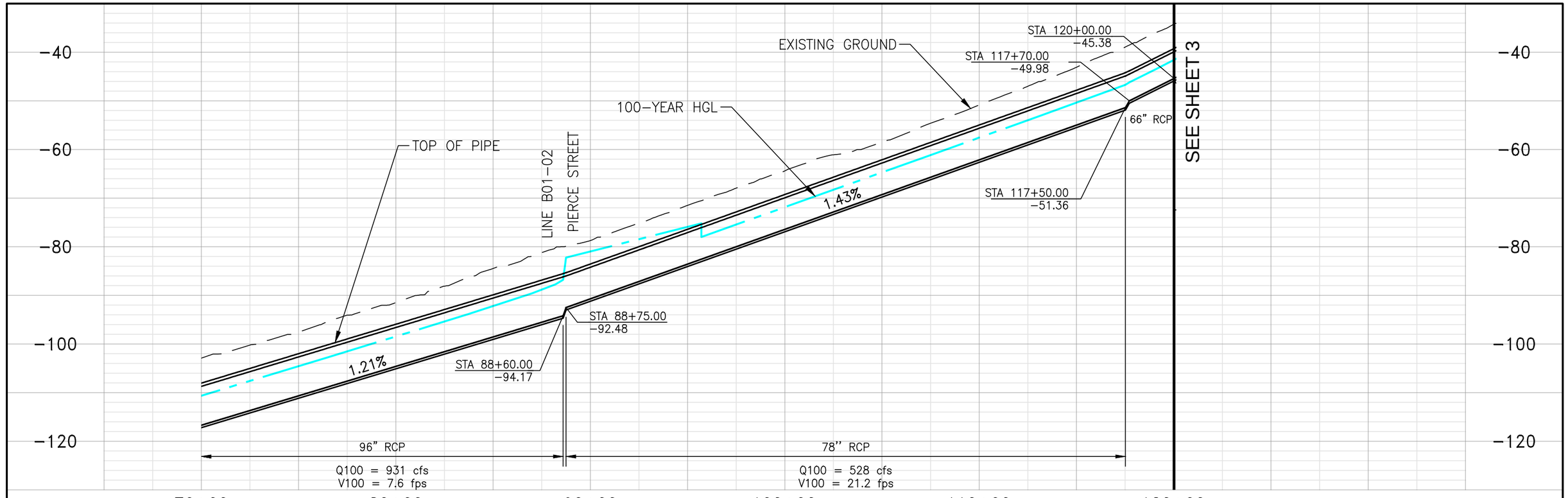
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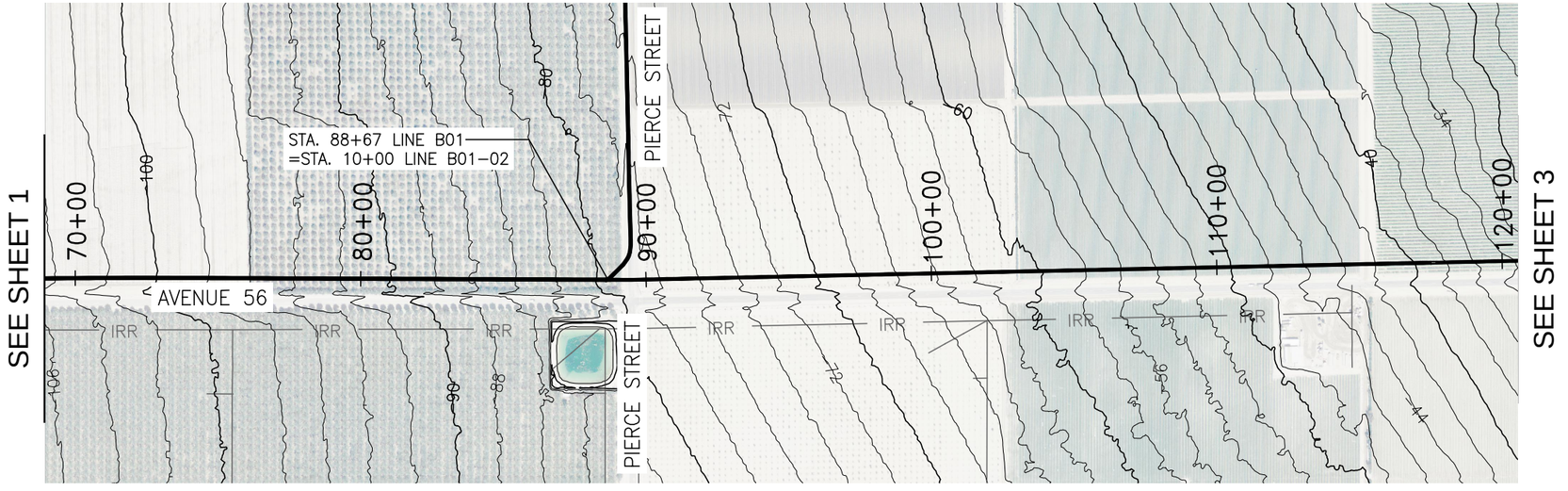
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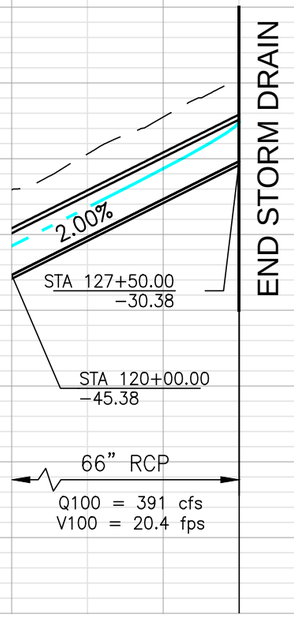
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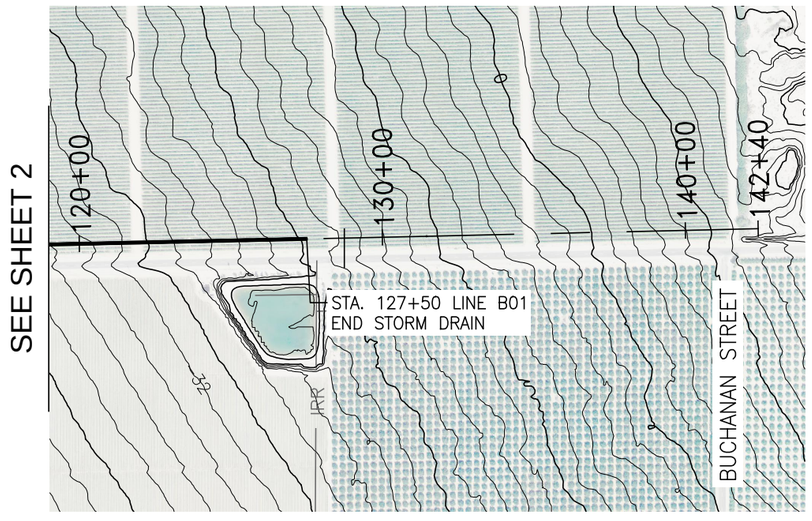
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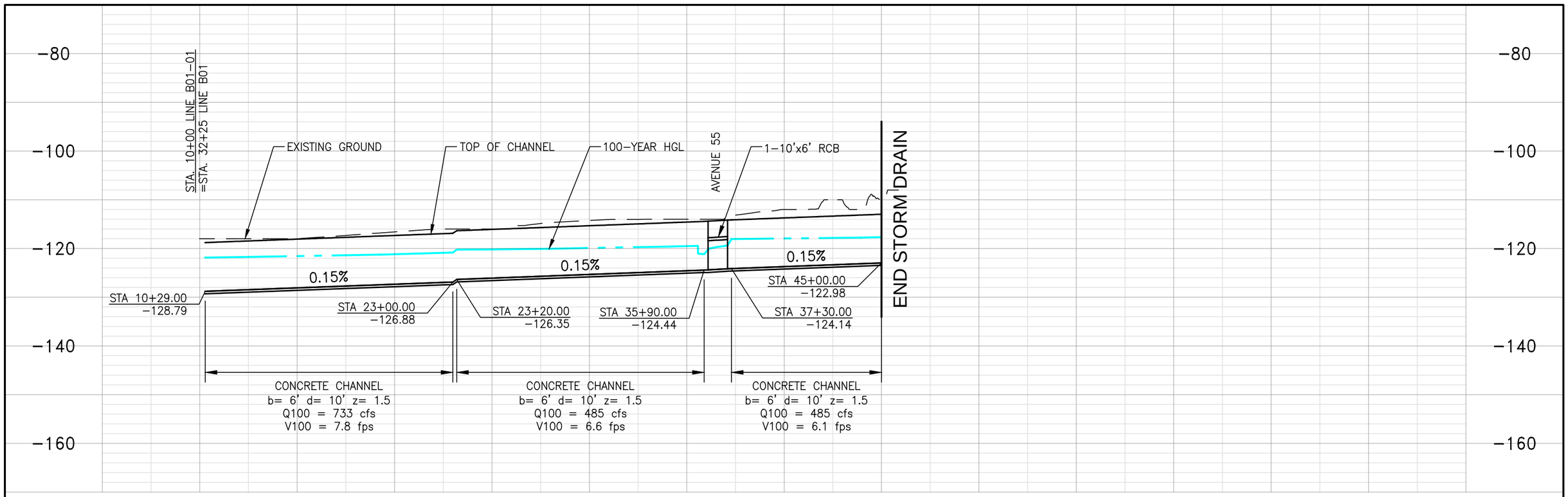
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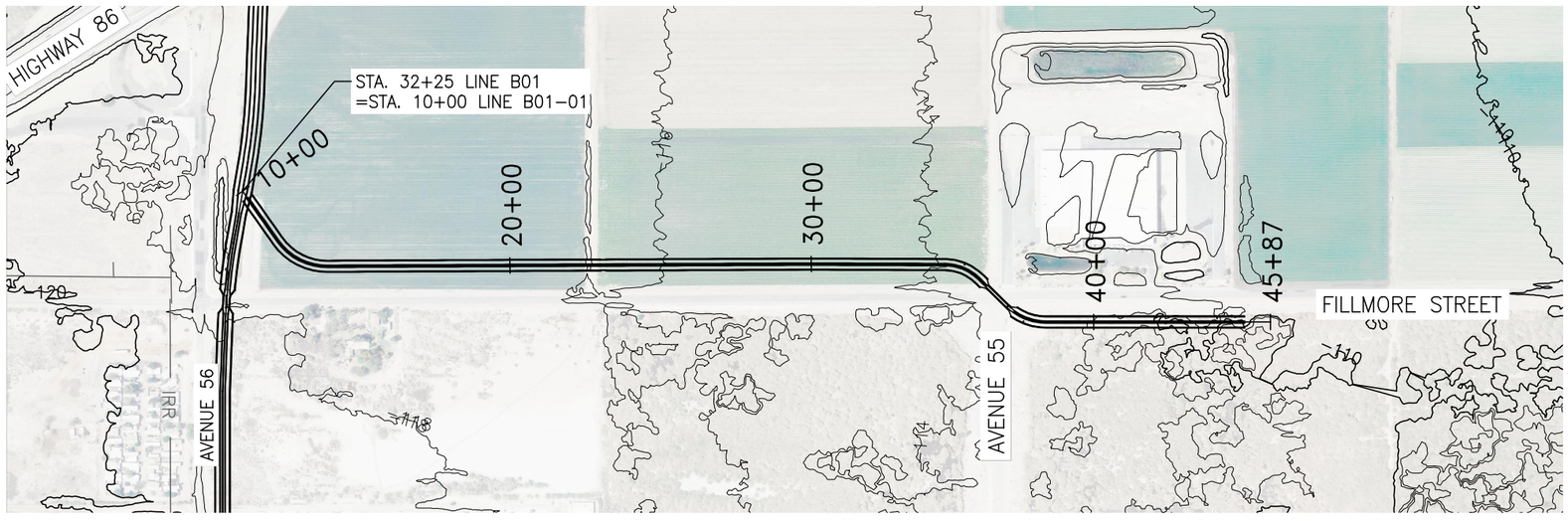
| REF. | REVISIONS | APPR. | DATE |
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE B01**
**STA 120+00 - STA 127+50**

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 3 OF 5

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DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE B01-01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
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3788 McCRAY STREET
RIVERSIDE CA. 92506
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FAX (951) 788-1256

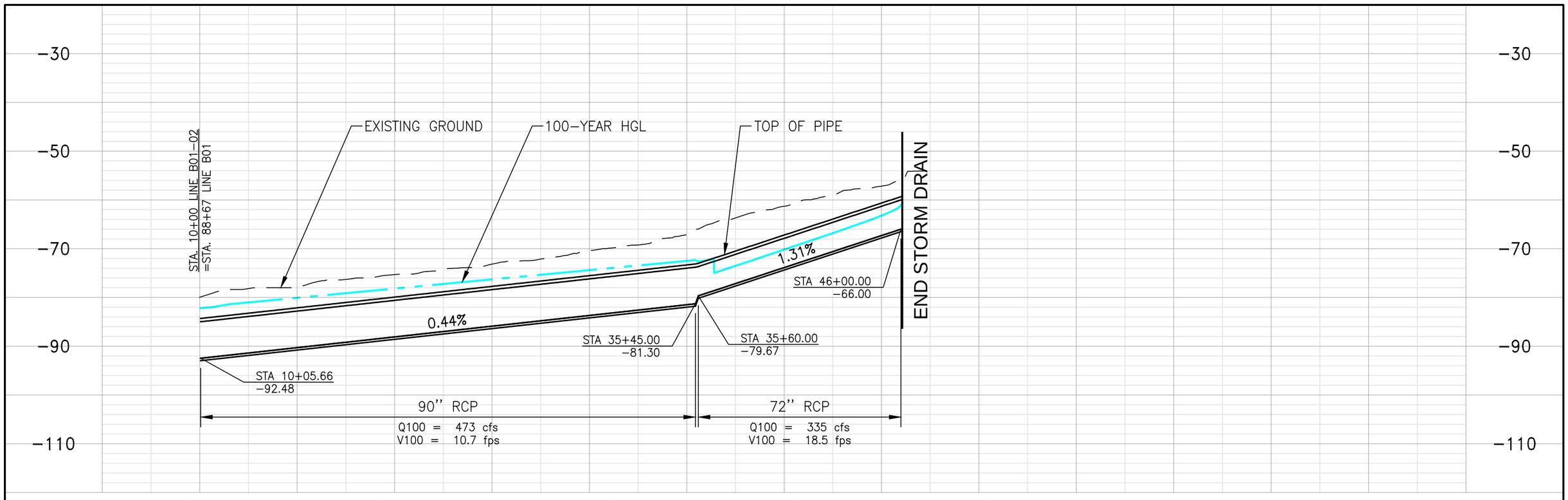
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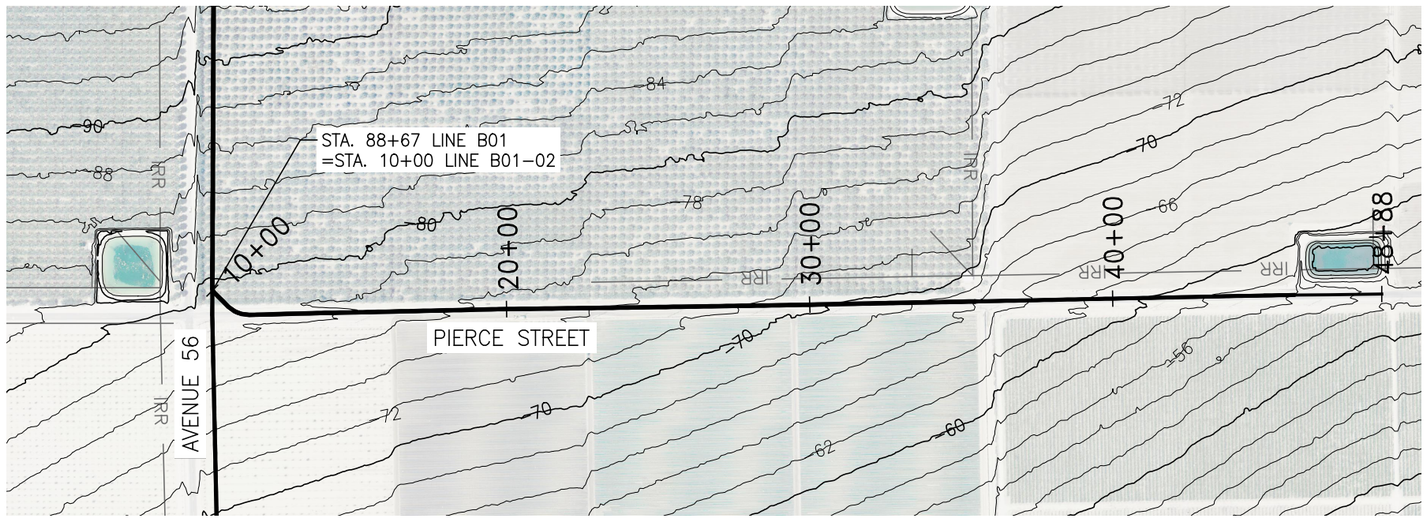
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE B01-01
STA 10+00 - STA 45+87

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 4 OF 5

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1" = 500'

250 0 500




DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE B01-02
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
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RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

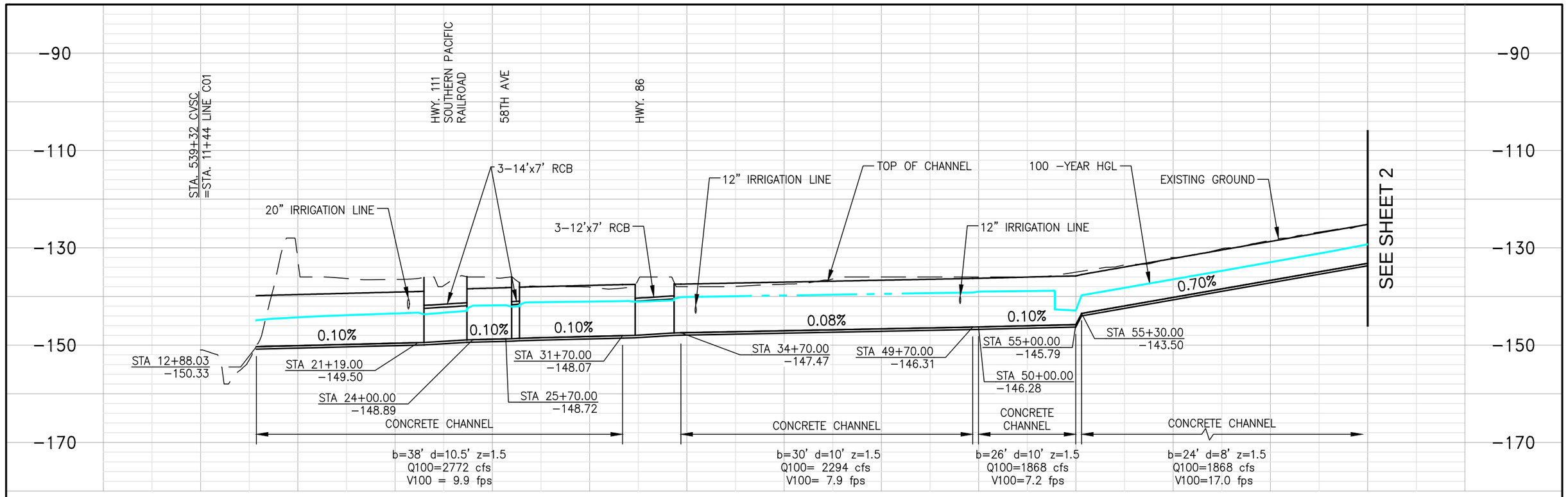
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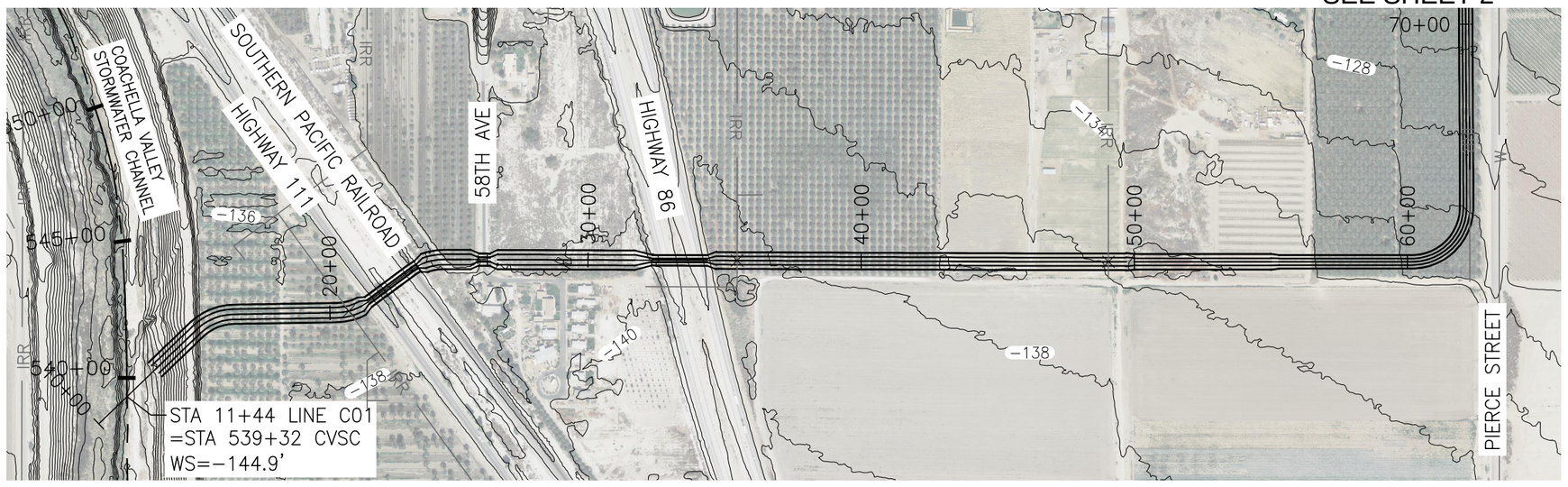
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE B01-02
STA 10+00 - STA 48+88

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 5 OF 5

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1" = 500'
250 0 500

N
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S

DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE C01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
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3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

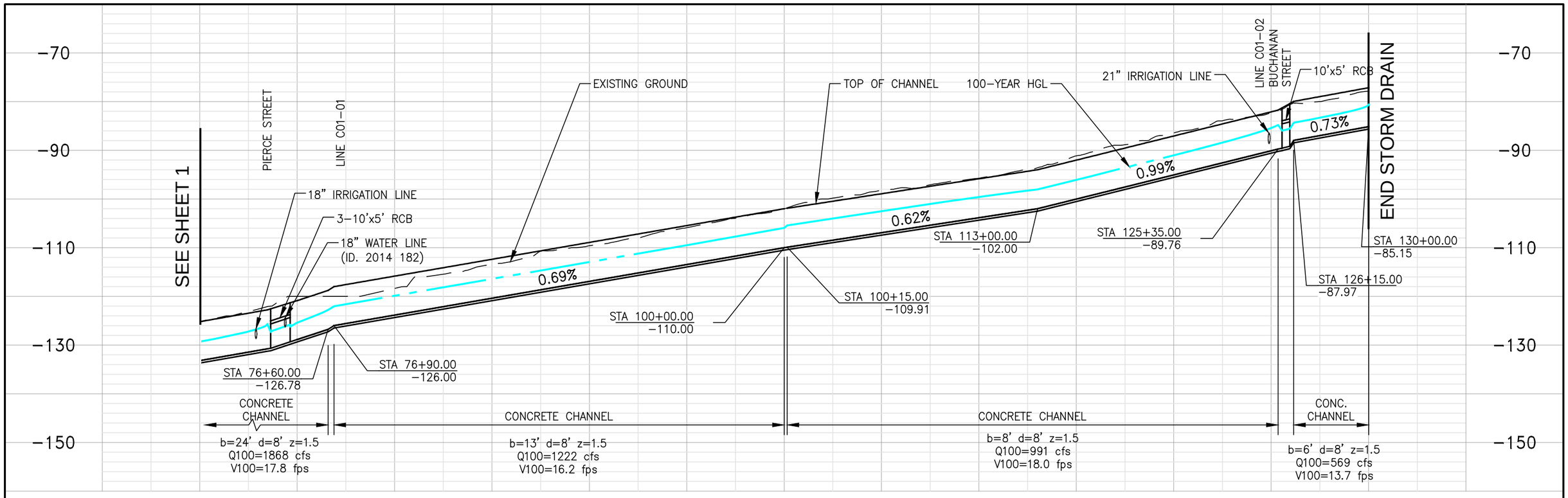
ENGINEER, RCE DATE:

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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE C01**
**STA 10+00 - STA 70+00**

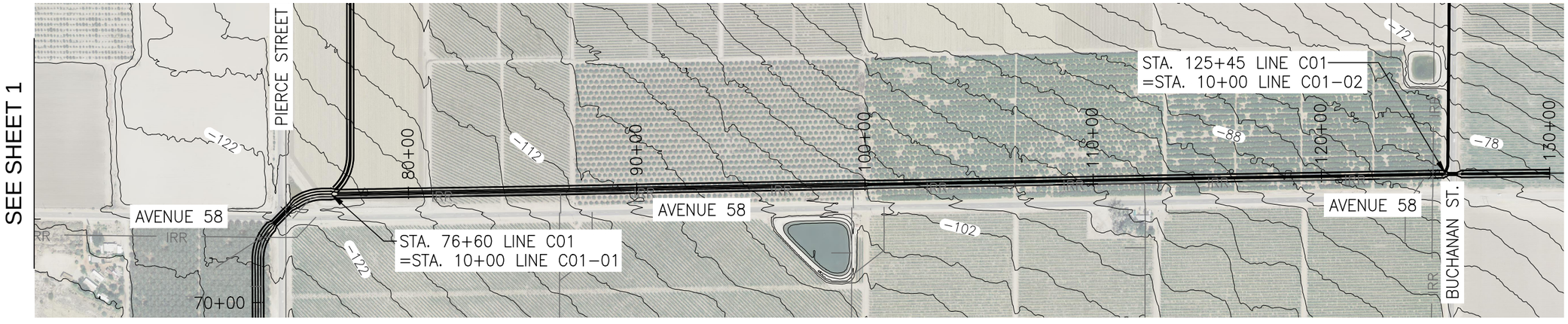
PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 1 OF 4

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1" = 500'

250 0 500




N
W WEBB E
S

DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE C01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

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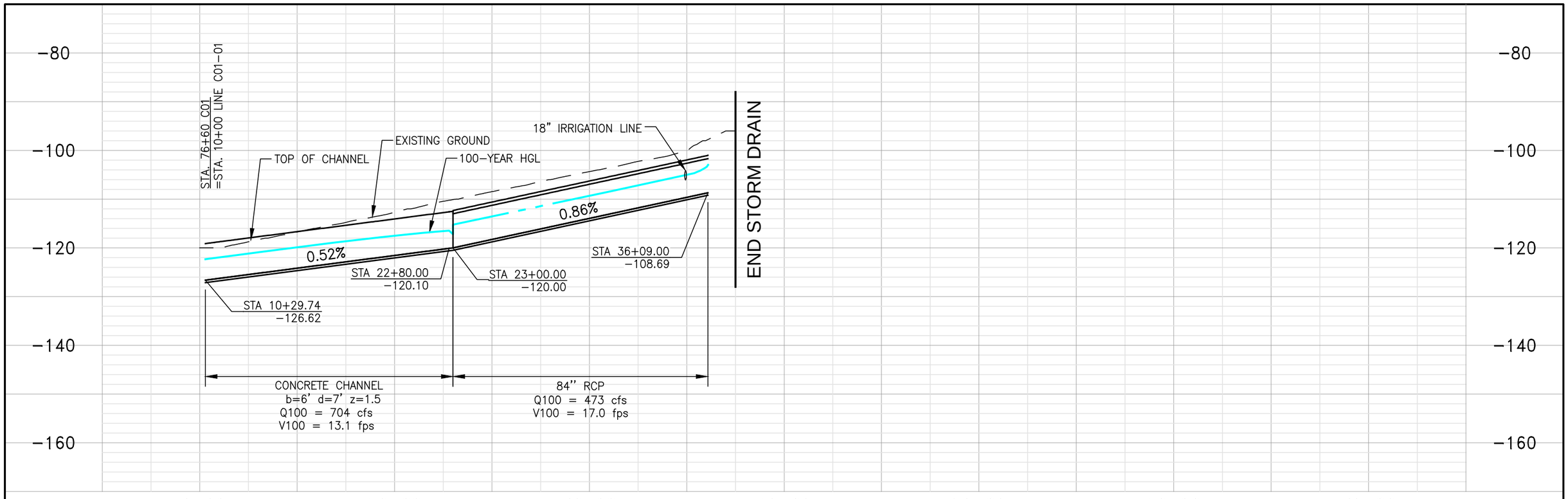
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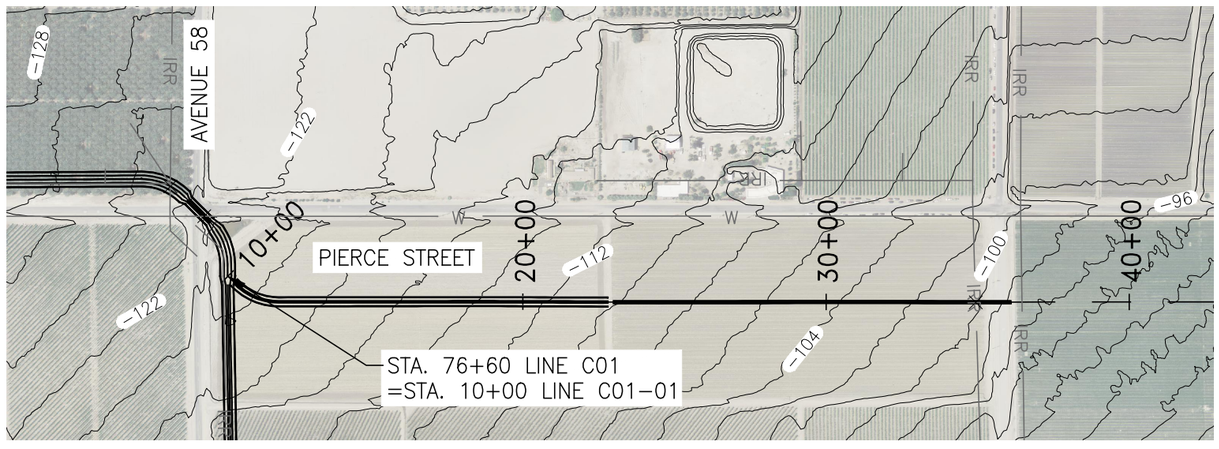
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE C01**
**STA 70+00 - STA 130+00**

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 2 OF 4

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1" = 500'

250 0 500




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TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE C01-01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

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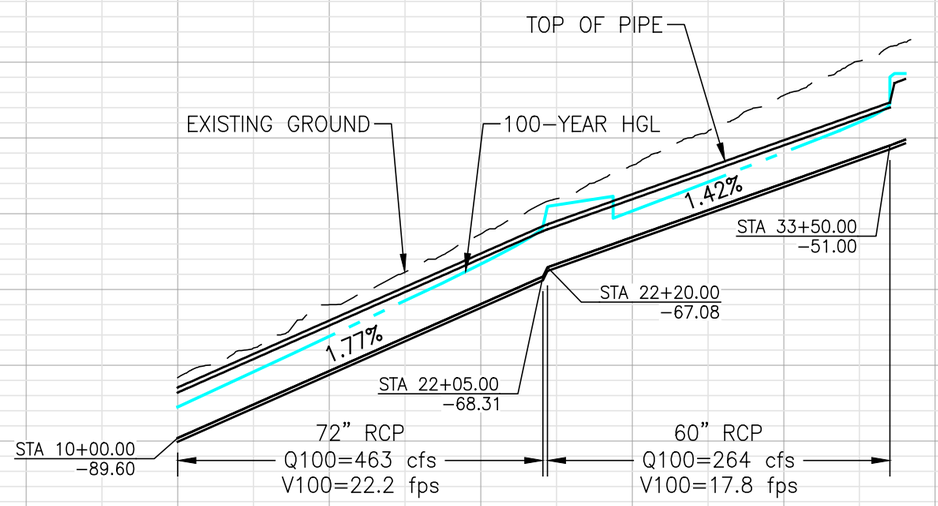
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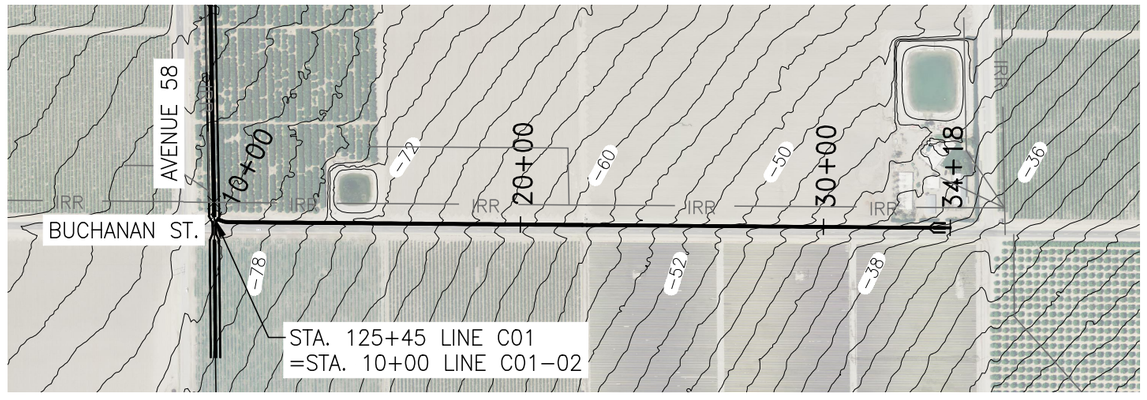
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE C01-01
STA 10+00 - STA 36+09

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 3 OF 4

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1" = 500'

250 0 500

W S N E WEBB

DIGALERT
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TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE C01-02
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
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3788 McCRAY STREET
RIVERSIDE CA. 92506
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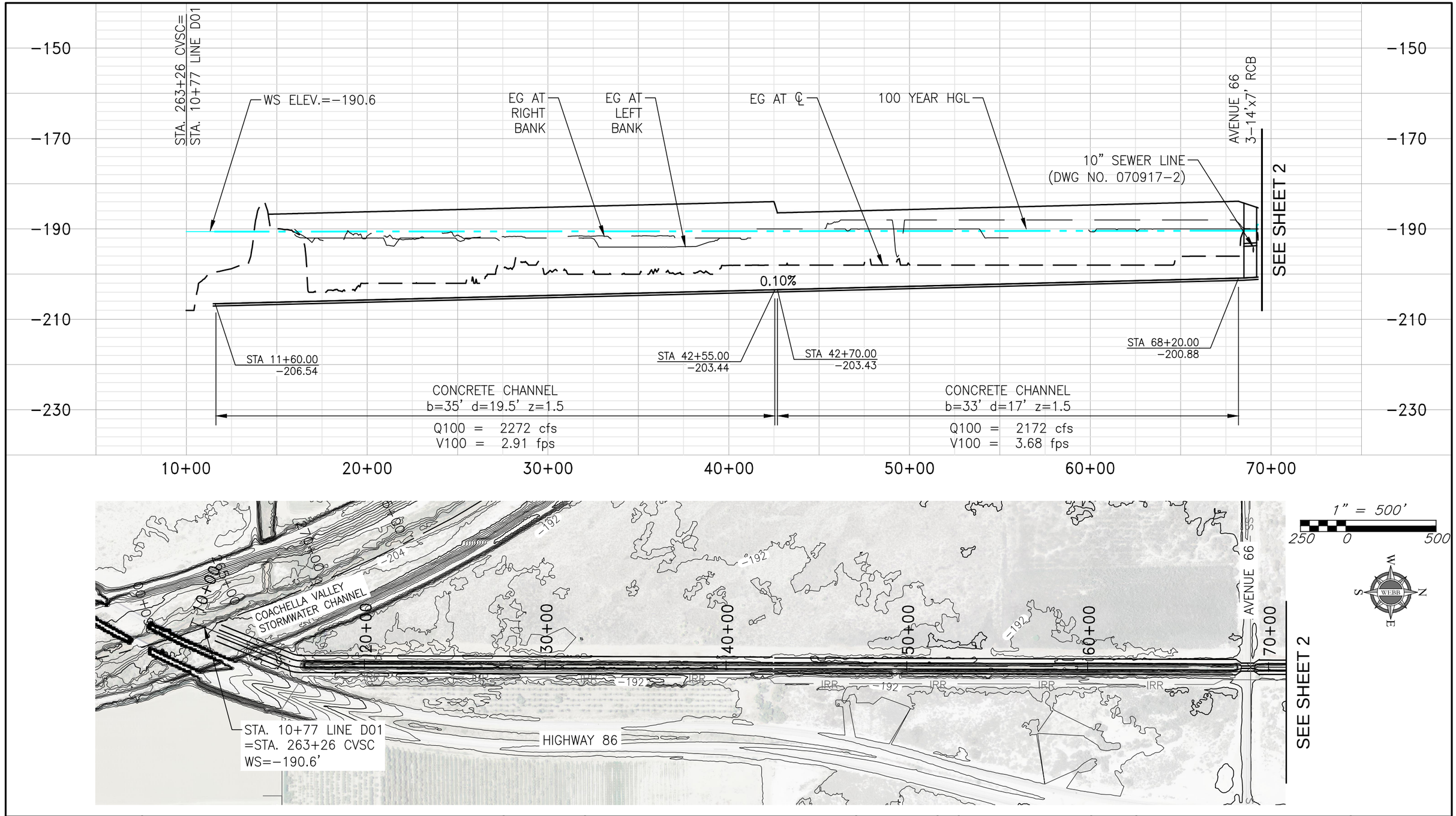
ENGINEER, RCE DATE:

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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
C01-02
STA 10+00 - STA 34+18

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 4 OF 4

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DIGALERT
DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1−800−227−2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE D01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686−1070
FAX (951) 788−1256

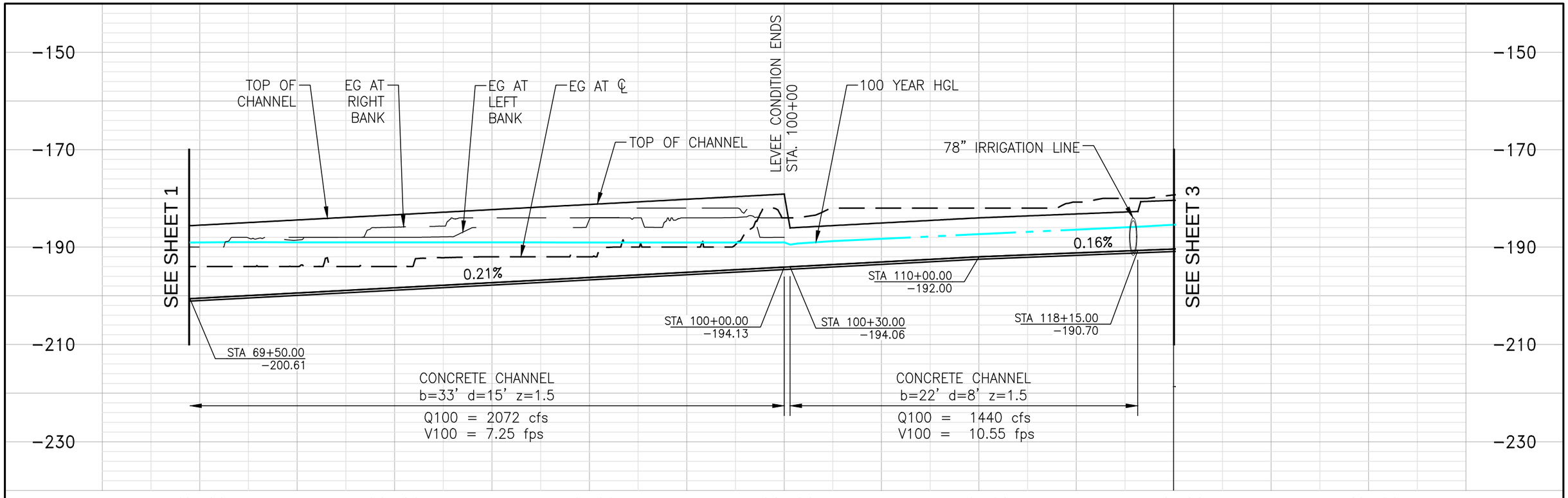
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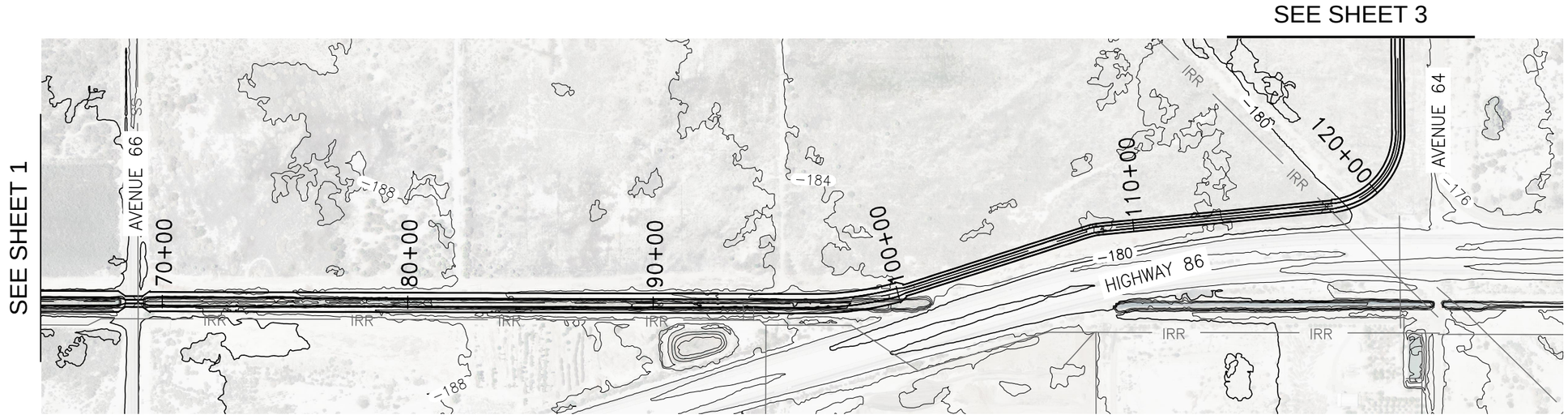
| REF. | REVISIONS | APPR. | DATE |
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE D01**
**STA 10+00 − STA 69+50**

PROJECT NO. 2012−0001
DRAWING NO. LN001
SHEET NO. 1 OF 4

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1" = 500'
250 0 500

W E S N WEBB

DIGALERT
DIAL BEFORE YOU DIG TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE D01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER JOSEPH C. CALDWELL NO. C67239 CIVIL STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

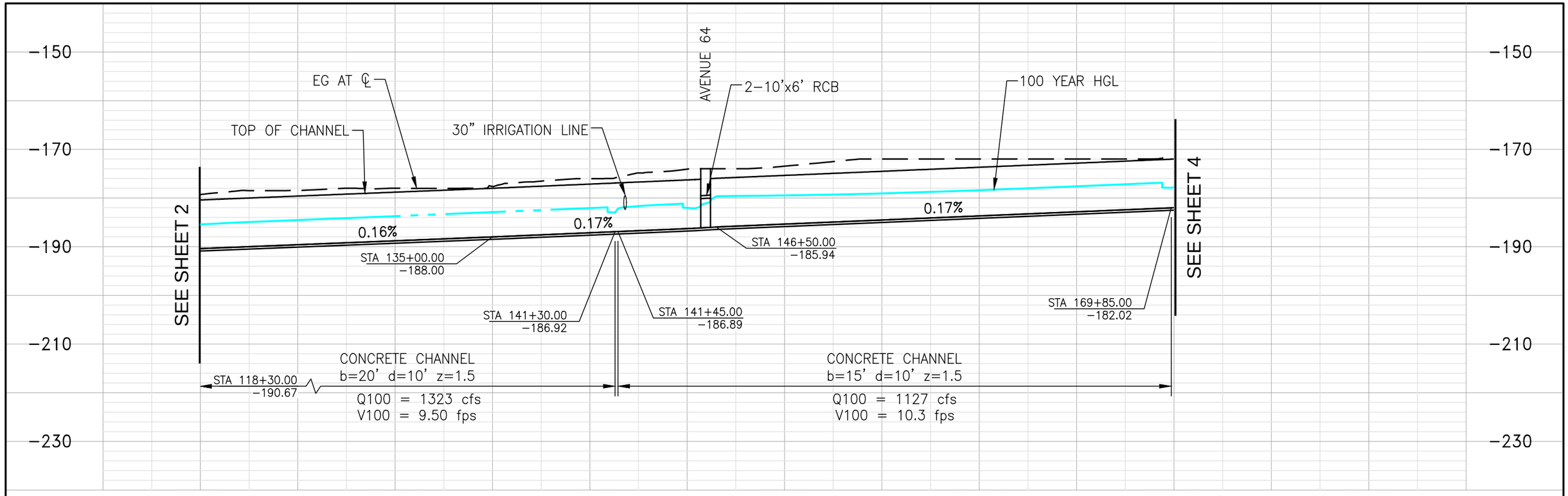
ENGINEER, RCE DATE:

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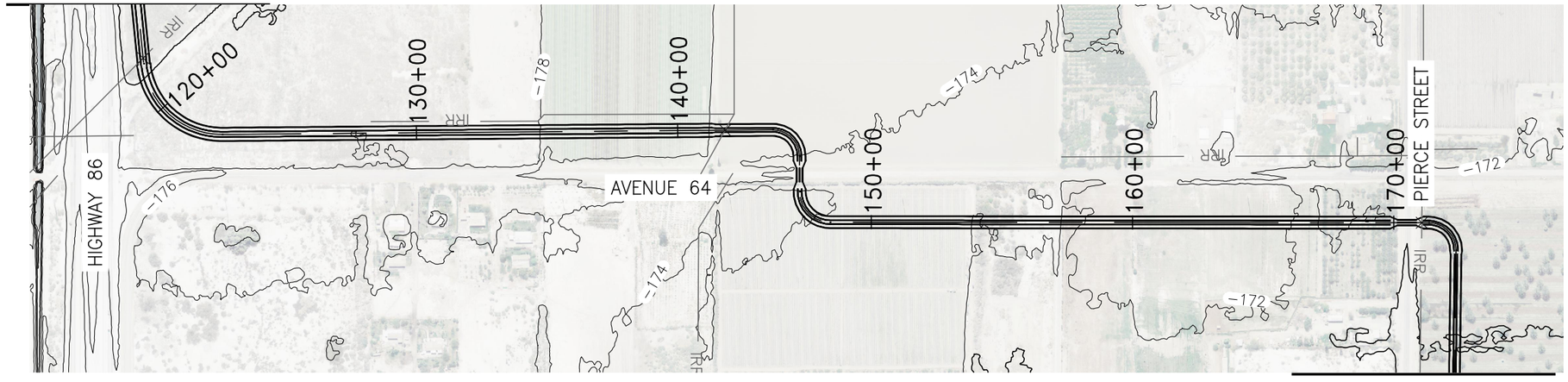
COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE D01
STA 69+50 – STA 120+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 2 OF 4

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SEE SHEET 2




SEE SHEET 4

1" = 500'

250 0 500

S E W N WEBB

DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE D01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
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ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

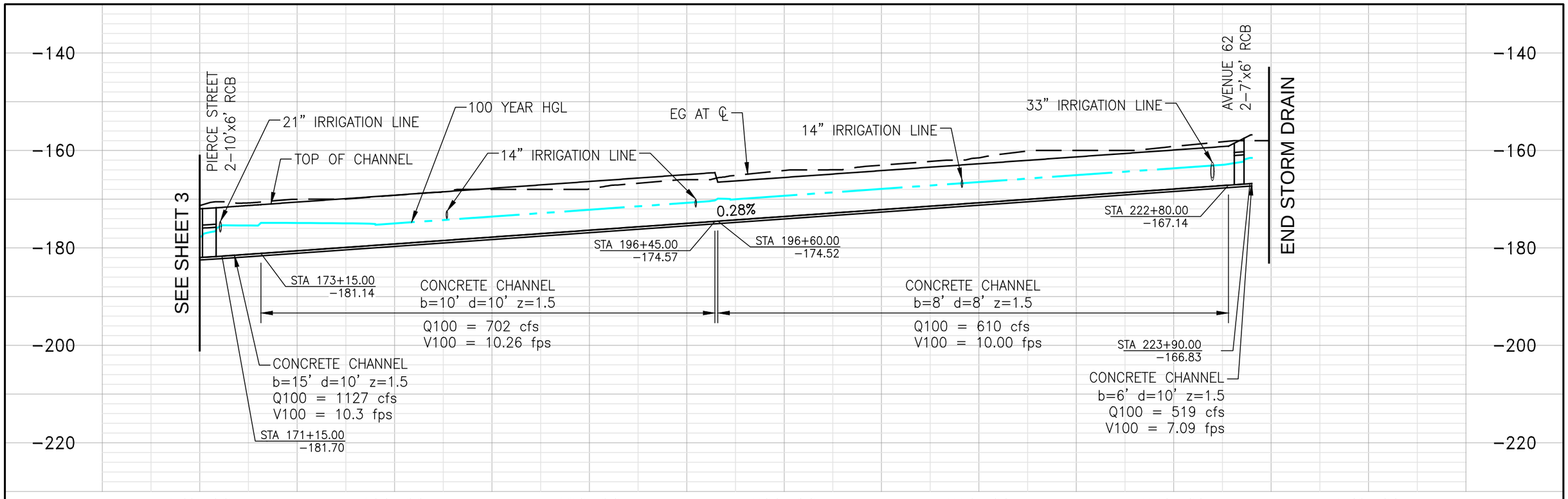
ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE D01**
**STA 120+00 - STA 170+00**

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 3 OF 4

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SEE SHEET 3

1" = 500'

250 0 500

DIGALERT
DIAL BEFORE YOU DIG TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE D01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
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ENGINEERING CONSULTANTS
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RIVERSIDE CA. 92506
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FAX (951) 788-1256

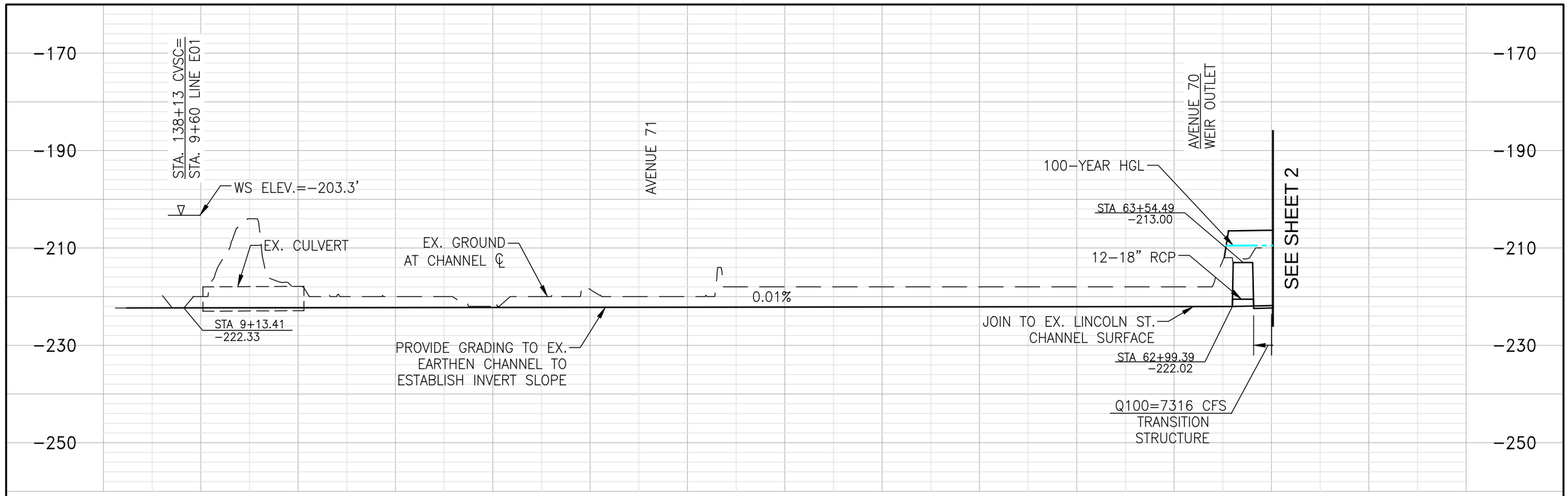
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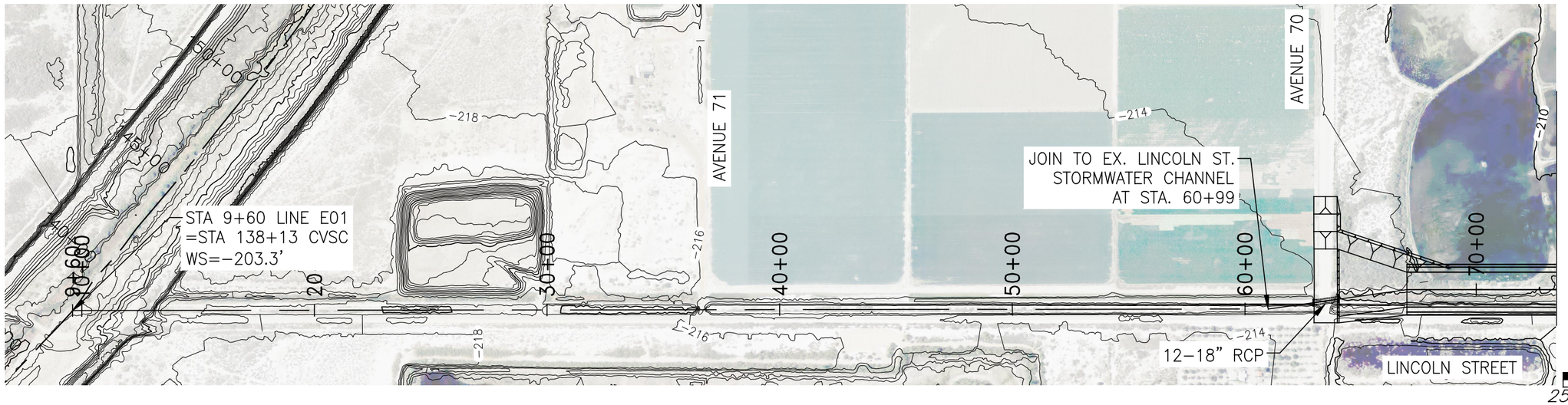
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE D01**
**STA 170+00 - STA 224+88**

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 4 OF 4

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1" = 500'

250 0 500

DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE E01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

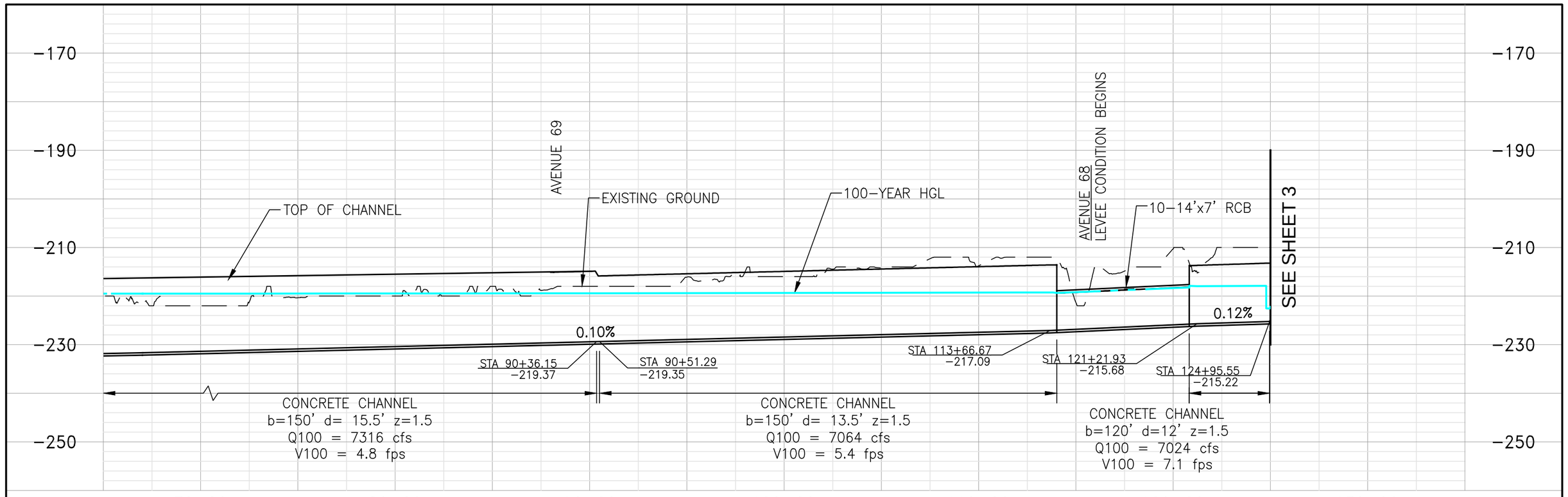
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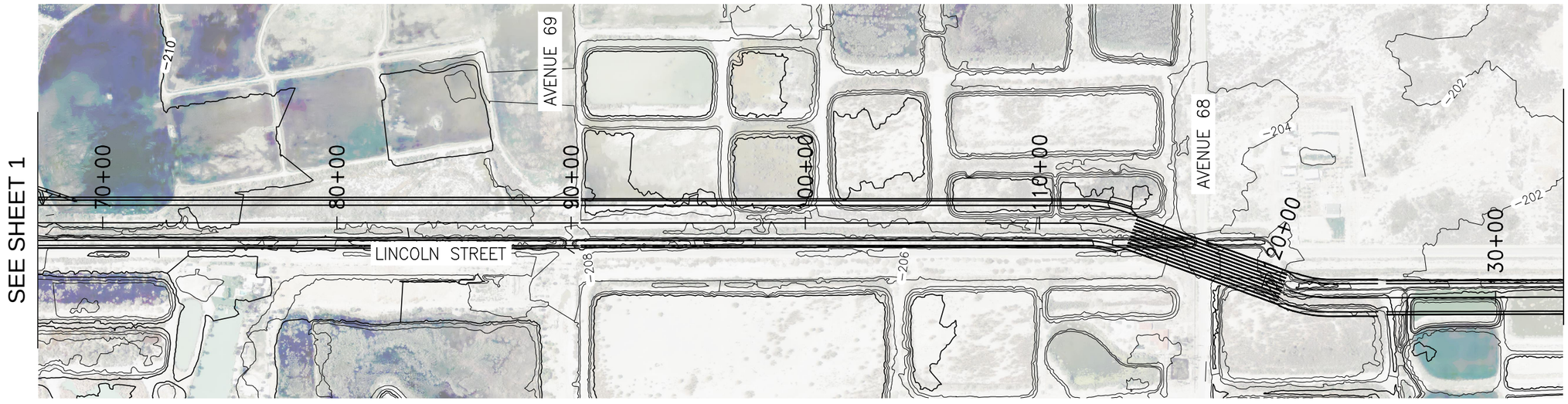
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE E01**
**STA 5+95 - STA 65+00**

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 1 OF 13

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1" = 500'
250 0 500

DIGALERT
DIAL BEFORE YOU DIG
TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE E01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
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RIVERSIDE CA. 92506
PH. (951) 686-1070
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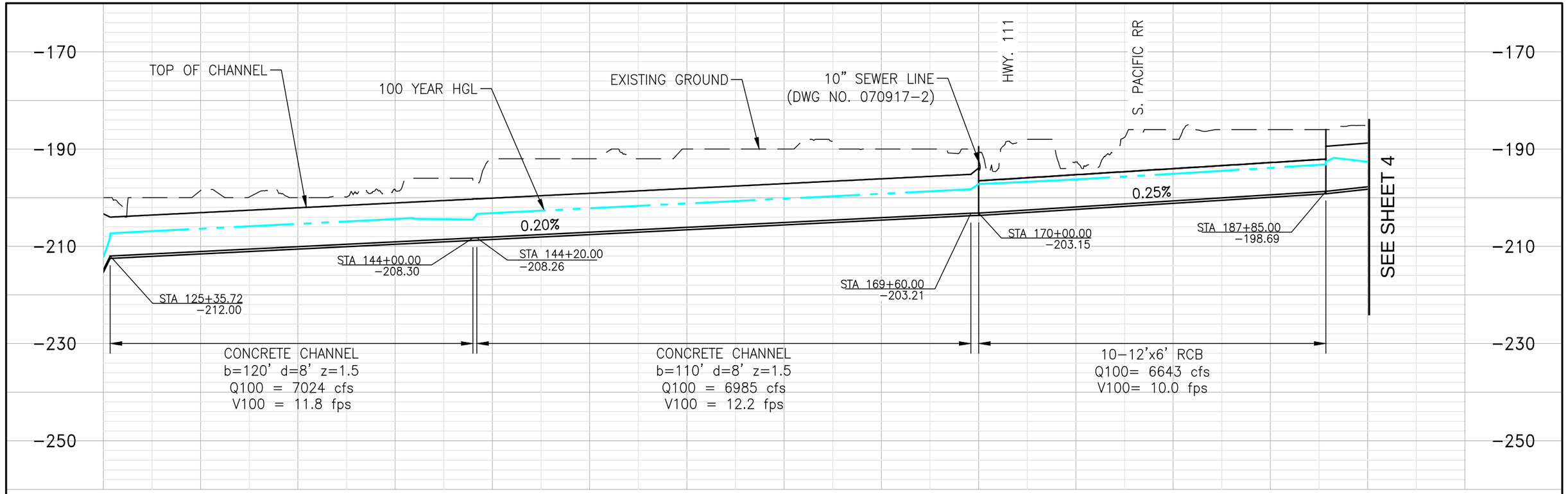
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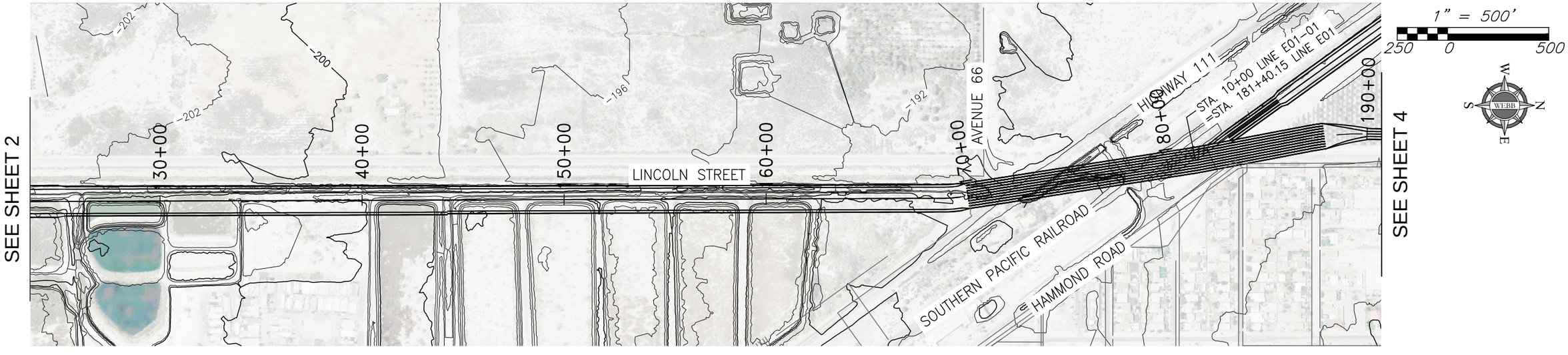
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE E01**
**STA 65+00 - STA 125+00**

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 2 OF 13

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DIGALERT
DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE E01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER — JOSEPH C. CALDWELL — NO. C67239 — CIVIL — STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

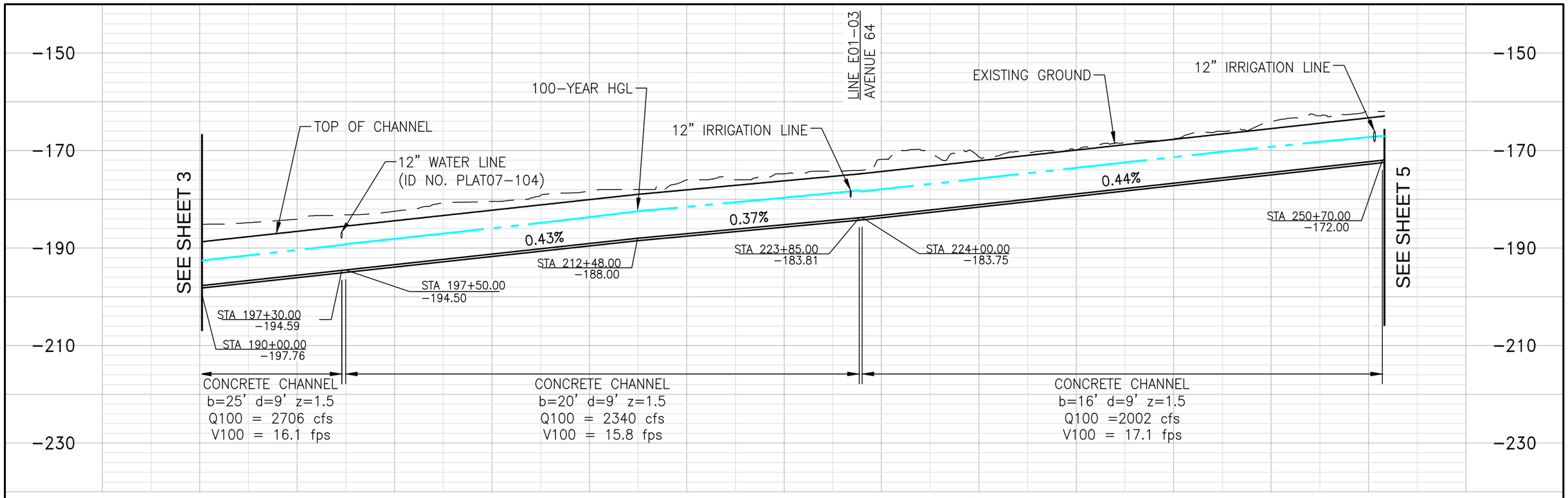
ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE E01**
**STA 130+00 - STA 190+00**

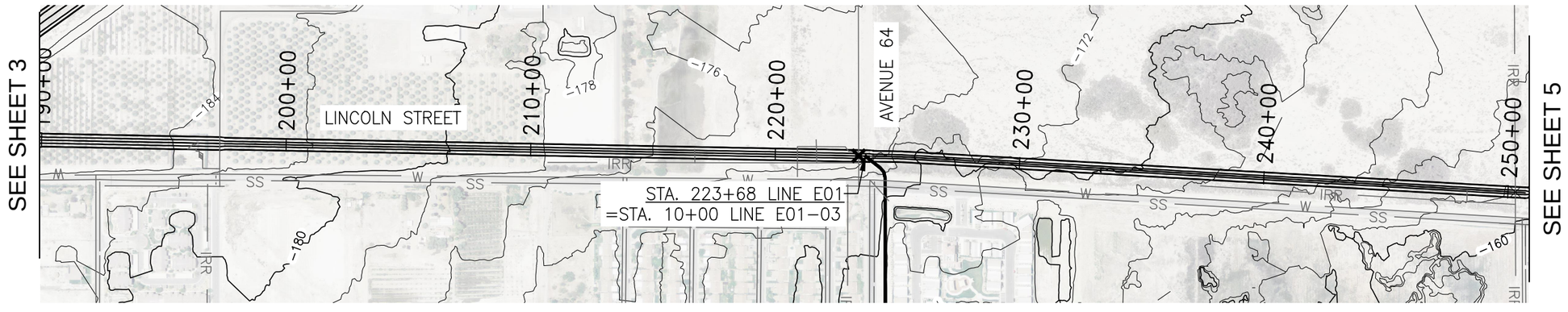
PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 3 OF 13

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1" = 500'

250 0 500




DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE E01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER — JOSEPH C. CALDWELL — NO. C67239 — CIVIL — STATE OF CALIFORNIA

APPROVED BY:

ALBERT A. WEBB ASSOCIATES

ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

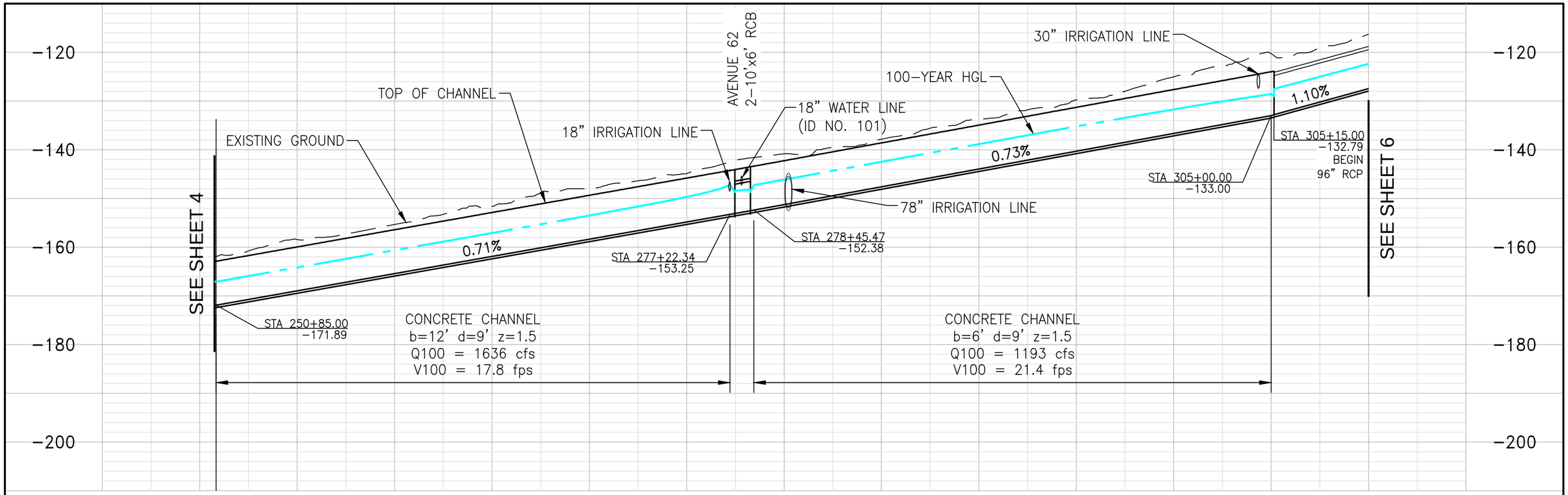
ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE E01**
**STA 190+00 - STA 250+85**

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 4 OF 13

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DIGALERT
DIAL BEFORE YOU DIG TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE E01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
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ENGINEERING CONSULTANTS
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PH. (951) 686-1070
FAX (951) 788-1256

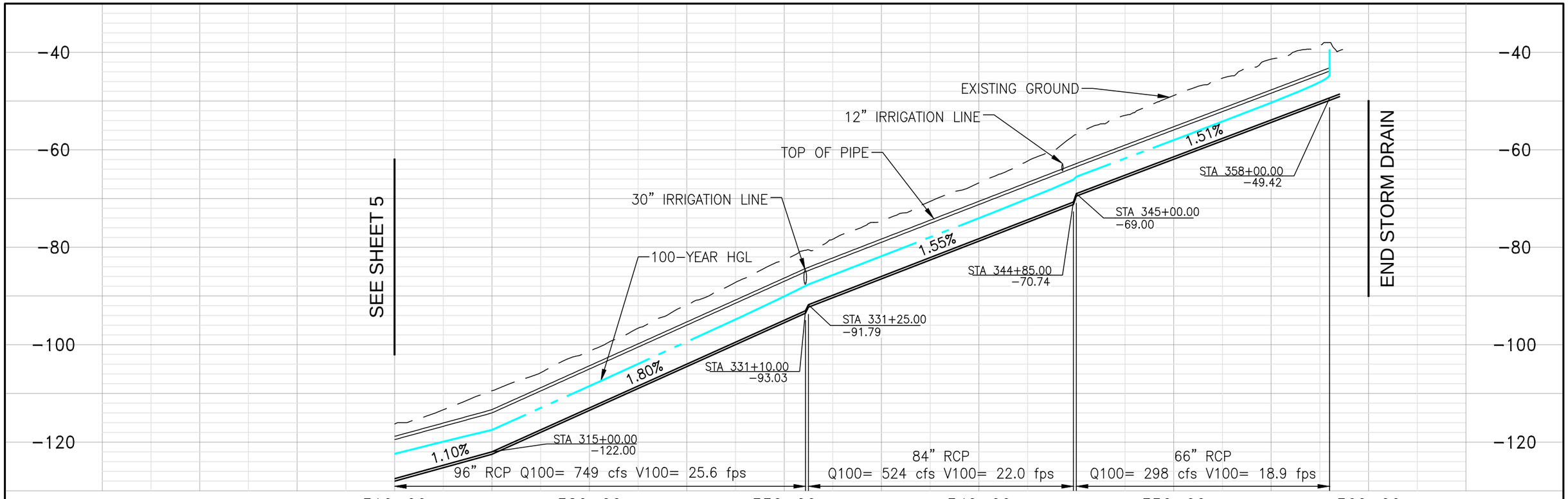
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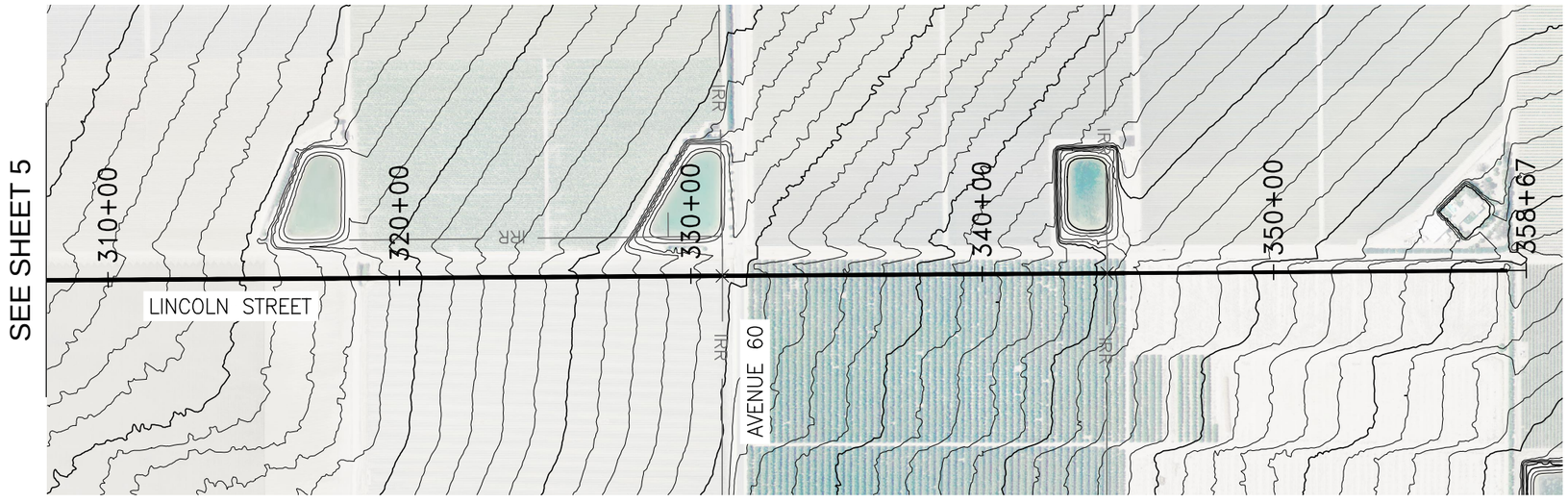
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE E01
STA 250+85 - STA 305+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 5 OF 13

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1" = 500'
250 0 500

DIGALERT
DIAL BEFORE YOU DIG TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE E01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER JOSEPH C. CALDWELL NO. C67239 CIVIL STATE OF CALIFORNIA

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PH. (951) 686-1070
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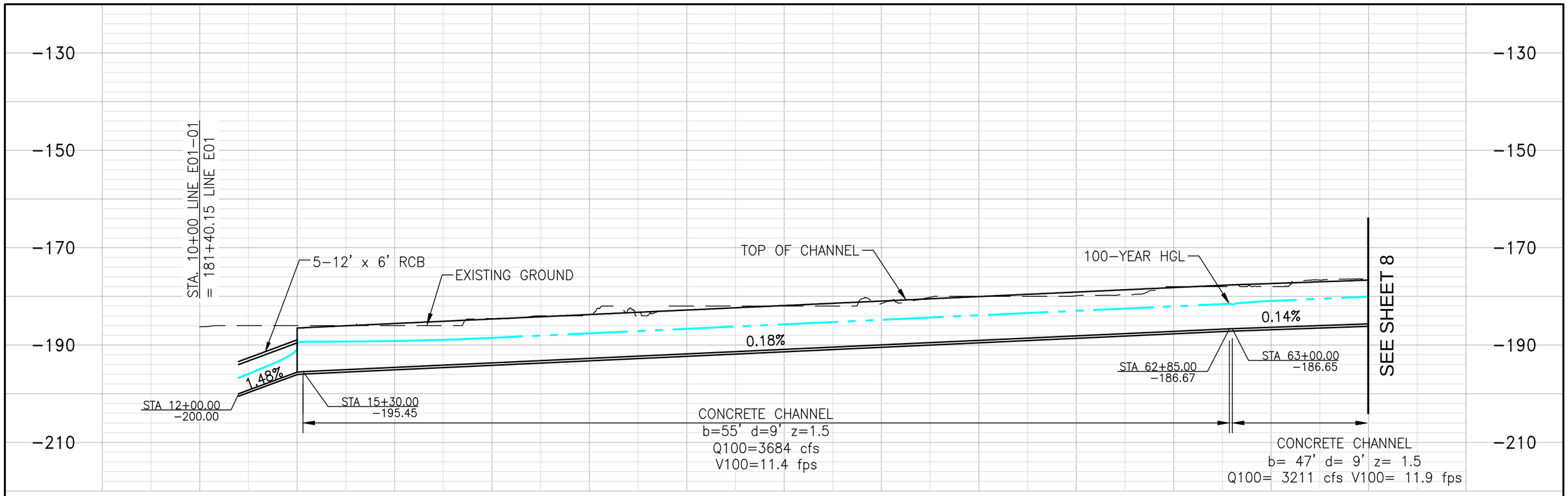
ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE E01
STA 310+00 - STA 358+00

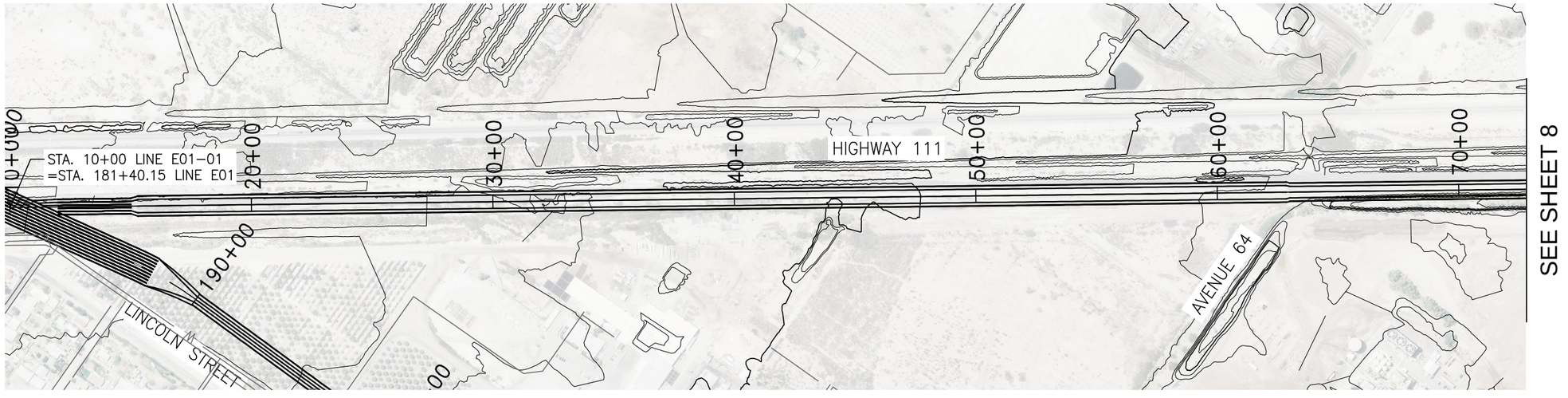
PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 6 OF 13

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1" = 500'

250 0 500




DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE E01-01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
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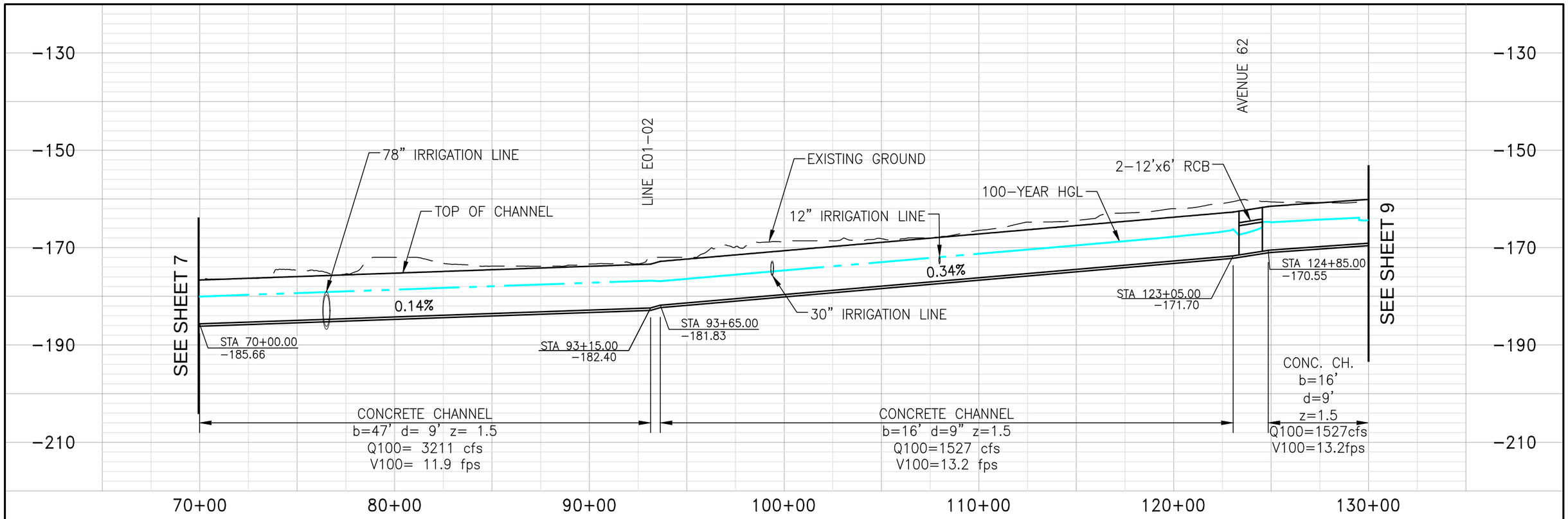
ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE E01-01
STA 10+00 - STA 70+00

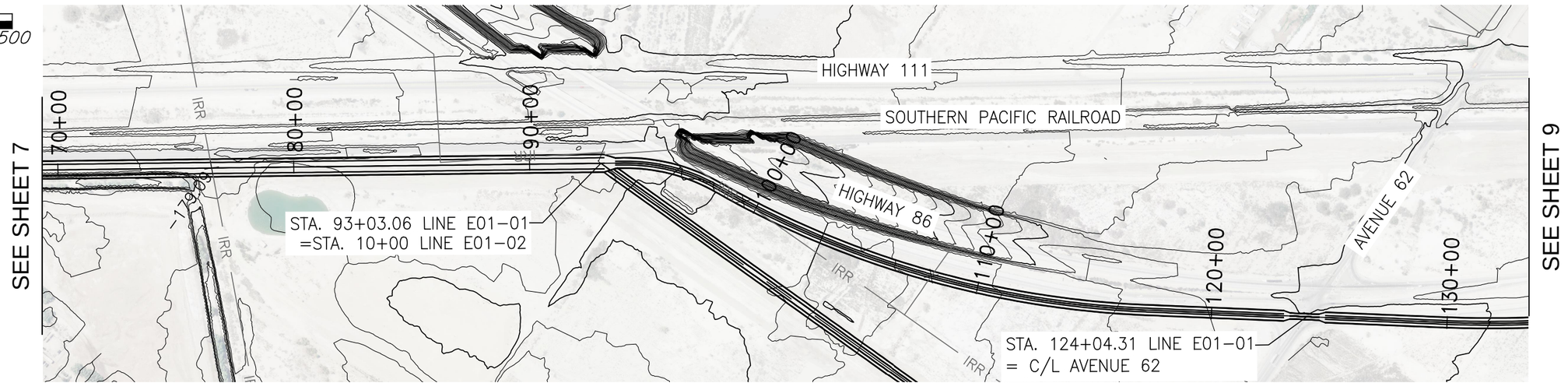
PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 7 OF 13

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1" = 500'

250 0 500




DIGALERT
DIAL BEFORE YOU DIG
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TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE E01-01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
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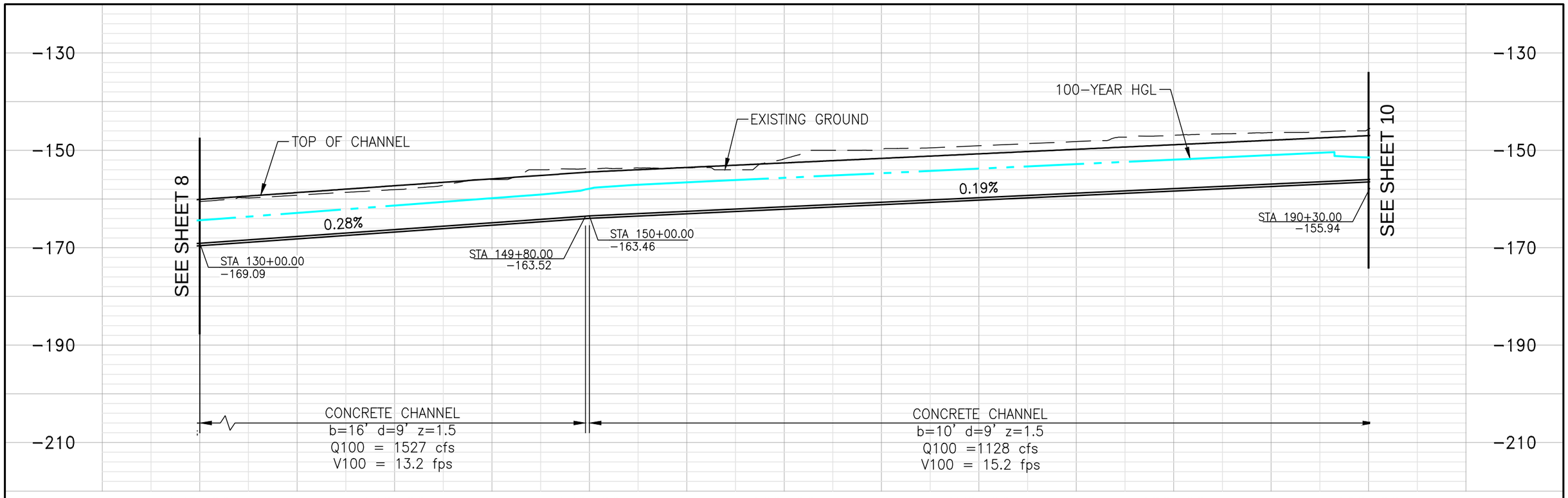
ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE E01-01
STA 70+00 - STA 130+00

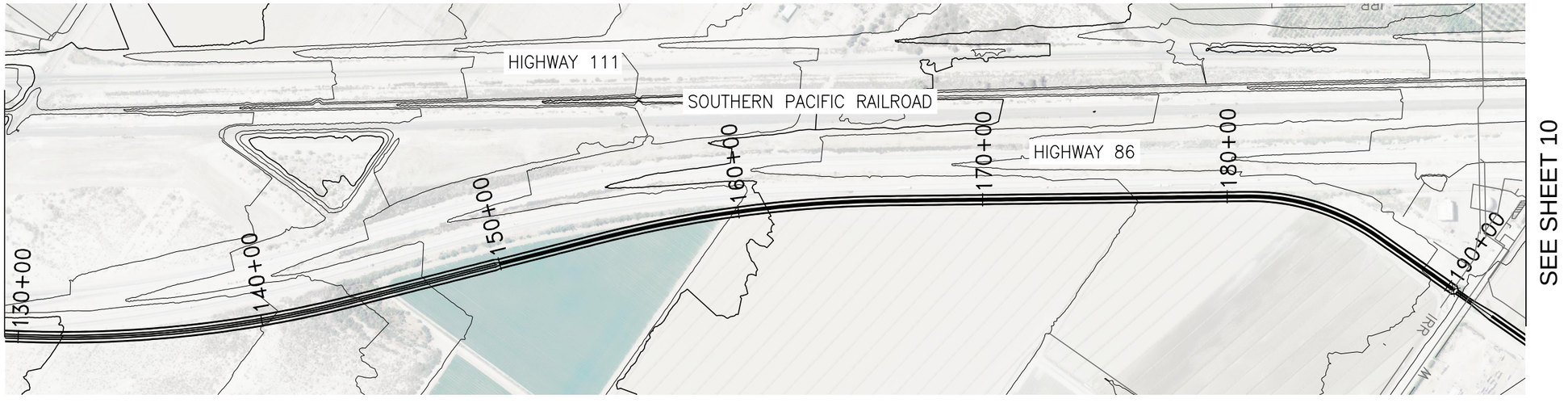
PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 8 OF 13

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1" = 500'

250 0 500




DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE E01-01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

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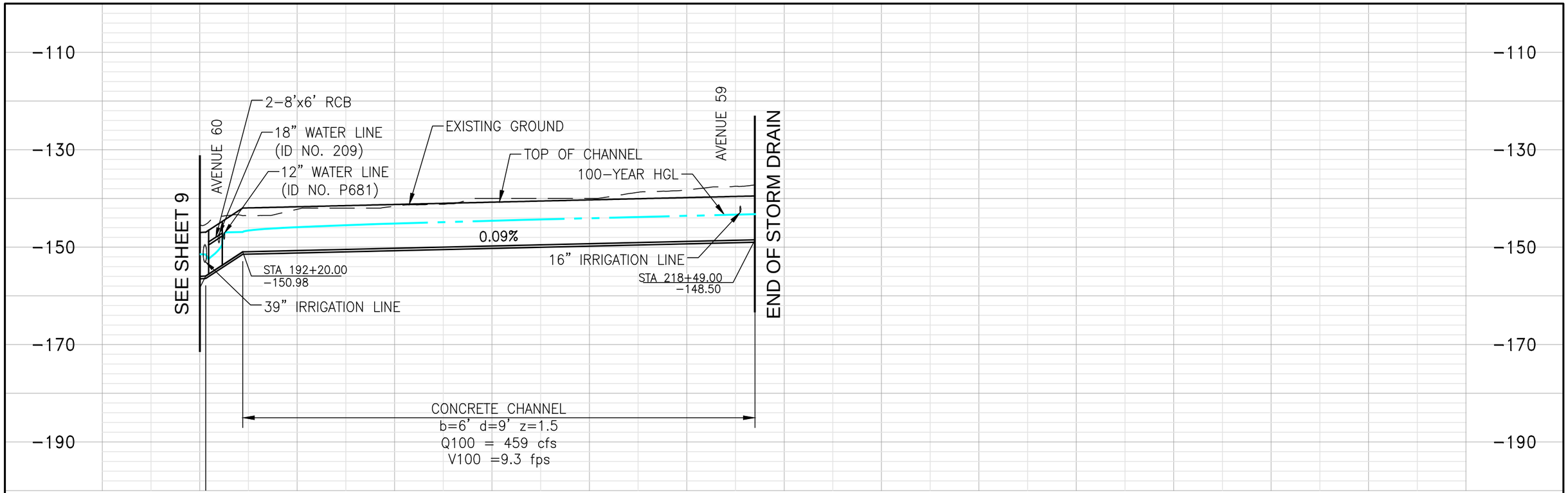
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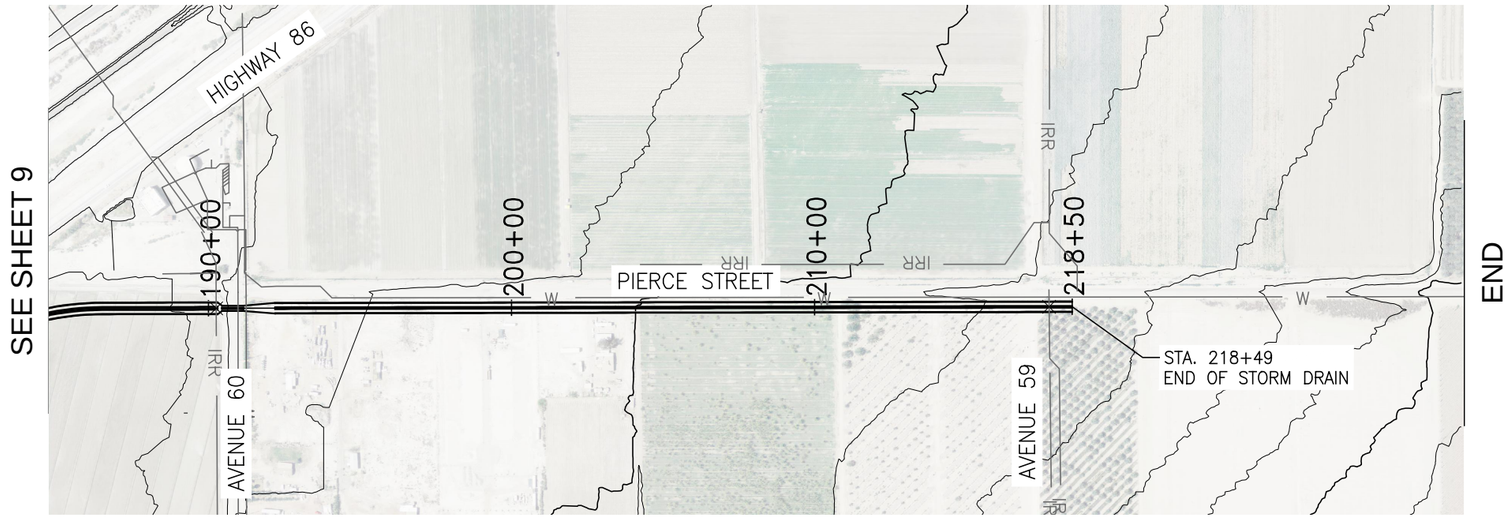
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE E01-01
STA 130+00 - STA 190+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 9 OF 13

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1" = 500'

250 0 500

DIGALERT — DIAL BEFORE YOU DIG — TOLL FREE 1−800−227−2600 — TWO WORKING DAYS BEFORE YOU DIG — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE E01−01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER — JOSEPH C. CALDWELL — NO. C67239 — CIVIL — STATE OF CALIFORNIA

APPROVED BY:

ENGINEER, RCE DATE:

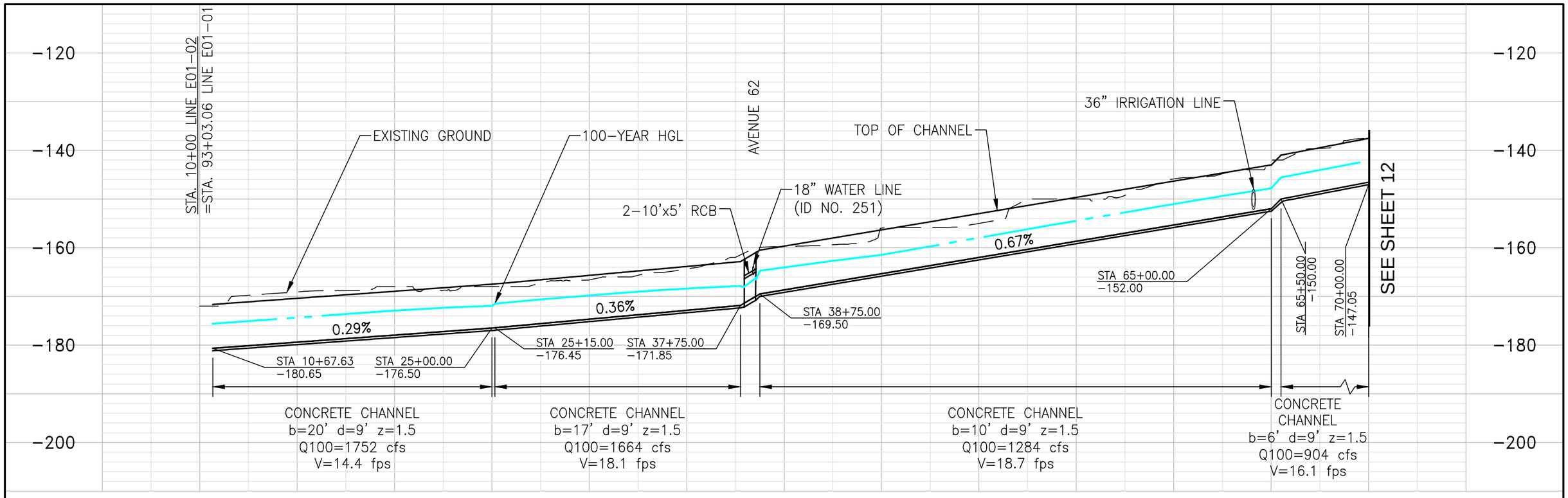

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FAX (951) 788−1256


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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE E01−01
STA 190+00 − STA 218+50

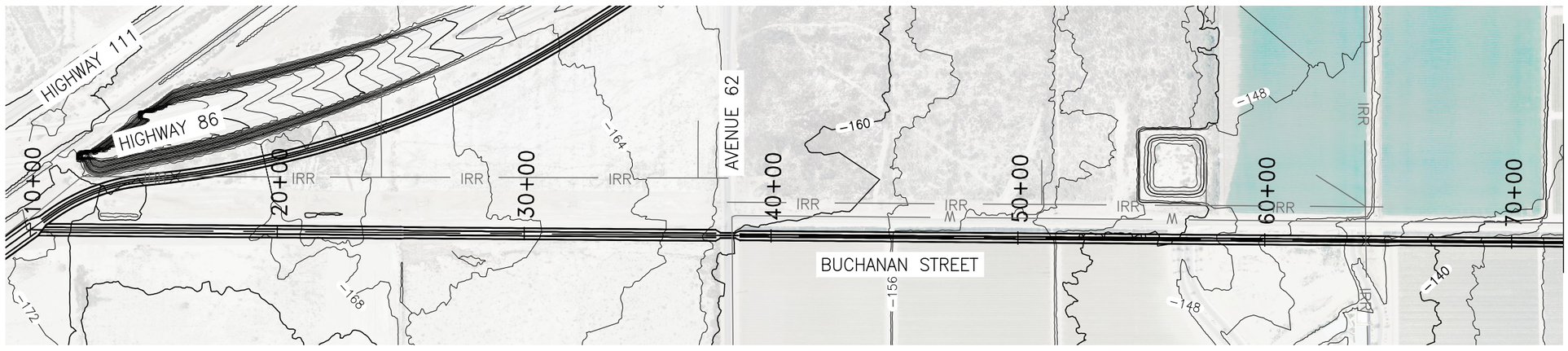
PROJECT NO. 2012−0001
DRAWING NO. LN001
SHEET NO. 10 OF 13

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1" = 500'

250 0 500




DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE E01-02
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
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RIVERSIDE CA. 92506
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FAX (951) 788-1256

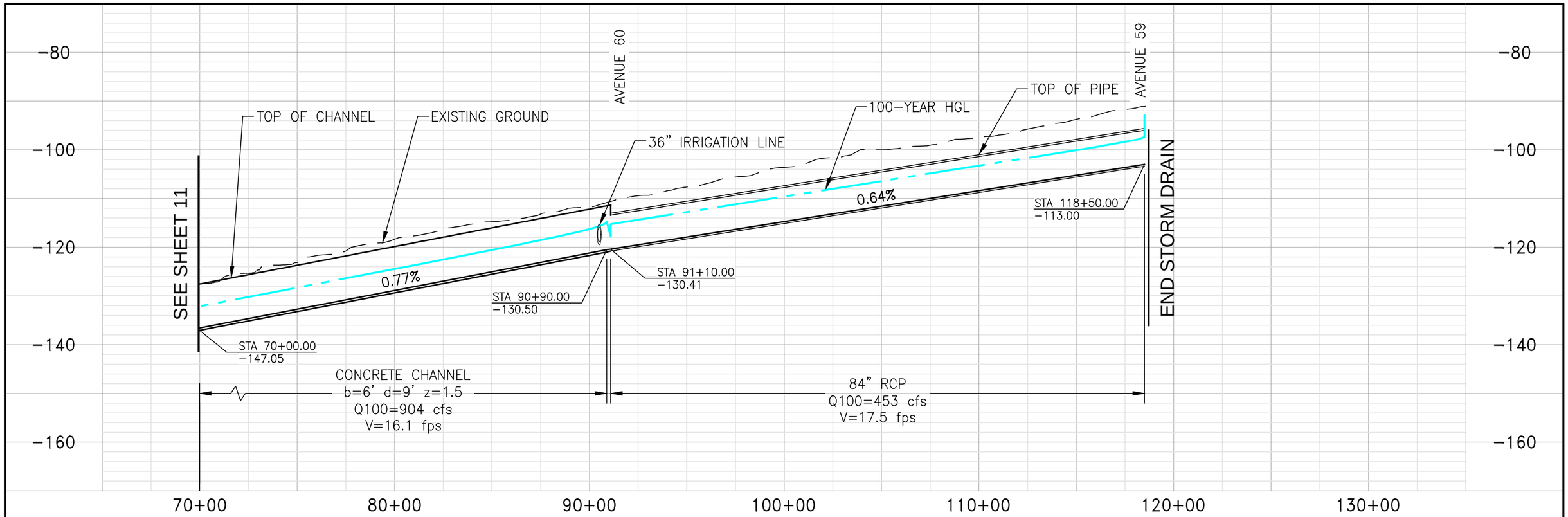
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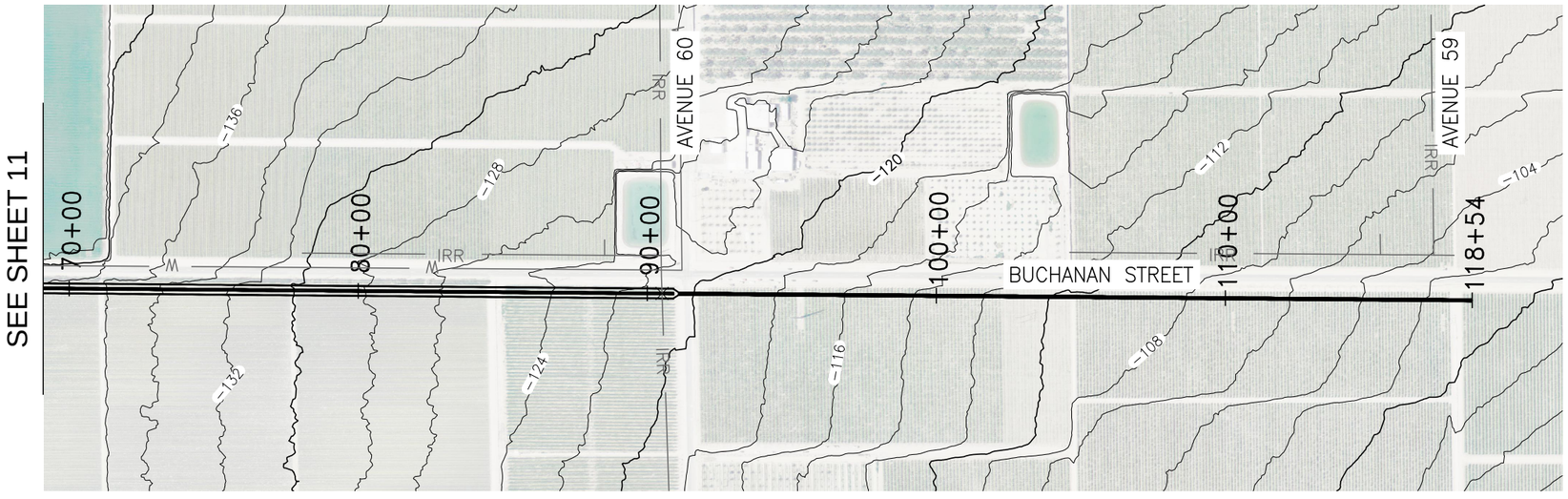
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE E01-02
STA 10+00 - STA 70+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 11 OF 13

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1" = 500'

250 0 500




DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE E01-02
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

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3788 McCRAY STREET
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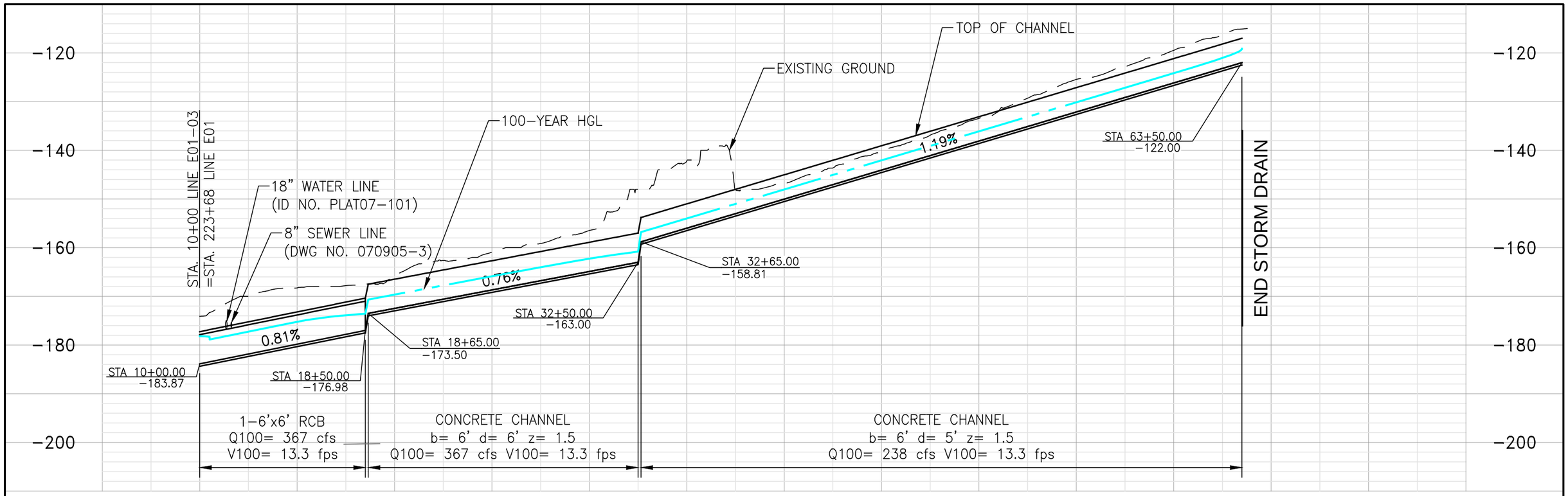
ENGINEER, RCE DATE:

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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE E01-02
STA 70+00 - STA 118+54

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 12 OF 13

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1" = 500'

250 0 500

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DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE E01-03
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

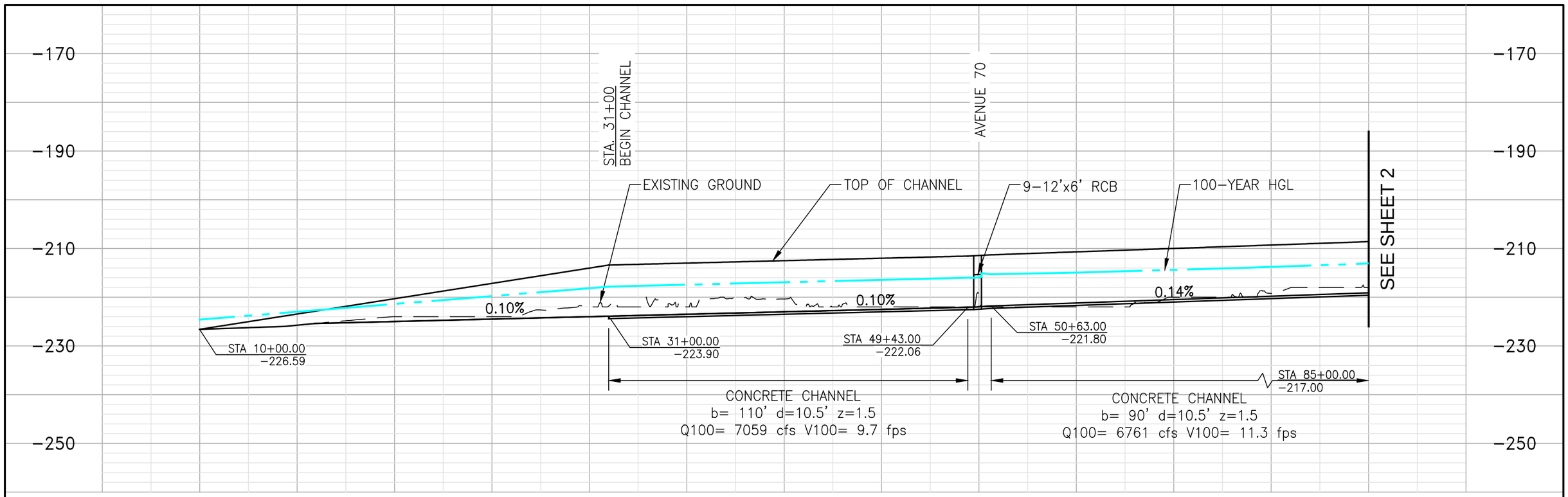
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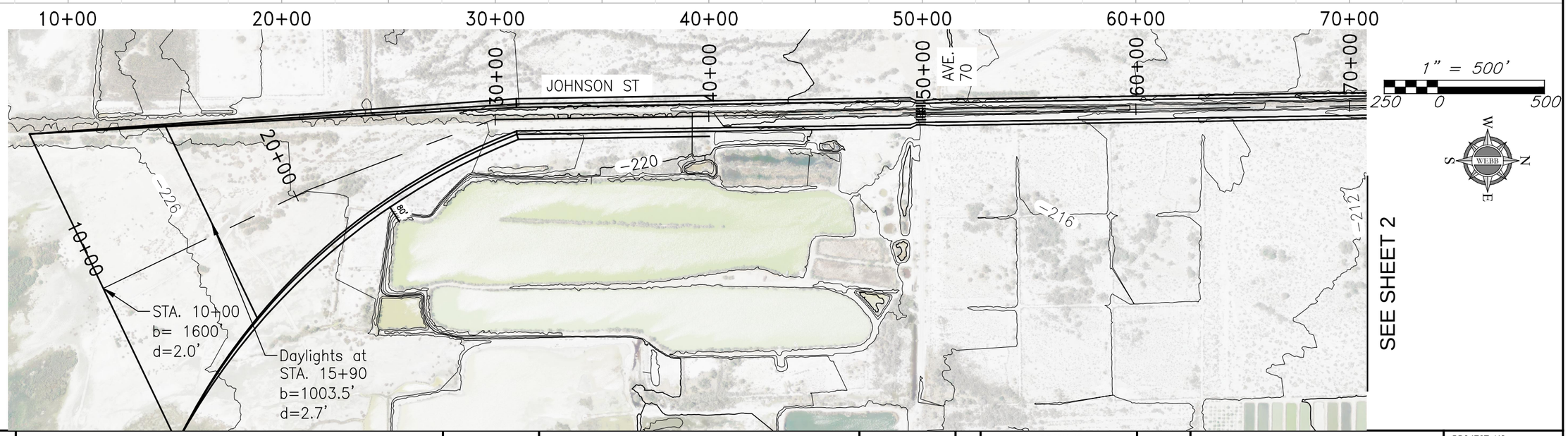
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE E01-03
STA 10+00 - STA 63+77

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 13 OF 13

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DIGALERT
DIAL BEFORE YOU DIG
TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE F01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

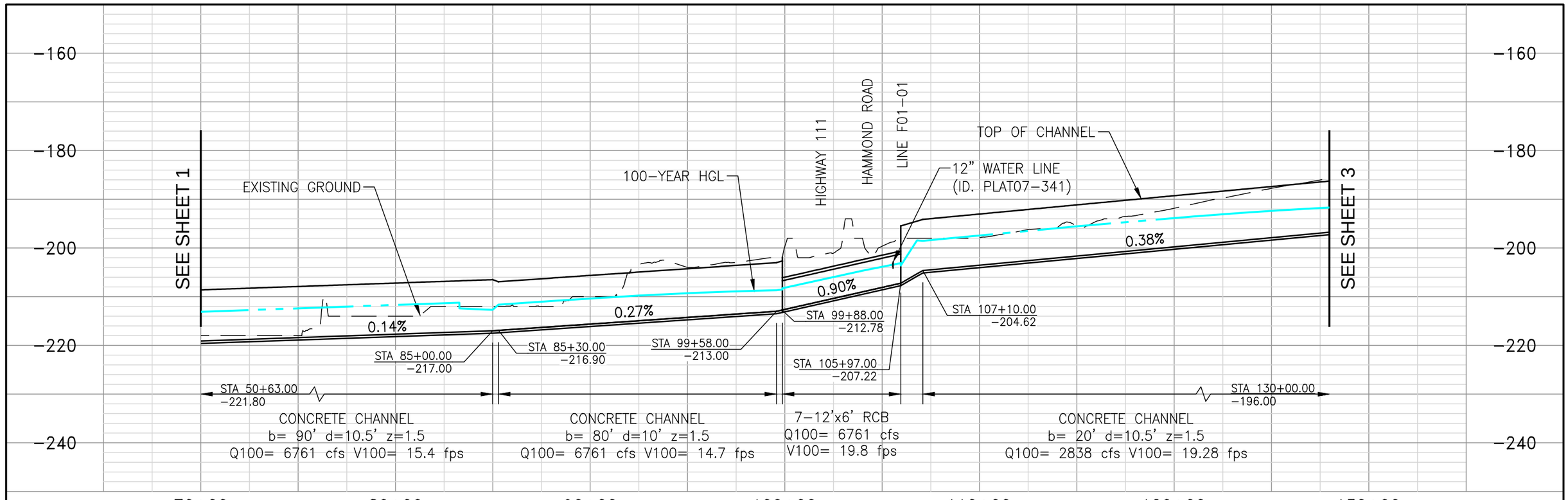
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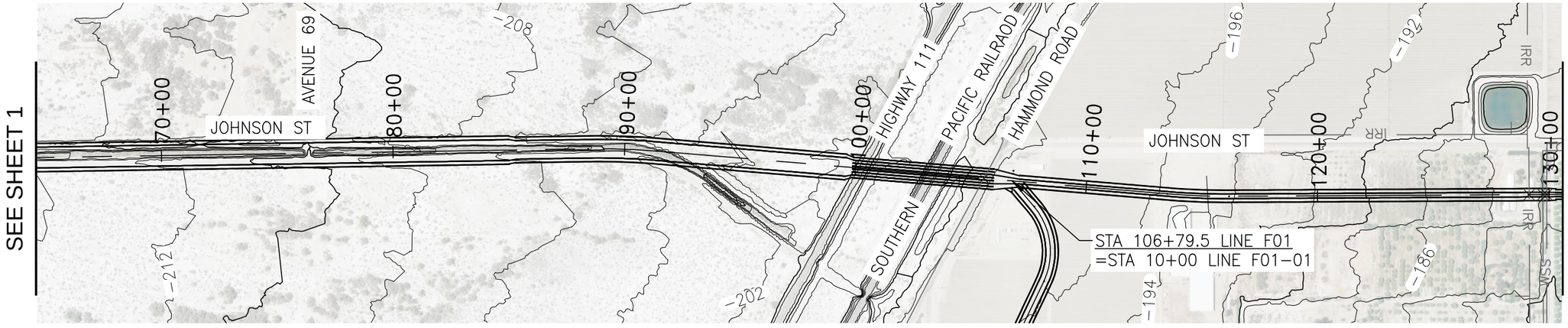
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE F01**
**STA 10+00 - STA 70+00**

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 1 OF 10

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DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
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# LINE F01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
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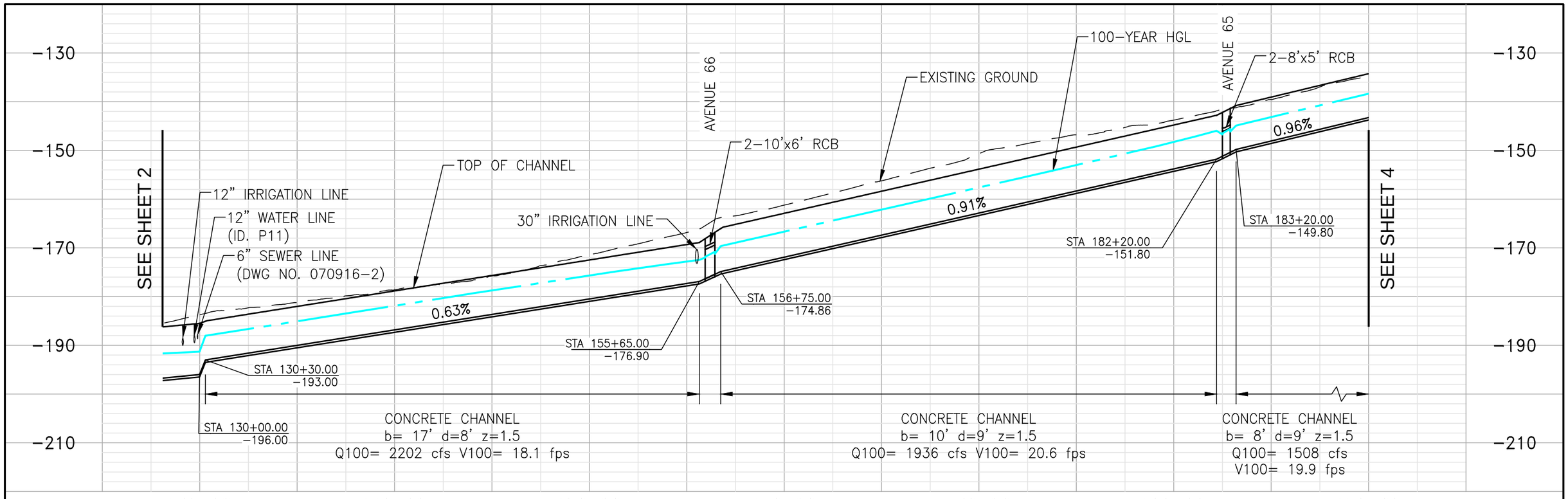
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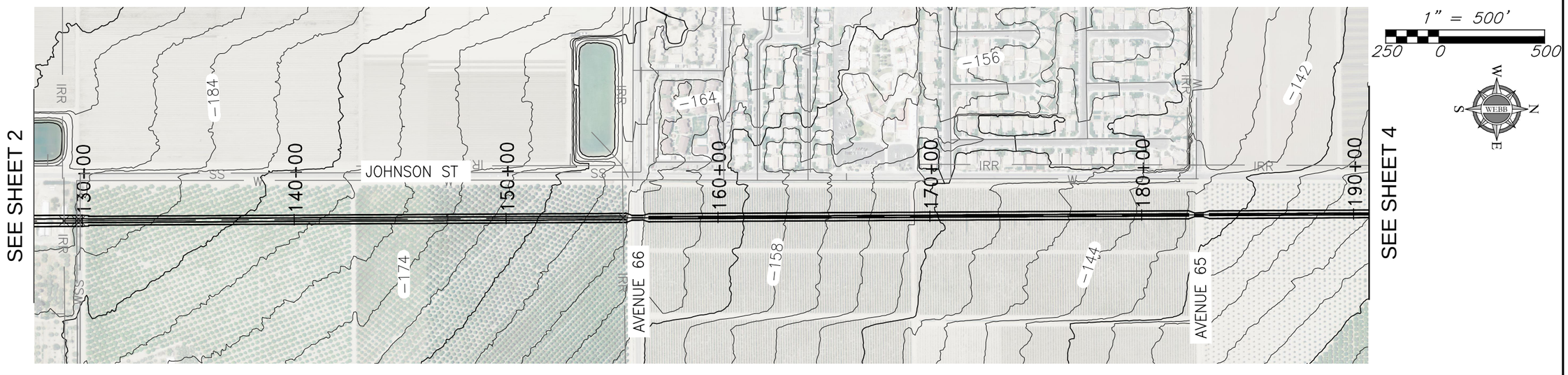
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE F01
STA 70+00 - STA 128+00

PROJECT NO. 2012-0001
DRAWING NO. LN0001
SHEET NO. 2 OF 10

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DIGALERT
DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE F01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

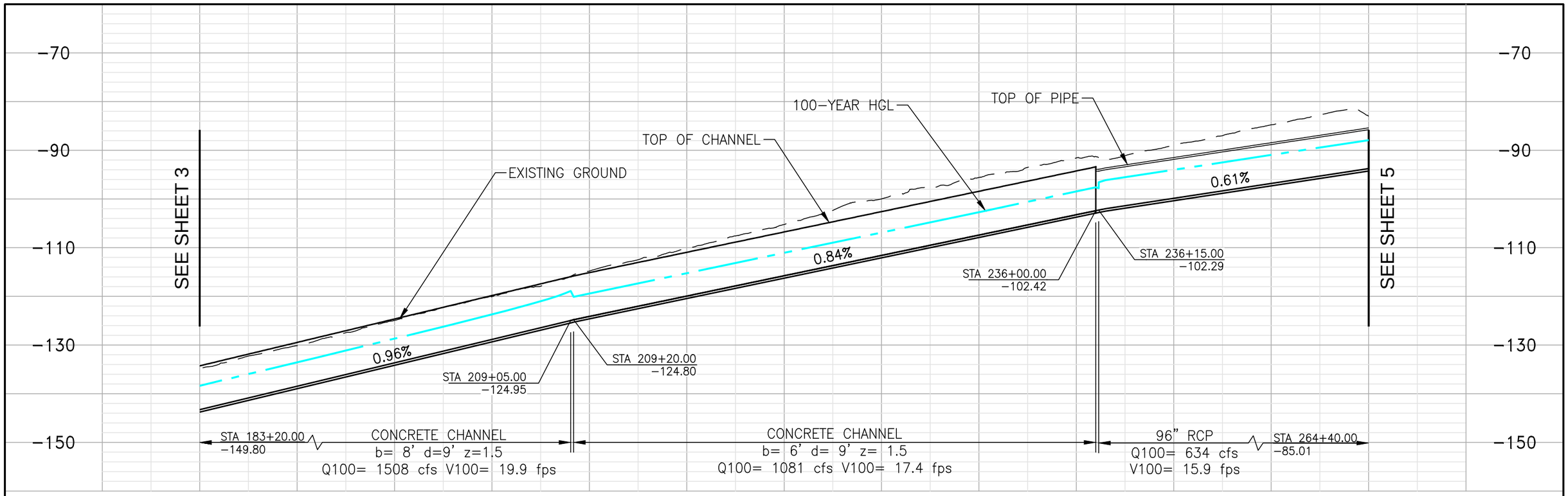
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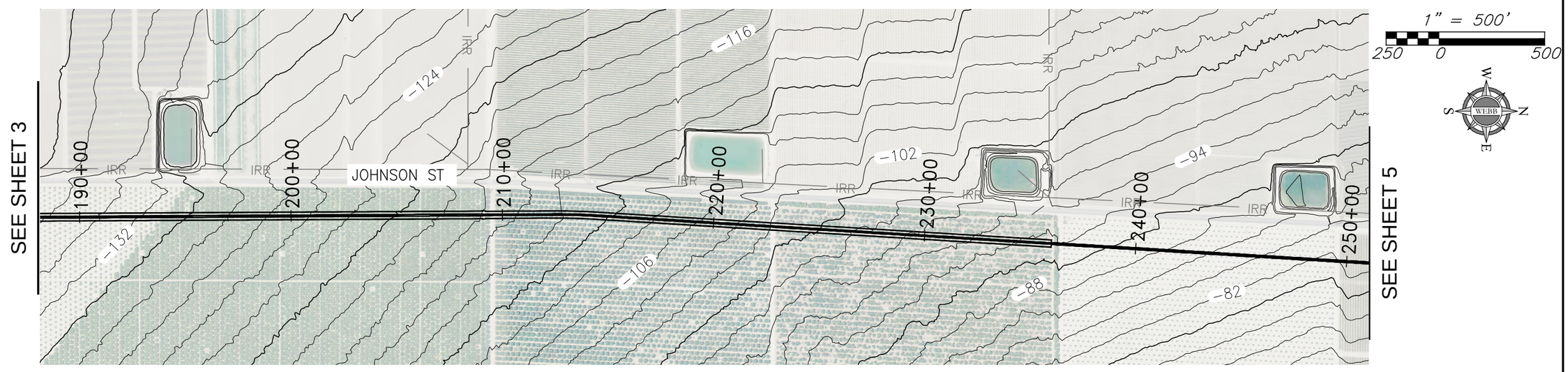
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE F01**
**STA 128+00 - STA 190+00**

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 3 OF 10

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DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE F01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
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3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

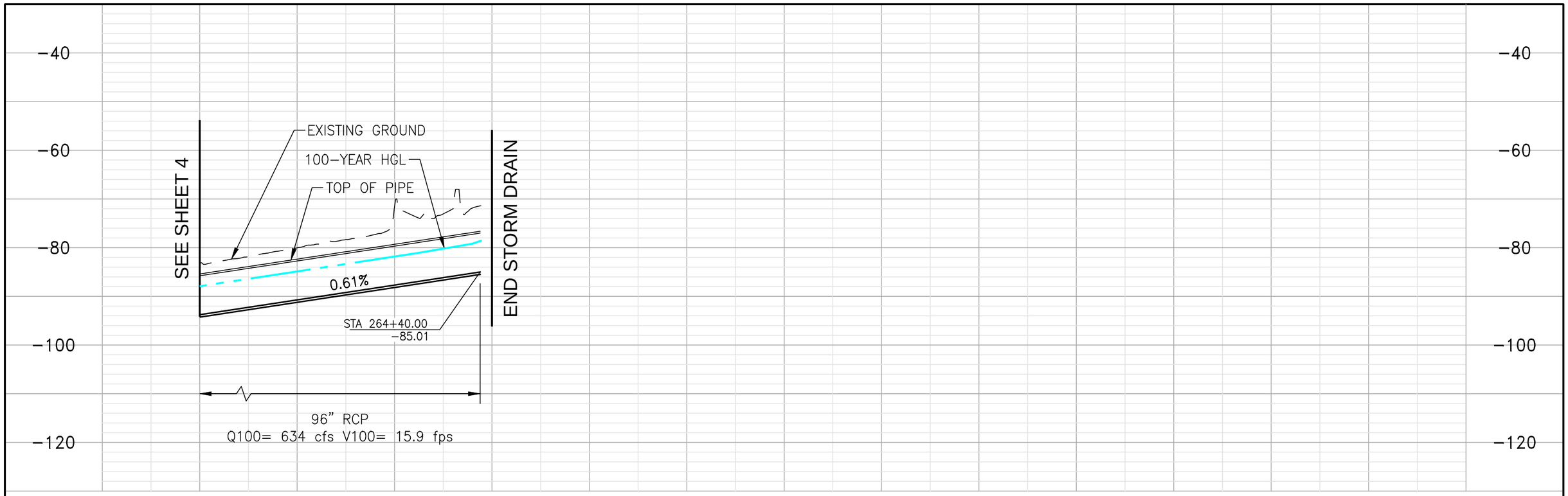
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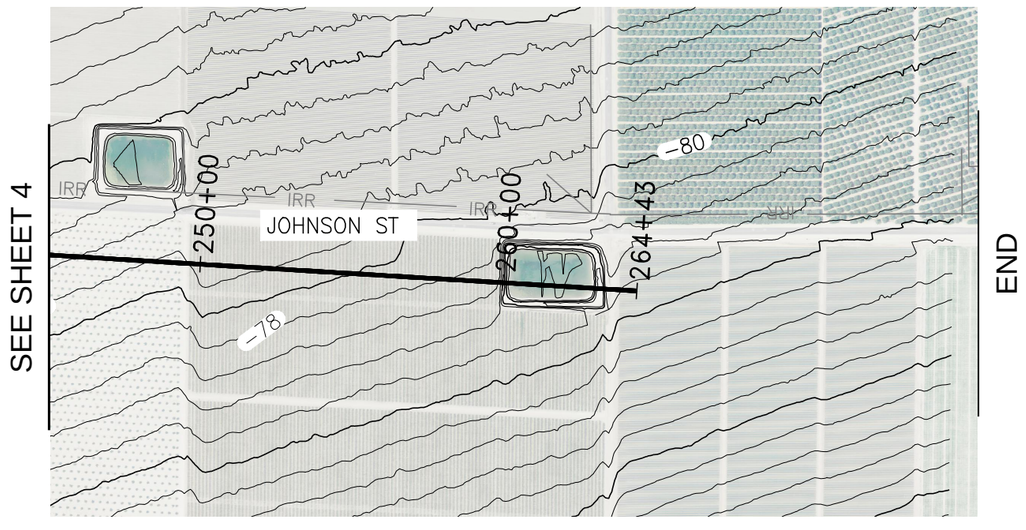
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE F01**
**STA 190+00 - STA 250+00**

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 4 OF 10

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1" = 500'

250 0 500

W S N E

WEBB

DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE F01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

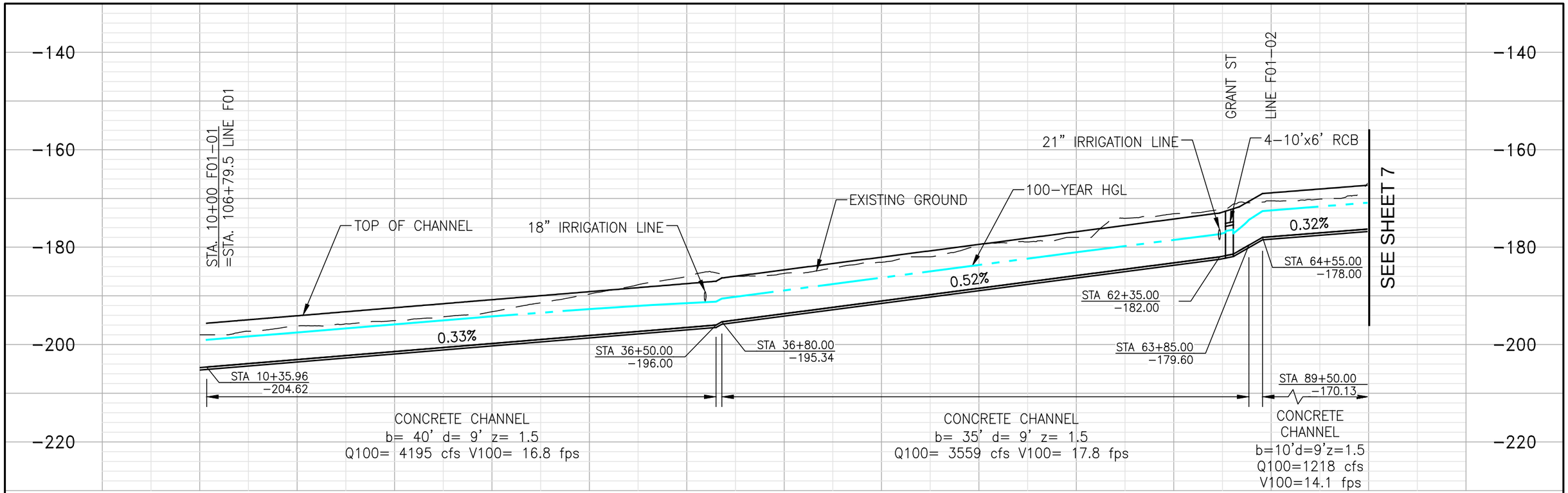
ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE F01
STA 250+00 - STA 264+43

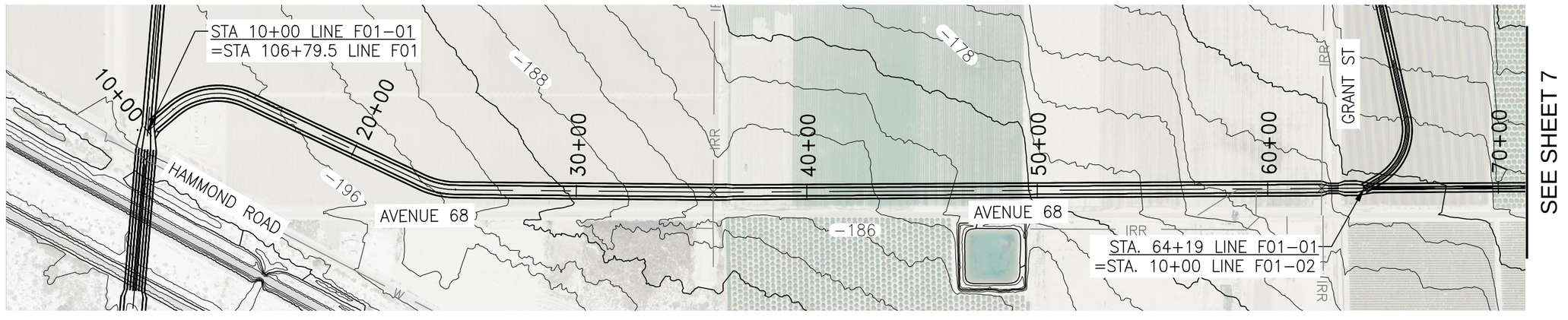
PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 5 OF 10

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1" = 500'

250 0 500




DIGALERT — DIAL BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — TWO WORKING DAYS BEFORE YOU DIG — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE F01-01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER — JOSEPH C. CALDWELL — NO. C67239 — CIVIL — STATE OF CALIFORNIA

APPROVED BY:

ENGINEER, RCE DATE:

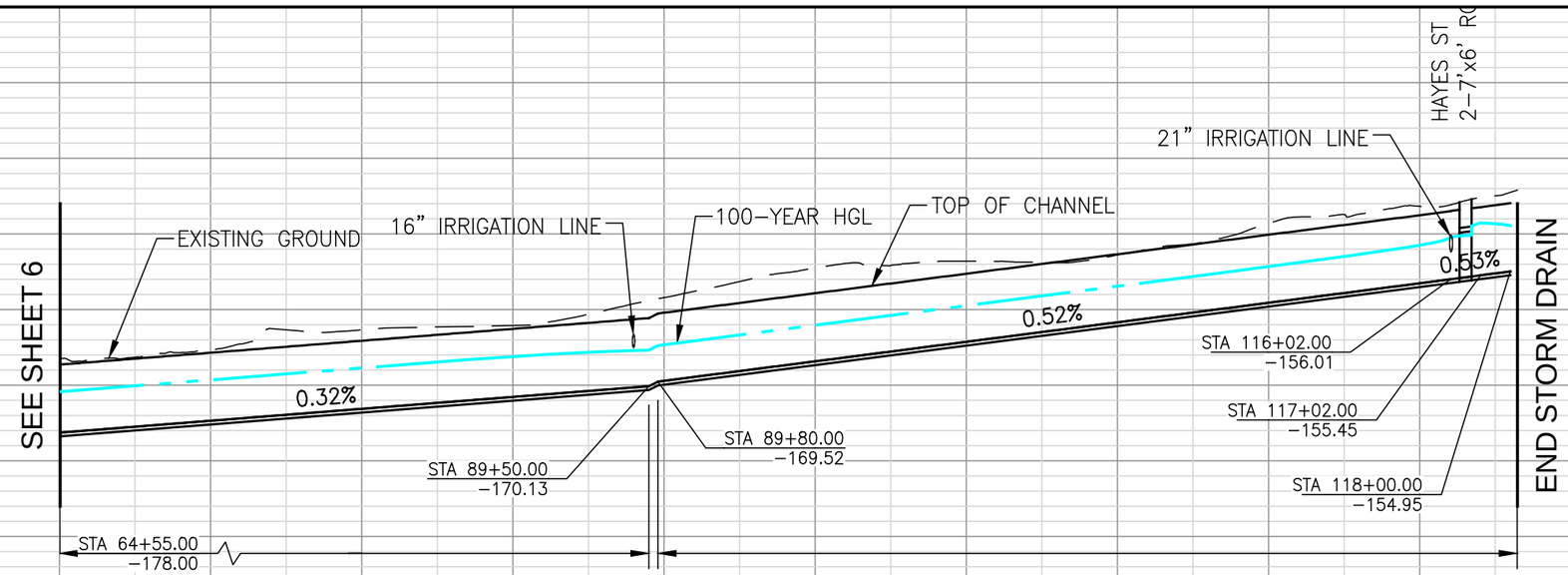
ALBERT A. WEBB ASSOCIATES
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PH. (951) 686-1070
FAX (951) 788-1256

| REF. | REVISIONS | APPR. | DATE |
|---|---|---|---|
| | | | |

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE F01-01
STA 10+00 - STA 70+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 6 OF 10

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1" = 500'

250 0 500




DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE F01-01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67259
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
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RIVERSIDE CA. 92506
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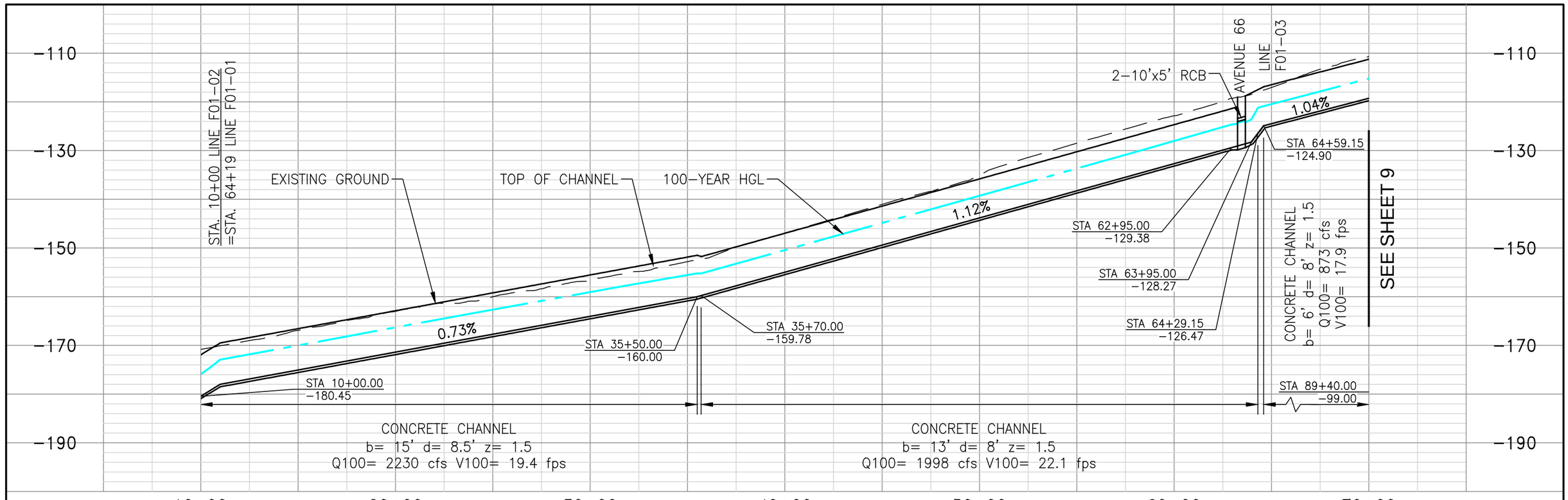
ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE F01-01
STA 70+00 - STA 118+23

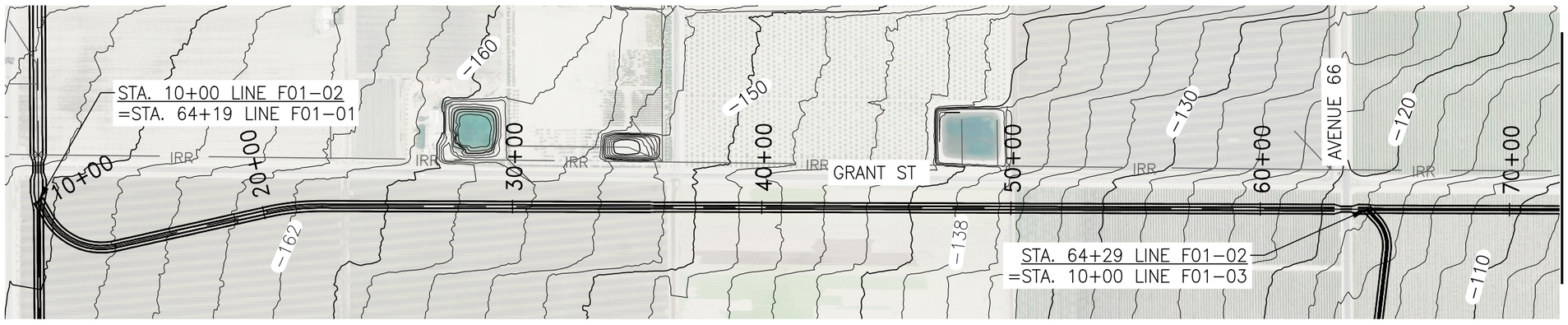
PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 7 OF 10

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1" = 500'

250 0 500




DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE F01-02
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER — JOSEPH C. CALDWELL — NO. C67239 — CIVIL — STATE OF CALIFORNIA

APPROVED BY:

ENGINEER, RCE DATE:

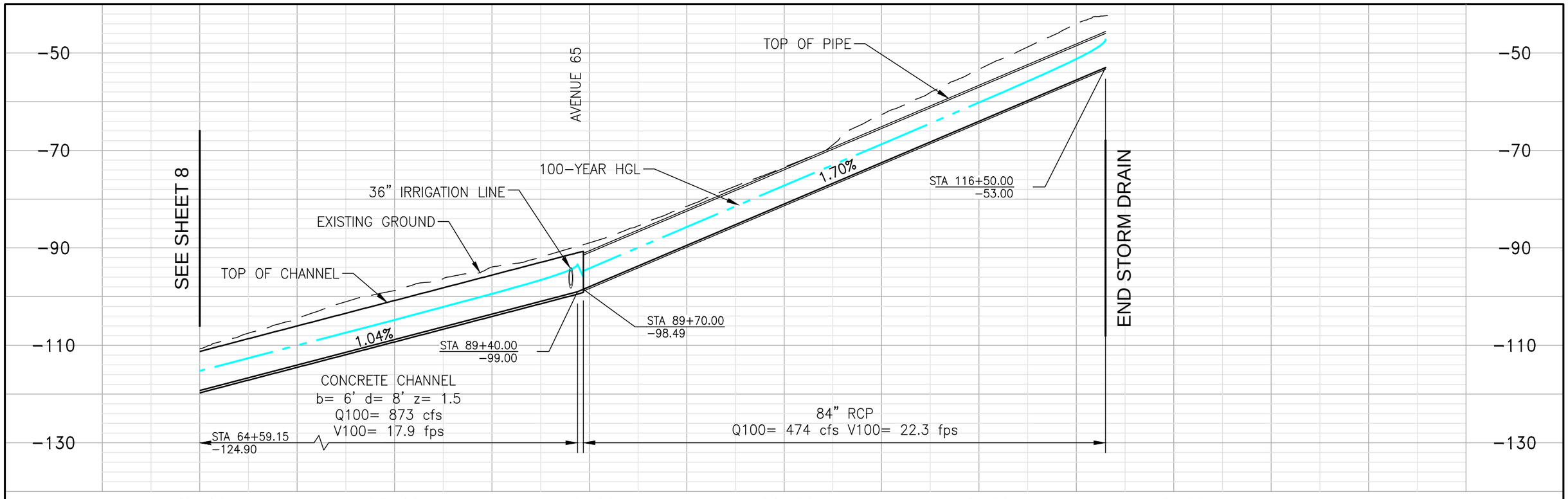

ALBERT A. WEBB ASSOCIATES
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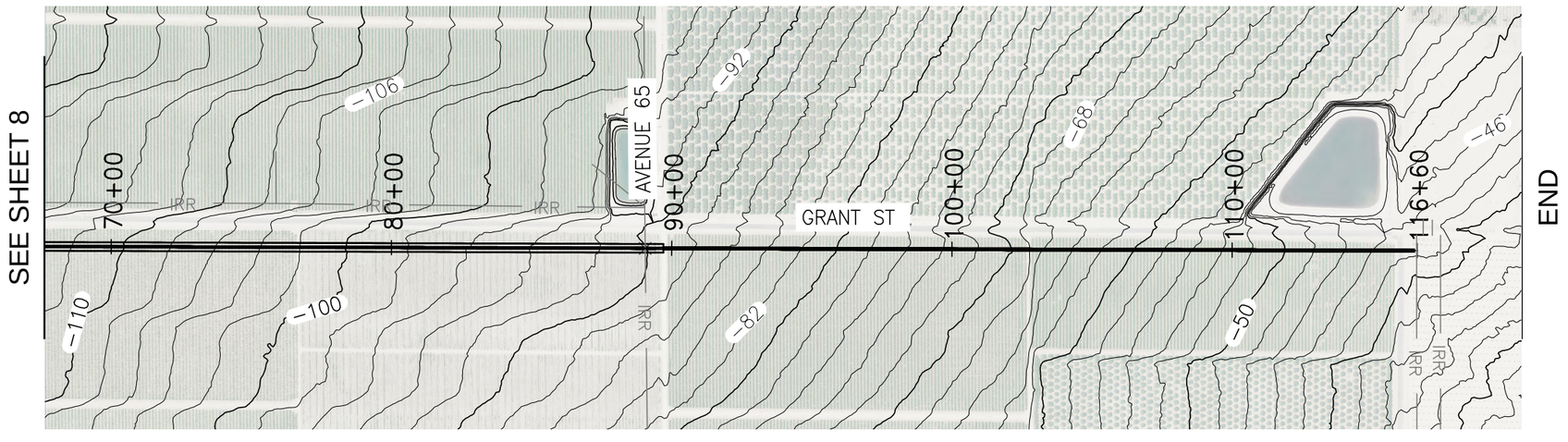

| REF. | REVISIONS | APPR. | DATE |
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE F01-02**
**STA 10+00 - STA 70+00**

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 8 OF 10

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1" = 500'
250 0 500

W S N E WEBB

DIGALERT
DIAL BEFORE YOU DIG TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE F01-02
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER JOSEPH C. CALDWELL NO. C67239 CIVIL STATE OF CALIFORNIA

APPROVED BY:
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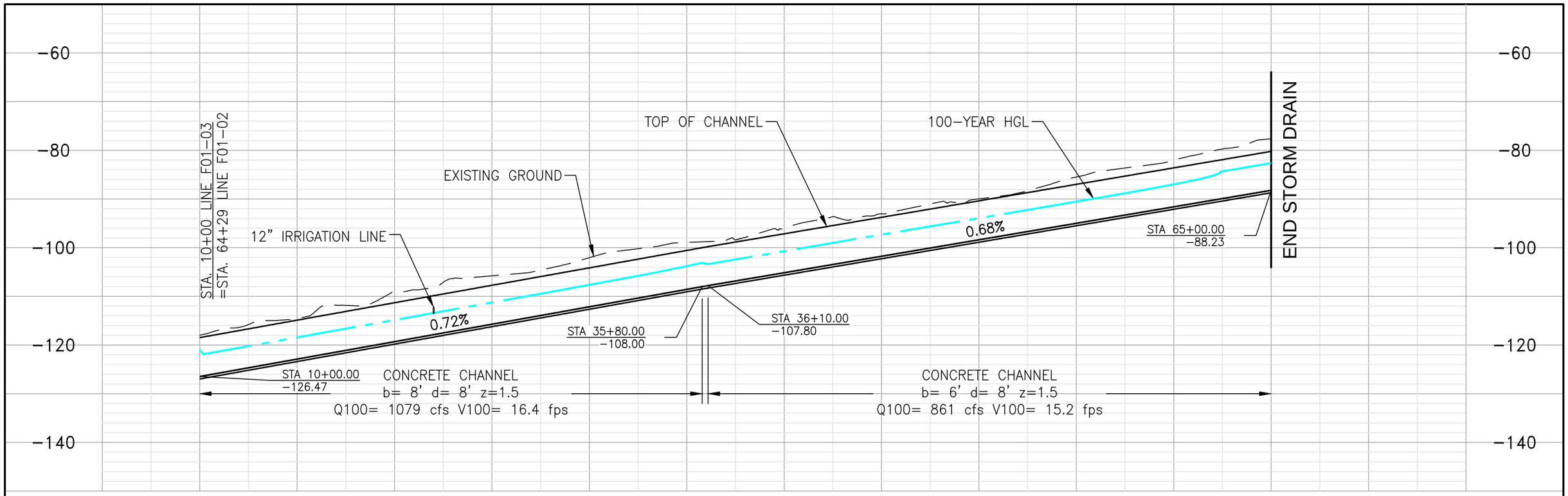
ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE F01-02
STA 70+00 - STA 116+13

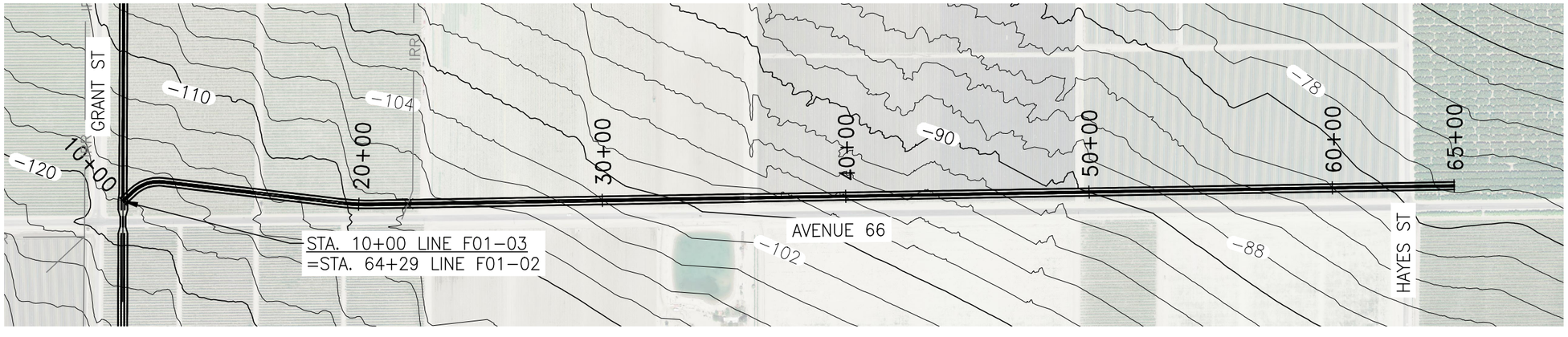
PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 9 OF 10

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1" = 500'

250 0 500




DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE F01-03
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:

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RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

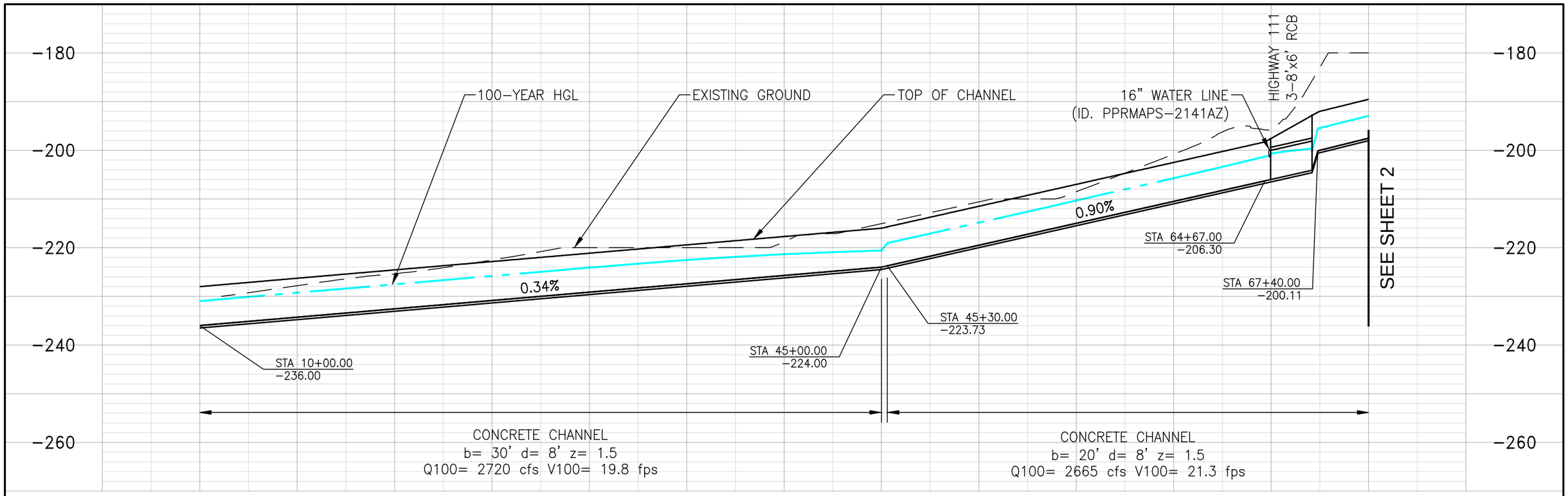
ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE F01-03
STA 10+00 - STA 65+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 10 OF 10

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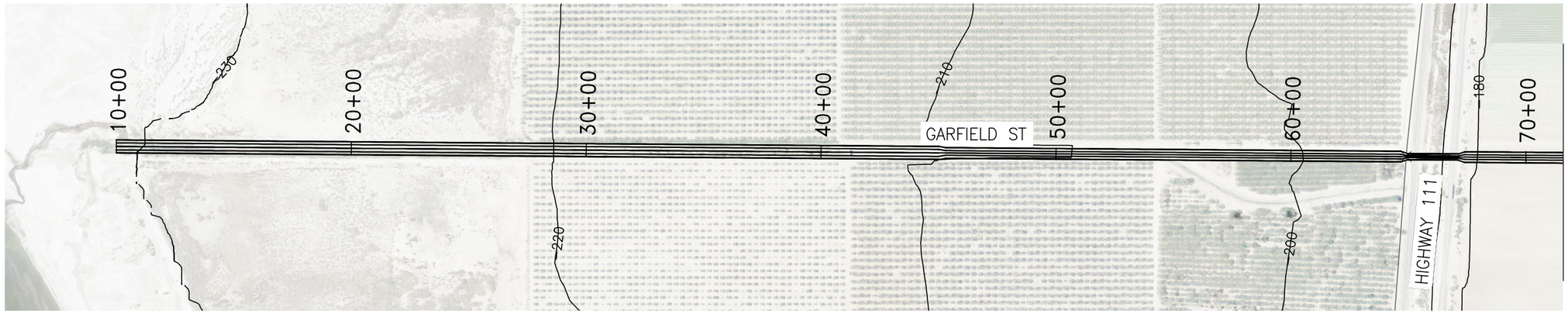






1" = 500'

250 0 500




DIGALERT

DIAL BEFORE YOU DIG TOLL FREE 1-800-227-2600 — TWO WORKING DAYS BEFORE YOU DIG

A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE 101
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:

ALBERT A. WEBB ASSOCIATES

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3788 McCRAY STREET
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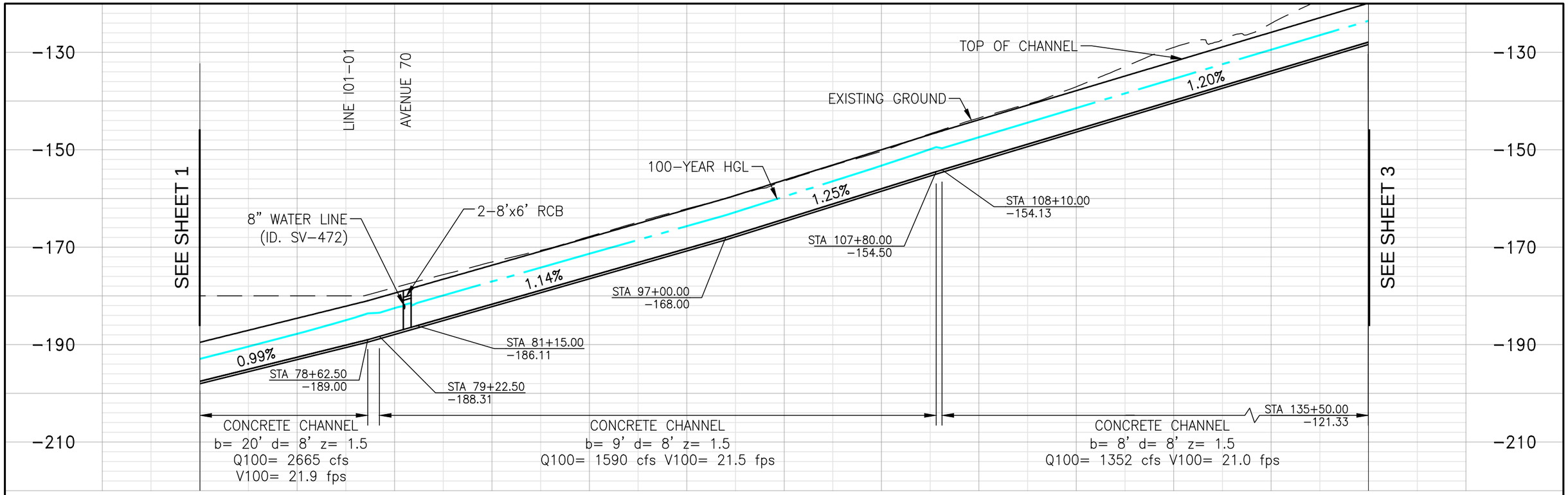
ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE 101
STA 10+00 - STA 70+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 1 OF 6

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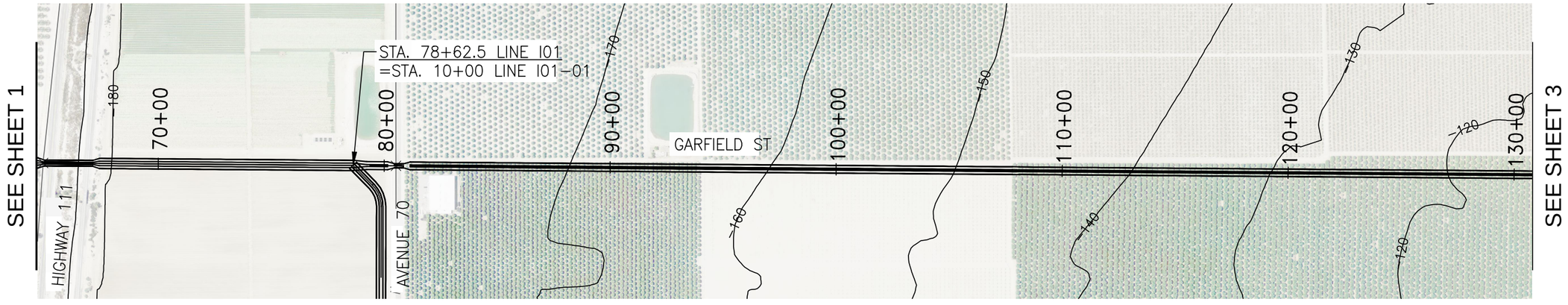






1" = 500'

250 0 500




DIGALERT
DIAL BEFORE YOU DIG TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE 101
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

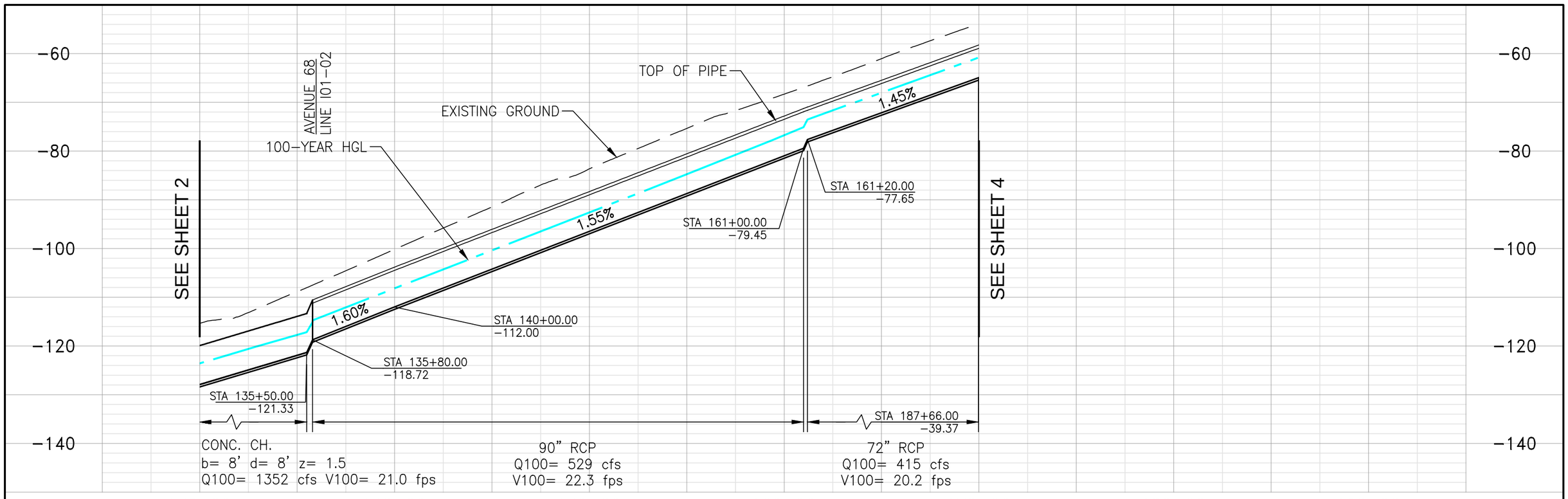
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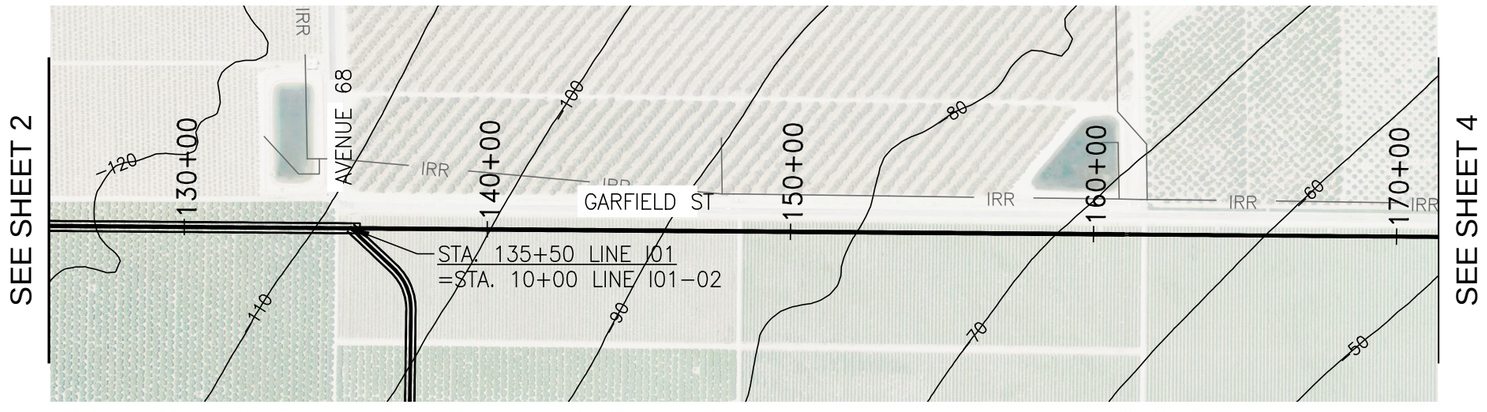
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE 101
STA 70+00 - STA 130+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 2 OF 6

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1" = 500'
250 0 500

DIGALERT
DIAL BEFORE YOU DIG TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE 101
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
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FAX (951) 788-1256

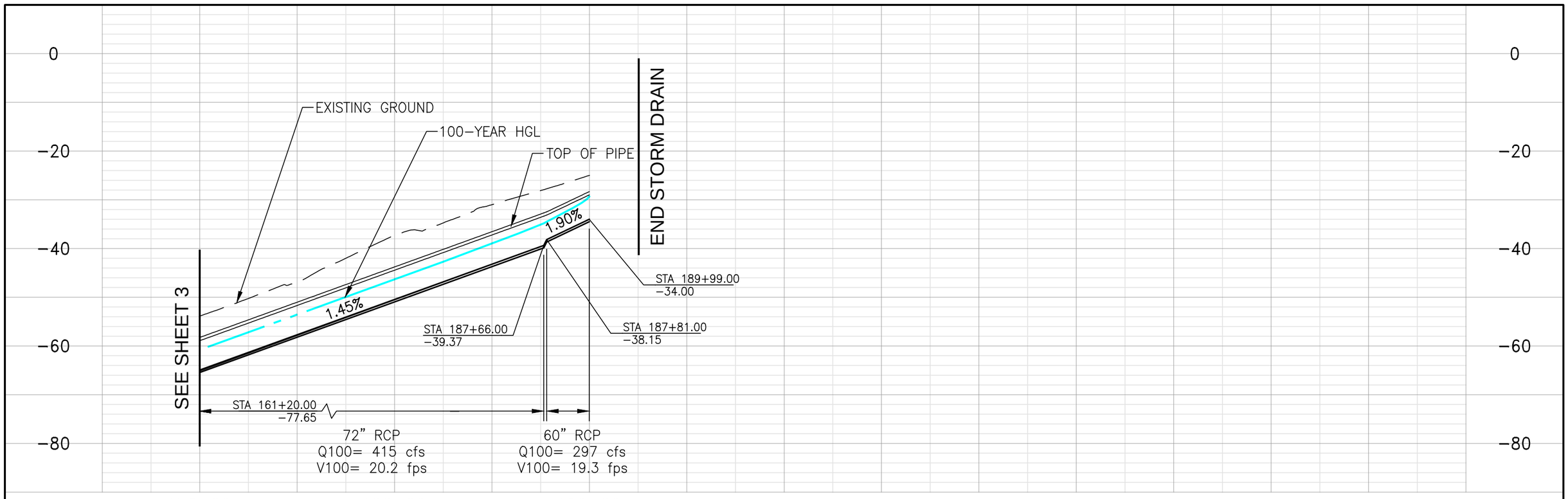
ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
|---|---|---|---|
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE 101
STA 130+00 - STA 170+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 3 OF 6

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1" = 500'

250 0 500

DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE 101
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
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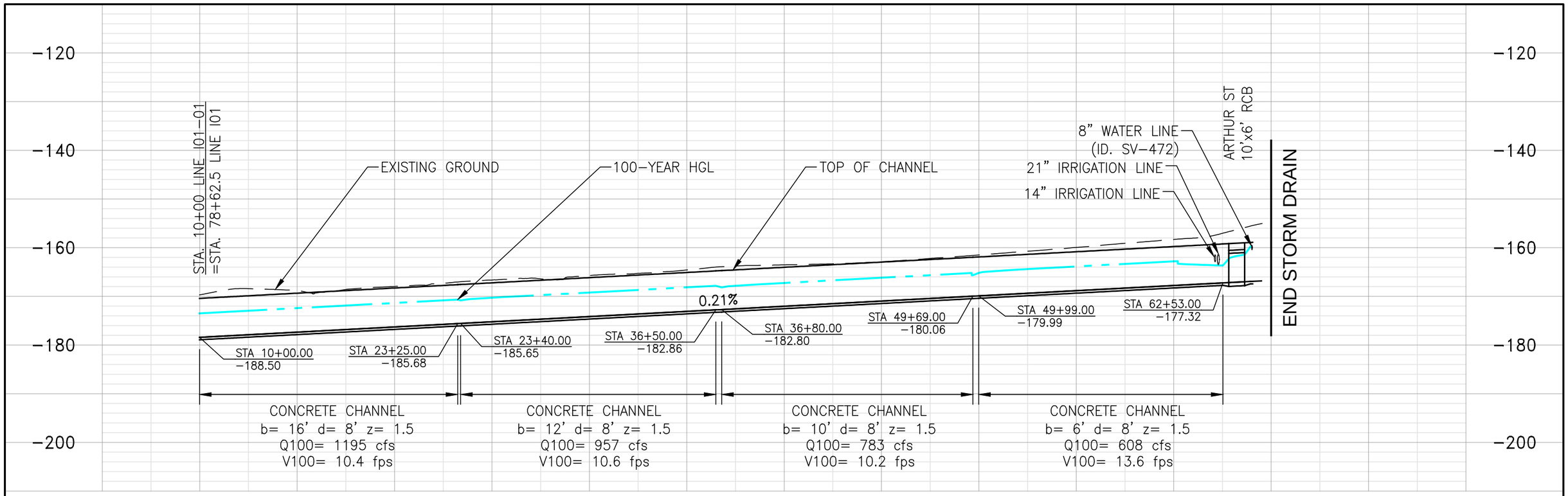
ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
|---|---|---|---|
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE 101
STA 170+00 - STA 190+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 4 OF 6

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1" = 500'

250 0 500

N W WEBB E S

DIGALERT
DIAL BEFORE YOU DIG TOLL FREE 1-800-227-2600 TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE 101-01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER JOSEPH C. CALDWELL NO. C67239 CIVIL STATE OF CALIFORNIA

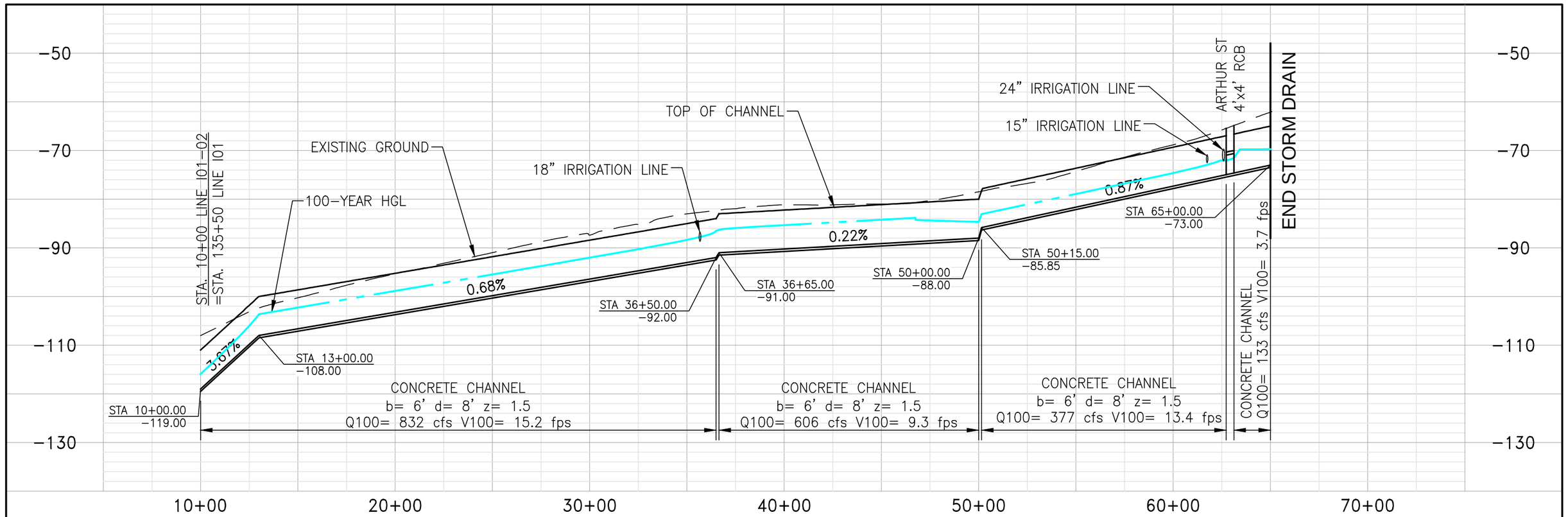
APPROVED BY:
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ENGINEER, RCE DATE:

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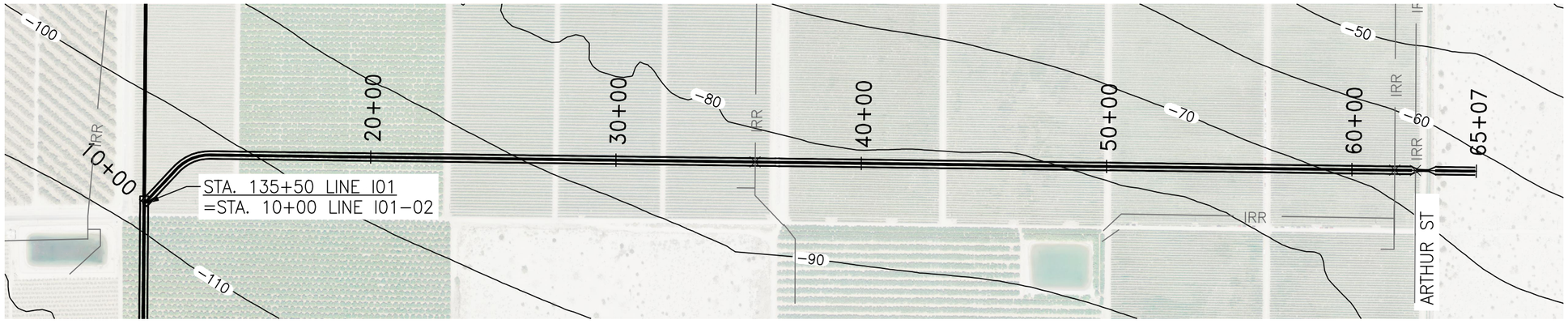
COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE 101-01
STA 10+00 - STA 64+54

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 5 OF 6




1" = 500'

250 0 500




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DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE 101-02
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67259
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
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ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
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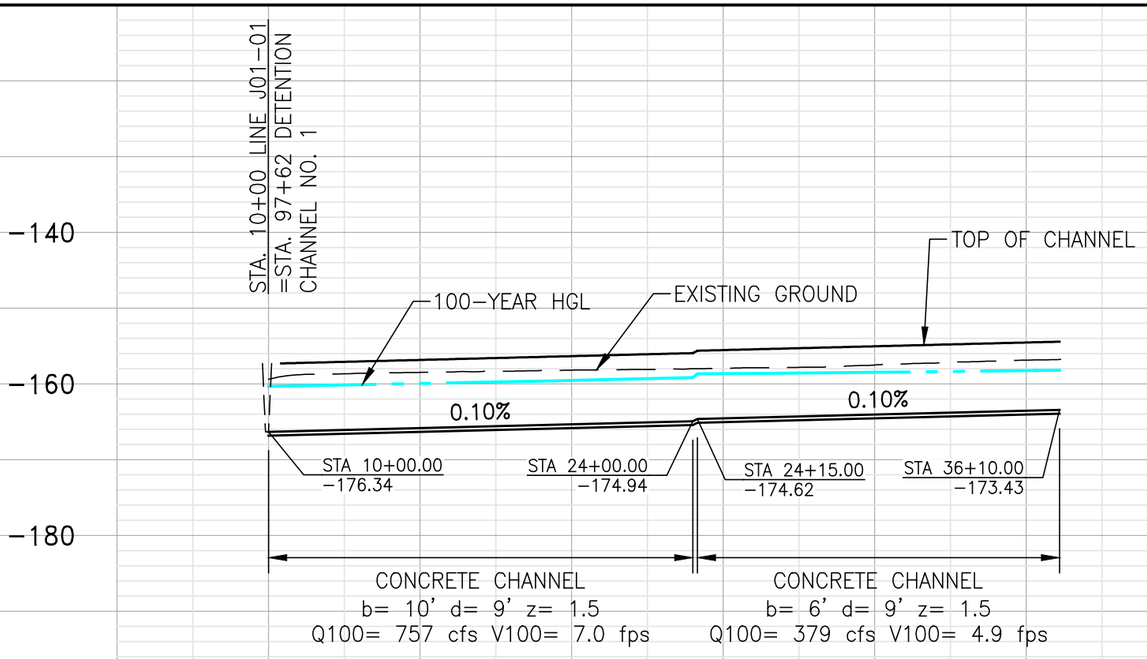
ENGINEER, RCE DATE:

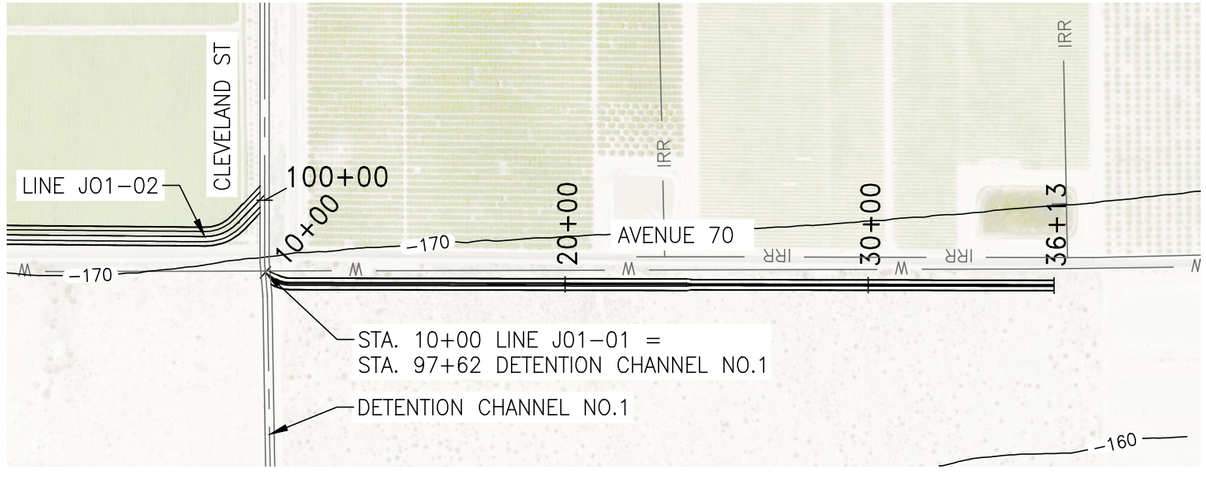
| REF. | REVISIONS | APPR. | DATE |
|---|---|---|---|
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE 101-02
STA 10+00 - STA 65+07

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 6 OF 6

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1" = 500'

250 0 500

S E W N WEBB

DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1–800–227–2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE J01–01
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER JOSEPH C. CALDWELL NO. C67239 CIVIL STATE OF CALIFORNIA

APPROVED BY:
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3788 McCRAY STREET
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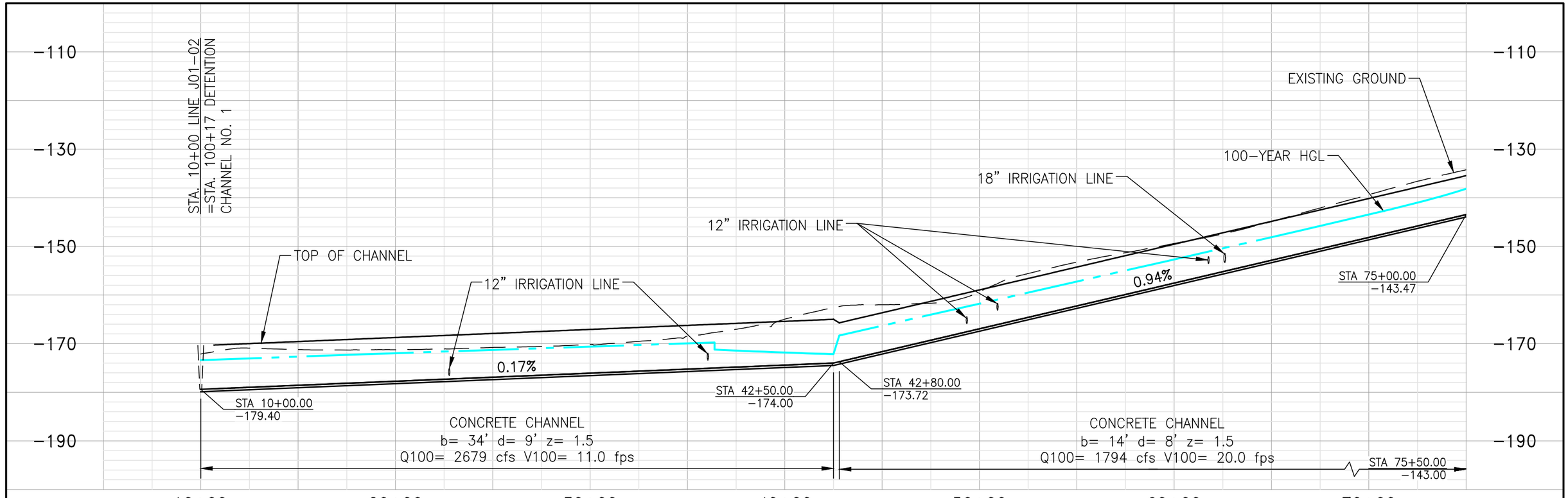
ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
|---|---|---|---|
| | | | |

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE J01–01
STA 10+00 – STA 36+10

PROJECT NO. 2012–0001
DRAWING NO. LN001
SHEET NO. 1 OF 3

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1" = 500'
250 0 500

DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

# LINE J01-02
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
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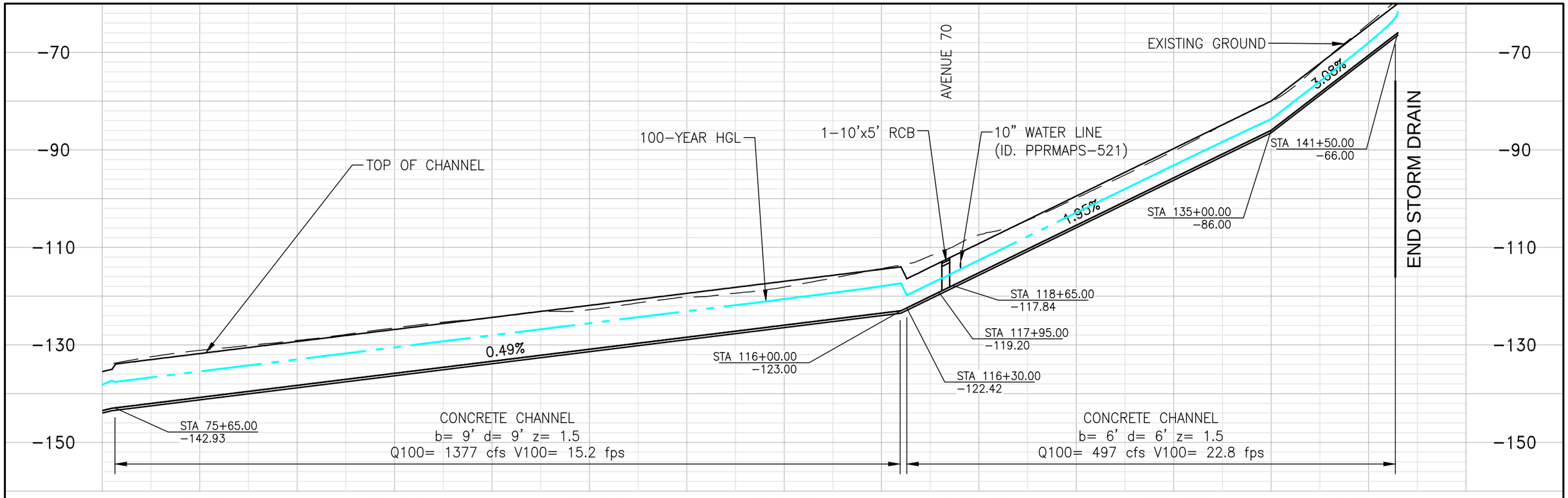
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE J01-02
STA 10+00 - STA 75+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 2 OF 3

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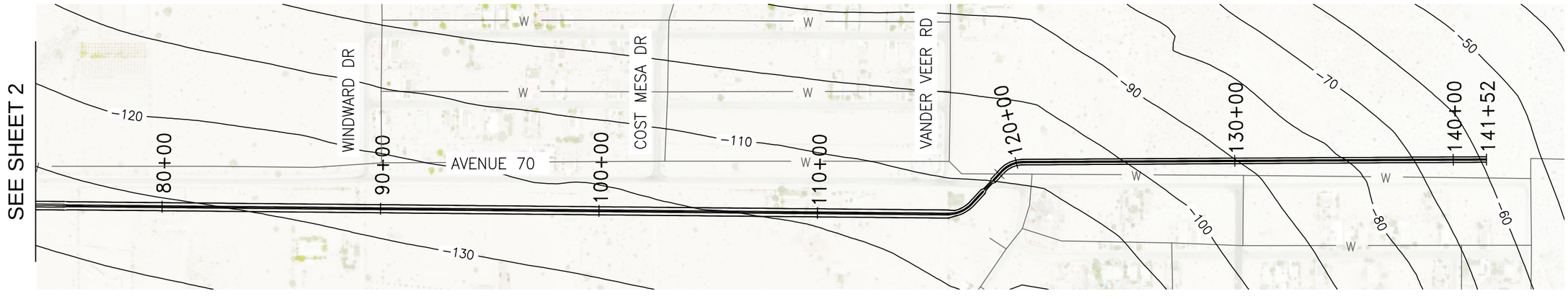






1" = 500'

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# LINE J01-02
# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
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NO. C67239
CIVIL
STATE OF CALIFORNIA

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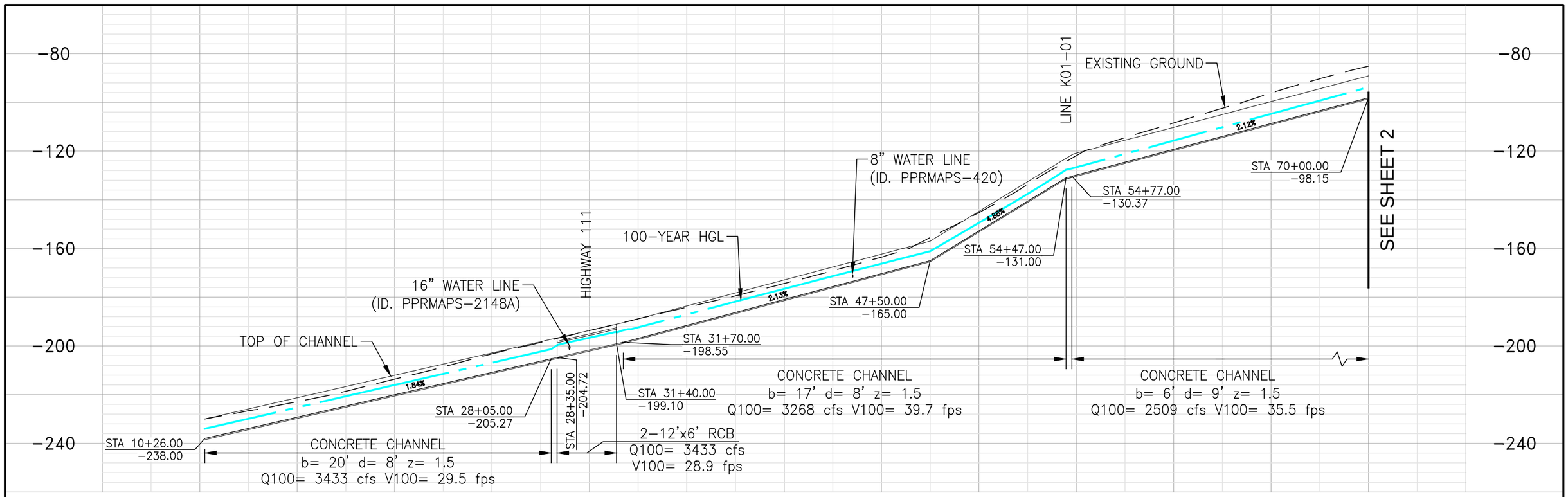
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| REF. | DESCRIPTION | APPR. | DATE |

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE J01-02
STA 75+00 - STA 141+52

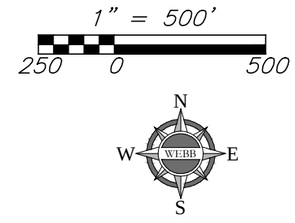
PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 3 OF 3

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# LINE K01
# PLAN AND PROFILE

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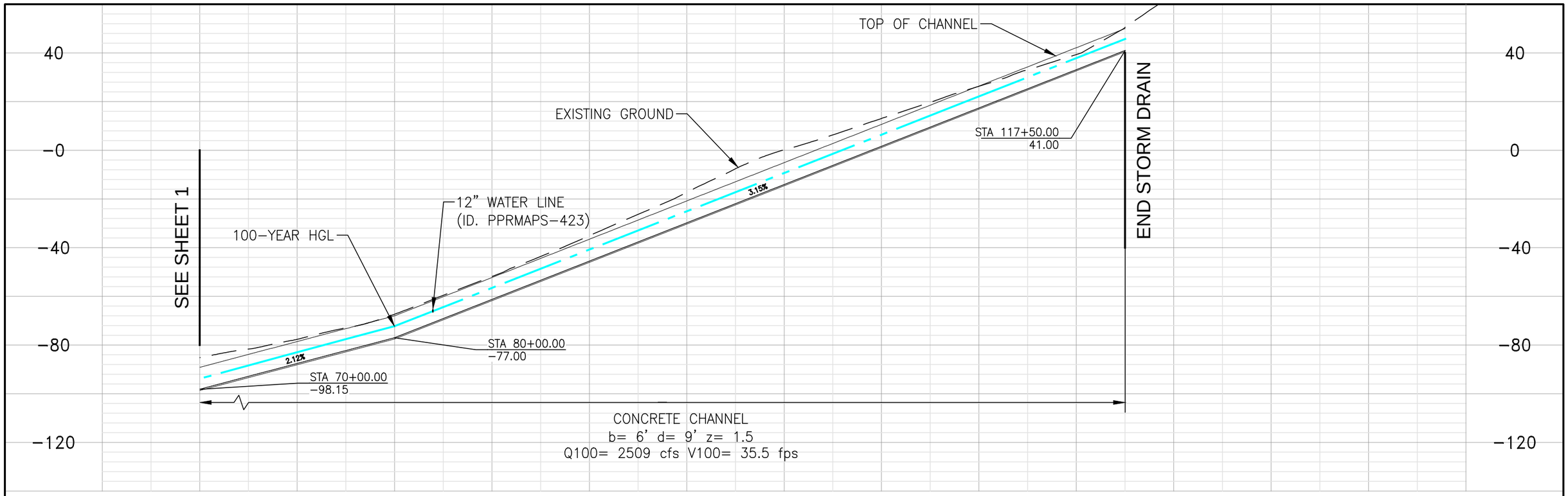
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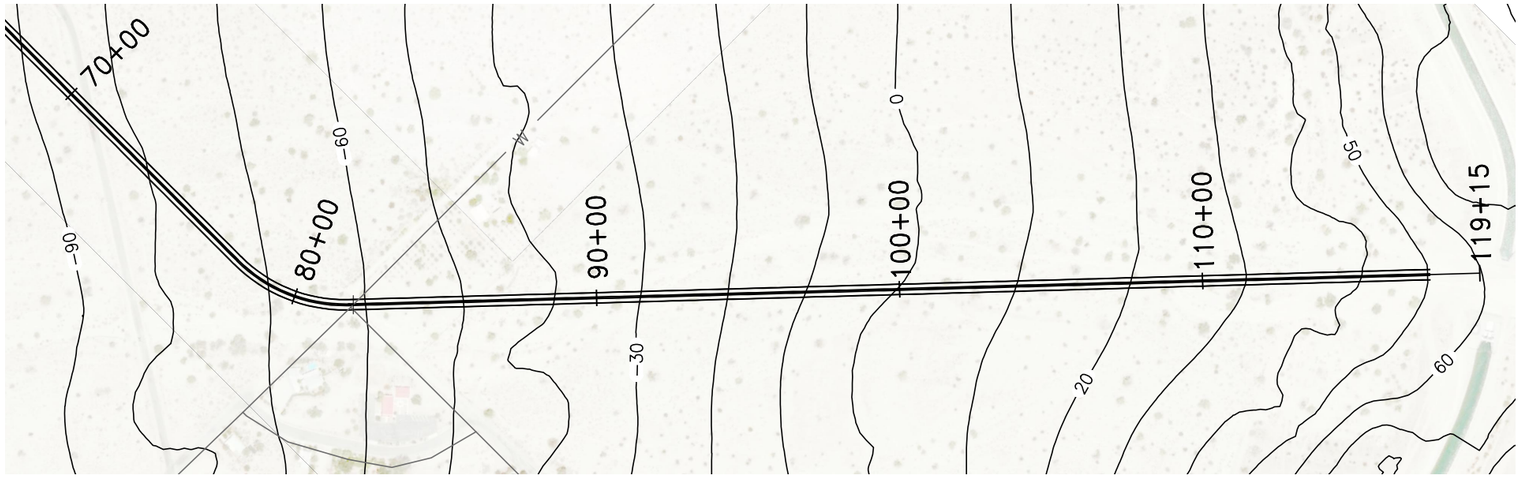
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
**LINE K01**
**STA 10+00 - STA 70+00**

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 1 OF 3

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1" = 500'

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# LINE K01
# PLAN AND PROFILE

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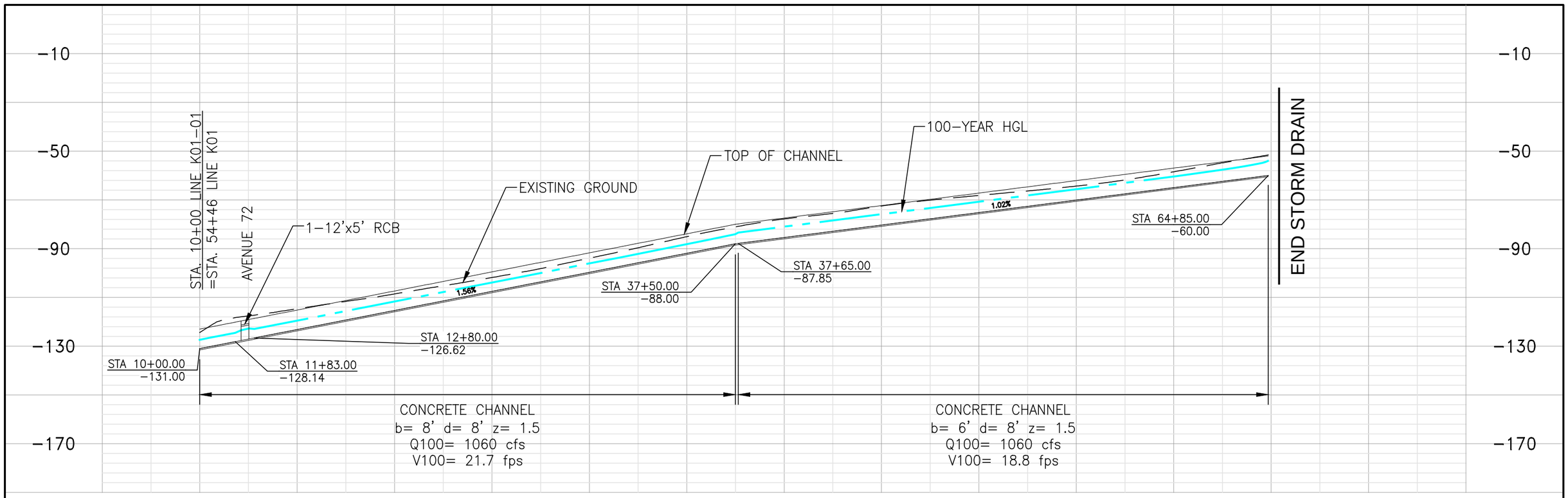
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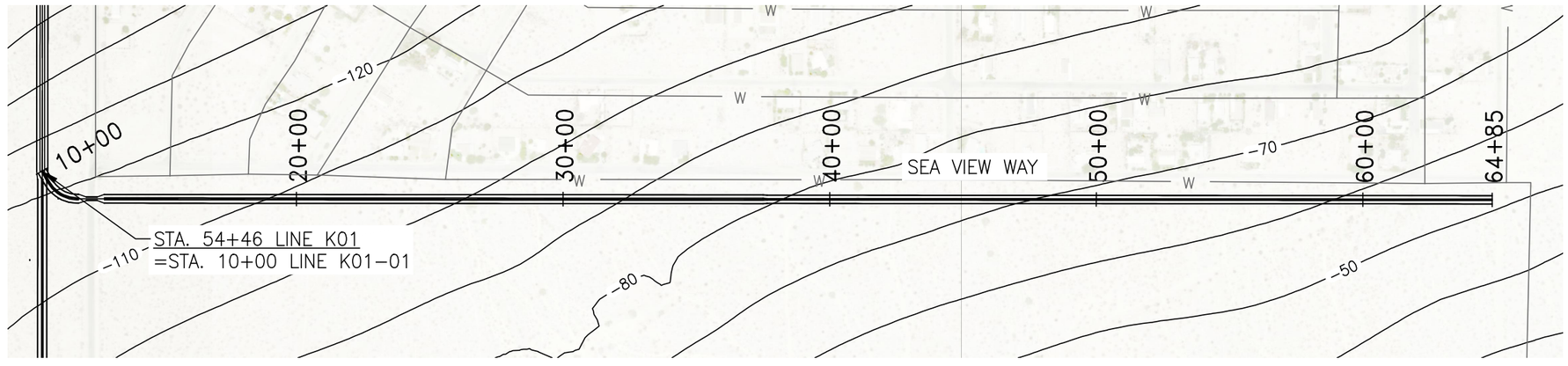
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE K01
STA 70+00 - STA 130+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 2 OF 3

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1" = 500'
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# LINE K01-01
# PLAN AND PROFILE

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ENGINEER, RCE DATE:

| REF. | REVISIONS | APPR. | DATE |
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| | | | |

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
**STORMWATER MASTER PLAN**
LINE K01-01
STA 10+00 - STA 64+85

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 3 OF 3

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# SECTION 5 – Preliminary Cost Estimates

## Mecca/North Shore SMP Cost Estimate

Preliminary cost estimates have been prepared for the major construction items for the Mecca/North Region SMP. Unit costs were based on the 2013 Riverside County Flood Control and Water Conservation District Project Planning Costs, Northwest Hydraulic Consultants' costs prepared for previous CVWD drainage reports, and WEBB's database of construction prices. Other construction items such as outlet and junction structures, headwalls, jack & bore costs, and other miscellaneous costs are assumed to be included in the 15% contingency which is added to the total facility cost estimate.

Required right-of-way widths were calculated by adding two 20-foot service roads to the top of channel widths and adding an additional 2.5 feet on each side of the service roads to daylight to existing ground. Existing ROW (based on available plans) were excluded from the area calculations. ROW costs for all open channels facilities were calculated assuming a unit cost of $30,000/acre. Contingency costs were based on 15% of the total of storm drain and earth work costs.

Concrete quantities for the trapezoidal channels were taken from RCFC&WCD Standard Drawing Number CH327. Concrete quantities for the RCBs were taken from Caltrans Standard Plans D80 and D81.

O&M costs were based on a 40-year design life of the project. This cost is associated with yearly maintenance that would result from sediment and vegetation removal. It was assumed that every ten years, 6-inches of sediment and vegetation would be removed from the channel bottoms. An estimated $10 per cubic yard (CY) for sediment removal was used in the O&M cost calculations, and increased by 2% per year. O&M costs were based on a 40 year life cycle and converted to a "Net Present Value" based on a 5.5% discount rate.

Unit costs of the major construction items and detailed cost estimation worksheets are included in Appendix G along with supporting calculations of the estimated costs. The estimated cost of each system is tabulated in Table 5-1.

**Table 5-1: Mecca/North Shore SMP Cost Summary**

| Item | Line A Stormwater System | Line B Stormwater System | Line C Stormwater System | Line D Stormwater System | Line E Stormwater System | Line F Stormwater System | Line I Stormwater System | Line J Stormwater System | Line K Stormwater System | Mecca Area MDP Update | **Total Cost** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Storm Drain & Earthwork | $7,620,000 | $10,739,000 | $10,275,000 | $17,208,000 | $73,970,000 | $39,940,000 | $13,988,000 | $8,101,000 | $7,590,000 | $3,836,000 | **$193,267,000** |
| Contingencies[1] | $1,143,000 | $1,611,000 | $1,541,000 | $2,581,000 | $11,096,000 | $5,991,000 | $2,098,000 | $1,215,000 | $1,139,000 | $575,000 | **$28,990,000** |
| Engineering and Inspection[2] | $762,000 | $1,074,000 | $1,027,000 | $1,721,000 | $7,397,000 | $3,994,000 | $1,399,000 | $810,000 | $759,000 | $384,000 | **$19,327,000** |
| Right of Way | $465,000 | $489,000 | $765,000 | $768,000 | $4,239,000 | $3,948,000 | $1,332,000 | $939,000 | $870,000 | $516,000 | **$14,331,000** |
| O & M[3] | $42,000 | $49,000 | $92,000 | $185,000 | $859,000 | $1,253,000 | $132,000 | $90,000 | $59,000 | $47,000 | **$2,808,000** |
| **Total Cost** | **$10,032,000** | **$13,962,000** | **$13,700,000** | **$22,463,000** | **$97,561,000** | **$55,126,000** | **$18,949,000** | **$11,155,000** | **$10,417,000** | **$5,358,000** | **$258,723,000** |

1. Contingencies assumes 15% of Construction Costs
2. Engineering and Inspection Budget assumes 10% of Construction Costs
3. Net Present Value of O&M for 40 Years, assuming an inflation rate of 2% and discount rate of 5.5%

Preliminary cost estimates were based on the major construction items (excavation, concrete, aggregate base, fill, structural backfill, right-of-way acquisitions) and 15% contingency, assuming an open trench construction. Please see Appendix G Cost Estimation Worksheets for quantities and unit costs used.

It should be noted that "Jack and Bore" costs for each railroad crossings are not explicitly included as part of the preliminary cost estimates. Additionally the connection (low flow channel) to the CVSC for Line E Outlet structure, the potential retrofitting of Detention Channel #1, and the replacement or re-routing of irrigation lines were not all not explicitly included in the preliminary cost estimates. The costs for these items is assumed to be included as part of the contingency**.**

# SECTION 6 – Conclusions

## Benefits

The regional and subregional flooding of the Mecca/North Shore region will be greatly reduced by the construction of the facilities proposed in this report. Under existing conditions, flood flows pass largely uncontrolled through the region causing damage to private property and public utilities. Such flood flows cause many streets to become impassible and when floods recede, leave behind eroded areas, pockets of mud and debris, and standing ponds of water. As the area converts from primarily agriculture to more urban land uses, these damages are expected to increase. A more orderly growth pattern will safely occur with the construction of these proposed SMP facilities.

## Environmental and Biological Impacts

The benefits of the proposed SMP facilities cannot be achieved without some impacts to the environment. The Mecca/North Shore region is located within the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) area. A biological constraint analysis (Ref. 8) has been prepared to address the impacts associated with the proposed Alternative 2A improvements per the "Preliminary Alternative Development Study for the Mecca/North Shore Area" (Ref. 1). Seven endangered/sensitive plant and/or animal species communities were identified as "potentially" impacted due to the proposed alignments. Review of the analysis indicated that the majority of the sensitive areas were along the northern Salton Sea shoreline, adjacent to Coachella Storm Drain footprint, and the North Shore region. Encroaching into these sensitive areas most likely would require mitigation to offset the losses. As part of the alternative analysis process, potential impacts to the CVMSHCP were taken into account and refinements to the proposed SMP facilities were made.

Proposed facilities located north of Highway 111 between Detention Channel No. 1 and Detention Channel No. 2, avoided most of the sensitive areas of the CVMSHCP because they are located on existing agricultural land. South of Highway 111 minor potential impacts occur to Desert Pupfish, Desert Sink Scrub, and Desert Saltbush Habitats due to the alignments of Lines D01, E01, and I01 proposed facilities.

Proposed facilities (Lines J01-01, J01-02, K01, and K01-01) located east of Detention Channel No. 1 may have potential impacts to Sonoran Creosote Bush Scrub Habitat and Line K01 may have a small potential impact to the Desert Drywash Woodland Habitat.

Actual impacts to these sensitive areas, and others not listed, of the CVMSHCP will require additional surveys performed by a qualified biologist to determine the level of impact per species prior to project implementation. In addition, permits such as Clean Water Act Section 401/ 404 and the California Department of Fish and Game Streambed Alteration Agreement will likely be required.

# SECTION 7 – Recommendations

## Recommendations

It is recommended that the Stormwater Master Plan presented in this report be adopted by the Coachella Valley Water District's Board. The SMP should be used as a guide for all future development in the study area. All developments should be required to conform to the Plan insofar as possible. Developments should evaluate both interim and ultimate conditions and implement design features and drainage facilities to protect against both conditions. In addition the Rights-of-Way required for the SMP should be protected from encroachment.

# SECTION 8 – References

## List of References

1. WEBB , "*Preliminary Alternative Development Study for the Mecca/North Area*", March 2013, prepared for the Coachella Valley Water District

2. Coachella Valley Water District Development Design Manual, February 2012

3. Riverside County Flood Control and Water Conservation District Hydrology Manual, April 1978

4. Tetra Tech, *"Coachella Valley Stormwater Channel Alternatives Study Final Report"* August 2014, prepared for the Coachella Valley Water District

5. NOAA (National Oceanic and Atmospheric Administration) Hydrometeorological Design Study Center – NOAA Atlas 14, Volume 6, Version 2

6. USACE (US Army Corps of Engineers) 2000 "*Hydrologic Modeling System HEC-HMS Technical Reference Manual*"

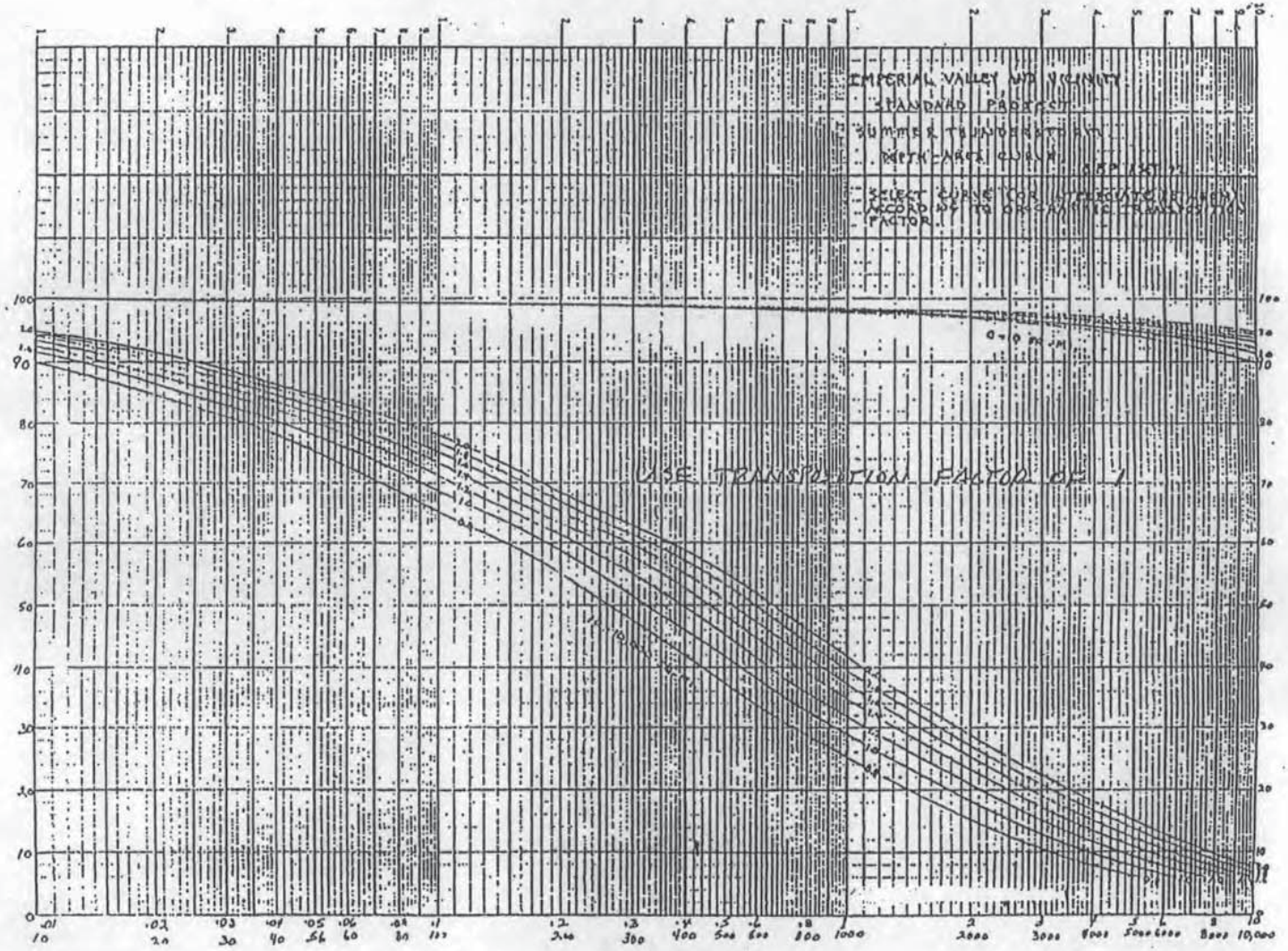
7. USACE (US Army Corps of Engineers) 1993. "*Introduction and Application of Kinematic Wave Routing Techniques Using HEC-1*"

8. Biological Constraints Analysis and Proposed Drainage Alignments of Alternative 2 Memo, Mecca Area, Tetra Tech, December 2012

9. Bechtel, "Without Project - Hydrology Report Thousand Palms Area, Whitewater River Basin", March 1997

# Appendix A
# Bechtel (1997)
# Depth-Area Reduction Factor Curve

**Plate 17: Rainfall-depth area reduction curve for Coachella Valley**



0141.

File: 0141.

# "Without Project" Hydrology Report

# Thousand Palms Area, Whitewater River Basin

# Riverside and San Bernardino Counties, California

by
Geotechnical and Hydraulic Engineering Services
Bechtel Corporation
March 1997

for

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

151
NB

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# Appendix B
# Watershed Lag Time Calculations

**EASTERN COACHELLA VALLEY MDP**

| Watershed Lag Time Calculations for Drainage Area Final Hydrology | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Watershed* | | *Area* | *L* | *Lca* | *Elev_Up* | *Elev_Dn* | *H* | *S* | *S^1/2* | *n-bar* | *Lag* |
| *ID* | *(ac)* | *(sqmi.)* | *(mi)* | *(mi)* | *(ft)* | *(ft)* | *(ft)* | *(ft/mi)* | | | *(hr)* |
| A1 | 243.9 | 0.38 | 1.022 | 0.420 | 28 | -50 | 78 | 76.3 | 8.736247 | 0.040 | 0.305 |
| A2 | 307.4 | 0.48 | 1.215 | 0.689 | -10 | -102 | 92 | 75.7 | 8.70337 | 0.040 | 0.394 |
| A3 | 324.9 | 0.51 | 1.124 | 0.594 | -30 | -108 | 78 | 69.4 | 8.329398 | 0.040 | 0.368 |
| A4 | 505.7 | 0.79 | 1.585 | 1.142 | -96 | -104 | 8 | 5.0 | 2.246672 | 0.040 | 0.884 |
| B1 | 231.9 | 0.36 | 0.762 | 0.276 | 34 | -40 | 74 | 97.1 | 9.853881 | 0.040 | 0.222 |
| B2 | 200.9 | 0.31 | 0.789 | 0.514 | 30 | -64 | 94 | 119.1 | 10.91411 | 0.040 | 0.275 |
| B3 | 159.4 | 0.25 | 0.758 | 0.426 | -18 | -78 | 60 | 79.1 | 8.895568 | 0.040 | 0.272 |
| B4 | 326.1 | 0.51 | 1.078 | 0.547 | -50 | -114 | 64 | 59.4 | 7.706779 | 0.040 | 0.361 |
| B5 | 331.8 | 0.52 | 1.092 | 0.545 | -72 | -118 | 46 | 42.1 | 6.489248 | 0.040 | 0.387 |
| B6 | 398.7 | 0.62 | 1.338 | 0.893 | -108 | -118 | 10 | 7.5 | 2.733425 | 0.040 | 0.701 |
| C1 | 222.8 | 0.35 | 0.698 | 0.397 | 30 | -44 | 74 | 106.0 | 10.29669 | 0.040 | 0.243 |
| C2 | 231.5 | 0.36 | 0.931 | 0.388 | 14 | -82 | 96 | 103.1 | 10.15399 | 0.040 | 0.270 |
| C3 | 144.9 | 0.23 | 0.688 | 0.274 | 36 | -32 | 68 | 98.8 | 9.942243 | 0.040 | 0.213 |
| C4 | 314.0 | 0.49 | 1.086 | 0.543 | -40 | -120 | 80 | 73.7 | 8.582781 | 0.040 | 0.347 |
| C5 | 309.1 | 0.48 | 1.045 | 0.524 | 4 | -100 | 104 | 99.5 | 9.976089 | 0.040 | 0.319 |
| C6 | 338.1 | 0.53 | 1.036 | 0.571 | -104 | -136 | 32 | 30.9 | 5.557334 | 0.040 | 0.410 |
| C7 | 337.5 | 0.53 | 1.044 | 0.430 | -80 | -124 | 44 | 42.1 | 6.491917 | 0.040 | 0.348 |
| C8 | 54.9 | 0.09 | 0.453 | 0.311 | -134 | -137 | 3 | 6.6 | 2.574092 | 0.040 | 0.318 |
| D1 | 498.5 | 0.78 | 1.892 | 0.861 | -138 | -158 | 20 | 10.6 | 3.251531 | 0.040 | 0.738 |
| D2 | 244.5 | 0.38 | 1.110 | 0.592 | -150 | -172 | 22 | 19.8 | 4.452088 | 0.040 | 0.464 |
| D3 | 451.2 | 0.71 | 1.780 | 0.803 | -148 | -174 | 26 | 14.6 | 3.821722 | 0.040 | 0.661 |
| D4 | 225.2 | 0.35 | 1.024 | 0.468 | -162 | -178 | 16 | 15.6 | 3.952542 | 0.040 | 0.431 |
| D5 | 202.1 | 0.32 | 2.813 | 1.315 | -138 | -174 | 36 | 12.8 | 3.577075 | 0.040 | 0.972 |
| D6 | 696.6 | 1.09 | 1.668 | 0.885 | -172 | -194 | 22 | 13.2 | 3.63142 | 0.040 | 0.682 |
| D7 | 286.2 | 0.45 | 1.132 | 0.577 | -182 | -204 | 22 | 19.4 | 4.409337 | 0.040 | 0.465 |
| E1 | 171.7 | 0.27 | 0.660 | 0.399 | 30 | -38 | 68 | 103.1 | 10.15159 | 0.040 | 0.240 |
| E2 | 284.1 | 0.44 | 0.918 | 0.565 | 46 | -81 | 127 | 138.4 | 11.76482 | 0.040 | 0.293 |
| E3 | 645.2 | 1.01 | 1.385 | 0.711 | 26 | -142 | 168 | 121.3 | 11.01384 | 0.040 | 0.383 |
| E4 | 327.4 | 0.51 | 1.266 | 0.731 | -80 | -160 | 80 | 63.2 | 7.948406 | 0.040 | 0.424 |
| E5 | 164.0 | 0.26 | 0.874 | 0.594 | -92 | -148 | 56 | 64.1 | 8.003525 | 0.040 | 0.340 |
| E6 | 166.5 | 0.26 | 0.823 | 0.513 | -130 | -171 | 41 | 49.8 | 7.059942 | 0.040 | 0.329 |
| E7 | 315.0 | 0.49 | 1.120 | 0.588 | -118 | -182 | 64 | 57.1 | 7.557862 | 0.040 | 0.380 |
| E8 | 319.7 | 0.50 | 1.254 | 0.566 | -148 | -190 | 42 | 33.5 | 5.786575 | 0.040 | 0.433 |
| E9 | 308.6 | 0.48 | 1.049 | 0.527 | -22 | -102 | 80 | 76.2 | 8.730854 | 0.040 | 0.337 |
| E10 | 319.6 | 0.50 | 1.137 | 0.589 | -42 | -120 | 78 | 68.6 | 8.282773 | 0.040 | 0.369 |
| E11 | 629.8 | 0.98 | 1.496 | 0.853 | -82 | -160 | 78 | 52.2 | 7.22152 | 0.040 | 0.497 |
| E12 | 307.2 | 0.48 | 1.089 | 0.514 | -86 | -138 | 52 | 47.7 | 6.909566 | 0.040 | 0.369 |
| E13 | 305.8 | 0.48 | 1.053 | 0.540 | -104 | -144 | 40 | 38.0 | 6.164796 | 0.040 | 0.388 |
| E14 | 189.2 | 0.30 | 0.852 | 0.557 | -136 | -144 | 8 | 9.4 | 3.064776 | 0.040 | 0.472 |
| E15 | 339.1 | 0.53 | 0.856 | 0.423 | -122 | -154 | 32 | 37.4 | 6.114904 | 0.040 | 0.328 |
| E16 | 138.3 | 0.22 | 0.967 | 0.680 | -148 | -172 | 24 | 24.8 | 4.982512 | 0.040 | 0.445 |
| E17 | 408.7 | 0.64 | 1.270 | 0.683 | -152 | -178 | 26 | 20.5 | 4.52459 | 0.040 | 0.512 |
| E18 | 331.1 | 0.52 | 1.762 | 0.892 | -144 | -186 | 42 | 23.8 | 4.882273 | 0.040 | 0.624 |
| E19 | 439.3 | 0.69 | 1.888 | 0.912 | -170 | -190 | 20 | 10.6 | 3.254644 | 0.040 | 0.754 |
| E20 | 552.9 | 0.86 | 1.772 | 0.818 | -170 | -210 | 40 | 22.6 | 4.751428 | 0.040 | 0.611 |
| E21 | 540.1 | 0.84 | 1.319 | 0.712 | -188 | -210 | 22 | 16.7 | 4.084479 | 0.040 | 0.549 |
| E22 | 592.4 | 0.93 | 2.044 | 1.145 | -202 | -218 | 16 | 7.8 | 2.797718 | 0.040 | 0.897 |

**EASTERN COACHELLA VALLEY MDP**

| Watershed Lag Time Calculations for Drainage Area Final Hydrology | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Watershed* | | *Area* | *L* | *Lca* | *Elev_Up* | *Elev_Dn* | *H* | *S* | *S^1/2* | *n-bar* | *Lag* |
| *ID* | *(ac)* | *(sqmi.)* | *(mi)* | *(mi)* | *(ft)* | *(ft)* | *(ft)* | *(ft/mi)* | | | *(hr)* |
| F1 | 368.8 | 0.58 | 0.986 | 0.359 | 30 | -74 | 104 | 105.4 | 10.26772 | 0.040 | 0.267 |
| F2 | 660.3 | 1.03 | 1.463 | 0.740 | 30 | -114 | 144 | 98.4 | 9.92094 | 0.040 | 0.414 |
| F3 | 284.4 | 0.44 | 1.000 | 0.329 | 34 | -42 | 76 | 76.0 | 8.715932 | 0.040 | 0.276 |
| F4 | 667.0 | 1.04 | 1.411 | 0.838 | 46 | -78 | 124 | 87.9 | 9.374442 | 0.040 | 0.437 |
| F5 | 317.3 | 0.50 | 1.192 | 0.537 | 10 | -90 | 100 | 83.9 | 9.158838 | 0.040 | 0.349 |
| F6 | 315.8 | 0.49 | 1.211 | 0.501 | -42 | -118 | 76 | 62.8 | 7.922136 | 0.040 | 0.362 |
| F7 | 649.6 | 1.02 | 1.477 | 0.674 | -34 | -144 | 110 | 74.5 | 8.630057 | 0.040 | 0.423 |
| F8 | 322.9 | 0.50 | 1.101 | 0.549 | -80 | -158 | 78 | 70.8 | 8.41622 | 0.040 | 0.353 |
| F9 | 334.2 | 0.52 | 1.110 | 0.565 | -100 | -172 | 72 | 64.9 | 8.055045 | 0.040 | 0.364 |
| F10 | 652.9 | 1.02 | 1.410 | 0.776 | -54 | -164 | 110 | 78.0 | 8.832246 | 0.040 | 0.434 |
| F11 | 910.1 | 1.42 | 1.682 | 0.451 | -122 | -200 | 78 | 46.4 | 6.810472 | 0.040 | 0.417 |
| F12 | 444.4 | 0.69 | 0.969 | 0.479 | -198 | -222 | 24 | 24.8 | 4.976115 | 0.040 | 0.390 |
| F13 | 926.7 | 1.45 | 2.136 | 0.934 | -202 | -224 | 22 | 10.3 | 3.209068 | 0.040 | 0.801 |
| I1 | 148.5 | 0.23 | 0.564 | 0.260 | 35 | -30 | 65 | 115.2 | 10.73248 | 0.040 | 0.188 |
| I2 | 160.5 | 0.25 | 0.695 | 0.371 | 20 | -70 | 90 | 129.5 | 11.38002 | 0.040 | 0.228 |
| I3 | 170.1 | 0.27 | 0.735 | 0.382 | -40 | -110 | 70 | 95.2 | 9.757116 | 0.040 | 0.249 |
| I4 | 305.9 | 0.48 | 1.010 | 0.549 | 40 | -90 | 130 | 128.7 | 11.3439 | 0.040 | 0.305 |
| I5 | 77.5 | 0.12 | 0.758 | 0.470 | 40 | -70 | 110 | 145.1 | 12.04721 | 0.040 | 0.252 |
| I6 | 456.7 | 0.71 | 1.719 | 0.747 | 40 | -165 | 205 | 119.2 | 10.91884 | 0.040 | 0.426 |
| I7 | 326.8 | 0.51 | 1.107 | 0.536 | -70 | -170 | 100 | 90.3 | 9.503712 | 0.040 | 0.335 |
| I8 | 330.0 | 0.52 | 1.089 | 0.531 | -90 | -180 | 90 | 82.7 | 9.091598 | 0.040 | 0.337 |
| I9 | 159.3 | 0.25 | 1.016 | 0.520 | -180 | -220 | 40 | 39.4 | 6.274248 | 0.040 | 0.375 |
| J1 | 946.9 | 1.48 | 1.870 | 1.117 | 570 | -110 | 680 | 363.6 | 19.06829 | 0.040 | 0.414 |
| J2 | 393.7 | 0.62 | 1.276 | 0.596 | 60 | -130 | 190 | 148.9 | 12.20095 | 0.040 | 0.334 |
| J3 | 1572.3 | 2.46 | 2.117 | 1.141 | 40 | -170 | 210 | 99.2 | 9.95968 | 0.040 | 0.560 |
| J4 | 619.0 | 0.97 | 1.826 | 0.969 | 40 | -170 | 210 | 115.0 | 10.72276 | 0.040 | 0.484 |
| K1 | 3449.7 | 5.39 | 6.959 | 3.334 | 2200 | 70 | 2130 | 306.1 | 17.49536 | 0.050 | 1.336 |
| K2 | 1040.8 | 1.63 | 2.964 | 1.484 | 550 | -105 | 655 | 221.0 | 14.86574 | 0.050 | 0.755 |
| K3 | 373.8 | 0.58 | 1.072 | 0.582 | 70 | -120 | 190 | 177.3 | 13.31519 | 0.040 | 0.300 |
| K4 | 362.2 | 0.57 | 1.266 | 0.522 | -60 | -200 | 140 | 110.6 | 10.51544 | 0.040 | 0.335 |

# Appendix C
# NOAA 14 Rainfall Data

**NOAA Atlas 14, Volume 6, Version 2**
**Location name: Mecca, California, US***
**Coordinates: 33.5822, -116.0636**
**Elevation: -128ft***
* source: Google Maps

**POINT PRECIPITATION FREQUENCY ESTIMATES**

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

## PF tabular

**PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]**

| Duration | Average recurrence interval(years) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 5 | 10 | 25 | 50 | 100 | 200 | 500 | 1000 |
| 5-min | 0.067 (0.056–0.081) | 0.105 (0.087–0.127) | 0.155 (0.129–0.188) | 0.198 (0.163–0.242) | 0.258 (0.206–0.327) | 0.306 (0.239–0.396) | 0.357 (0.272–0.473) | 0.410 (0.304–0.561) | 0.486 (0.344–0.693) | 0.547 (0.374–0.808) |
| 10-min | 0.096 (0.080–0.116) | 0.150 (0.125–0.181) | 0.223 (0.185–0.270) | 0.284 (0.234–0.347) | 0.370 (0.295–0.469) | 0.439 (0.343–0.568) | 0.511 (0.389–0.678) | 0.588 (0.435–0.803) | 0.697 (0.494–0.993) | 0.784 (0.536–1.16) |
| 15-min | 0.116 (0.097–0.141) | 0.181 (0.151–0.219) | 0.269 (0.224–0.327) | 0.343 (0.283–0.420) | 0.448 (0.357–0.567) | 0.531 (0.414–0.687) | 0.618 (0.471–0.821) | 0.711 (0.526–0.972) | 0.843 (0.597–1.20) | 0.948 (0.649–1.40) |
| 30-min | 0.166 (0.139–0.201) | 0.258 (0.216–0.313) | 0.384 (0.320–0.466) | 0.490 (0.404–0.599) | 0.638 (0.509–0.809) | 0.757 (0.591–0.980) | 0.882 (0.671–1.17) | 1.02 (0.750–1.39) | 1.20 (0.852–1.71) | 1.35 (0.925–2.00) |
| 60-min | 0.232 (0.194–0.280) | 0.361 (0.301–0.437) | 0.536 (0.446–0.650) | 0.683 (0.564–0.836) | 0.891 (0.711–1.13) | 1.06 (0.825–1.37) | 1.23 (0.937–1.63) | 1.42 (1.05–1.94) | 1.68 (1.19–2.39) | 1.89 (1.29–2.79) |
| 2-hr | 0.316 (0.264–0.382) | 0.469 (0.392–0.568) | 0.687 (0.572–0.833) | 0.878 (0.725–1.08) | 1.16 (0.926–1.47) | 1.40 (1.09–1.81) | 1.66 (1.26–2.20) | 1.94 (1.44–2.65) | 2.37 (1.68–3.37) | 2.72 (1.86–4.02) |
| 3-hr | 0.377 (0.315–0.456) | 0.551 (0.460–0.667) | 0.803 (0.669–0.975) | 1.03 (0.850–1.26) | 1.37 (1.09–1.74) | 1.66 (1.30–2.15) | 1.99 (1.51–2.64) | 2.35 (1.74–3.21) | 2.90 (2.06–4.14) | 3.38 (2.31–4.99) |
| 6-hr | 0.489 (0.409–0.591) | 0.709 (0.592–0.858) | 1.04 (0.862–1.26) | 1.33 (1.10–1.63) | 1.79 (1.43–2.27) | 2.19 (1.71–2.83) | 2.64 (2.01–3.50) | 3.15 (2.33–4.30) | 3.94 (2.79–5.61) | 4.63 (3.16–6.83) |
| 12-hr | 0.581 (0.486–0.702) | 0.868 (0.725–1.05) | 1.29 (1.07–1.56) | 1.67 (1.38–2.04) | 2.24 (1.79–2.84) | 2.74 (2.14–3.54) | 3.29 (2.50–4.37) | 3.91 (2.90–5.35) | 4.86 (3.45–6.93) | 5.68 (3.89–8.39) |
| 24-hr | 0.729 (0.645–0.841) | 1.13 (0.996–1.30) | 1.70 (1.50–1.97) | 2.21 (1.93–2.58) | 2.98 (2.52–3.58) | 3.62 (3.01–4.45) | 4.34 (3.52–5.46) | 5.14 (4.06–6.64) | 6.34 (4.81–8.51) | 7.36 (5.40–10.2) |
| 2-day | 0.845 (0.747–0.974) | 1.32 (1.17–1.52) | 2.01 (1.77–2.32) | 2.62 (2.29–3.06) | 3.54 (3.00–4.27) | 4.33 (3.59–5.32) | 5.20 (4.22–6.53) | 6.17 (4.88–7.97) | 7.63 (5.79–10.3) | 8.88 (6.53–12.3) |
| 3-day | 0.905 (0.801–1.04) | 1.42 (1.25–1.63) | 2.16 (1.90–2.50) | 2.82 (2.47–3.29) | 3.82 (3.24–4.60) | 4.68 (3.88–5.75) | 5.62 (4.56–7.07) | 6.69 (5.29–8.64) | 8.29 (6.30–11.1) | 9.67 (7.11–13.4) |
| 4-day | 0.959 (0.849–1.11) | 1.50 (1.32–1.73) | 2.28 (2.01–2.63) | 2.98 (2.60–3.47) | 4.03 (3.42–4.86) | 4.94 (4.10–6.06) | 5.94 (4.82–7.47) | 7.07 (5.58–9.13) | 8.76 (6.65–11.8) | 10.2 (7.51–14.2) |
| 7-day | 1.03 (0.909–1.19) | 1.58 (1.40–1.82) | 2.38 (2.10–2.76) | 3.10 (2.72–3.62) | 4.19 (3.55–5.05) | 5.12 (4.25–6.29) | 6.15 (4.99–7.74) | 7.31 (5.78–9.45) | 9.06 (6.88–12.2) | 10.6 (7.76–14.7) |
| 10-day | 1.06 (0.934–1.22) | 1.61 (1.43–1.86) | 2.42 (2.13–2.80) | 3.15 (2.75–3.67) | 4.24 (3.59–5.10) | 5.16 (4.29–6.34) | 6.19 (5.03–7.79) | 7.35 (5.81–9.50) | 9.09 (6.90–12.2) | 10.6 (7.77–14.7) |
| 20-day | 1.12 (0.988–1.29) | 1.71 (1.52–1.98) | 2.57 (2.27–2.98) | 3.33 (2.91–3.88) | 4.45 (3.77–5.36) | 5.40 (4.49–6.64) | 6.44 (5.23–8.10) | 7.60 (6.01–9.82) | 9.32 (7.08–12.5) | 10.8 (7.92–15.0) |
| 30-day | 1.18 (1.05–1.37) | 1.84 (1.63–2.12) | 2.76 (2.44–3.20) | 3.57 (3.13–4.17) | 4.76 (4.04–5.74) | 5.75 (4.78–7.07) | 6.83 (5.54–8.59) | 8.02 (6.34–10.4) | 9.77 (7.42–13.1) | 11.2 (8.26–15.6) |
| 45-day | 1.28 (1.13–1.47) | 2.02 (1.78–2.33) | 3.05 (2.69–3.53) | 3.94 (3.44–4.59) | 5.22 (4.43–6.29) | 6.28 (5.21–7.71) | 7.41 (6.02–9.32) | 8.66 (6.84–11.2) | 10.5 (7.94–14.1) | 12.0 (8.78–16.6) |
| 60-day | 1.35 (1.19–1.55) | 2.16 (1.91–2.50) | 3.28 (2.90–3.80) | 4.24 (3.71–4.95) | 5.61 (4.75–6.75) | 6.72 (5.58–8.25) | 7.90 (6.41–9.93) | 9.18 (7.25–11.9) | 11.0 (8.37–14.8) | 12.5 (9.21–17.4) |

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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# Appendix D
# Subarea Soil Type-Land Use
# and
# Infiltration Rate Summary

## AREA ($mi^2$)

| | Agricultural Cover | | | Barren Cover | | | Commercial Cover | | | Open Brush Cover | | | Residential Cover | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Subarea** | *Soil A* | *Soil B* | *Soil D* | *Soil A* | *Soil B* | *Soil D* | *Soil A* | *Soil B* | *Soil D* | *Soil A* | *Soil B* | *Soil D* | *Soil A* | *Soil B* | *Soil D* | **Total Area** | **Area Average RI** | **Pervious Area Infiltration Rate (in/hr)** | **% Impervious** |
| **A1** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.381 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.38 | 62 | 0.45 | 0% |
| **A2** | 0.153 | 0.328 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.48 | 82 | 0.22 | 0% |
| **A3** | 0.172 | 0.336 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.51 | 82 | 0.22 | 0% |
| **A4** | 0.000 | 0.764 | 0.026 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.79 | 85 | 0.19 | 0% |
| **B1** | 0.362 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.36 | 76 | 0.29 | 0% |
| **B2** | 0.314 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.31 | 76 | 0.29 | 0% |
| **B3** | 0.202 | 0.047 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.25 | 78 | 0.27 | 0% |
| **B4** | 0.056 | 0.453 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.51 | 84 | 0.20 | 0% |
| **B5** | 0.011 | 0.508 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.52 | 85 | 0.19 | 0% |
| **B6** | 0.035 | 0.573 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.62 | 85 | 0.19 | 0% |
| **C1** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.131 | 0.218 | 0.000 | 0.000 | 0.000 | 0.000 | 0.35 | 71 | 0.35 | 0% |
| **C2** | 0.238 | 0.124 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.36 | 79 | 0.26 | 0% |
| **C3** | 0.208 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.23 | 77 | 0.28 | 0% |
| **C4** | 0.111 | 0.379 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.49 | 83 | 0.21 | 0% |
| **C5** | 0.407 | 0.076 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.48 | 77 | 0.28 | 0% |
| **C6** | 0.005 | 0.523 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.53 | 85 | 0.19 | 0% |
| **C7** | 0.088 | 0.440 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.53 | 84 | 0.20 | 0% |
| **C8** | 0.000 | 0.086 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.09 | 85 | 0.19 | 0% |
| **D1** | 0.000 | 0.652 | 0.127 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.78 | 86 | 0.18 | 0% |
| **D2** | 0.000 | 0.381 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.38 | 85 | 0.19 | 0% |
| **D3** | 0.000 | 0.518 | 0.187 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.71 | 87 | 0.16 | 0% |
| **D4** | 0.000 | 0.000 | 0.000 | 0.000 | 0.021 | 0.062 | 0.000 | 0.000 | 0.000 | 0.000 | 0.216 | 0.051 | 0.000 | 0.000 | 0.000 | 0.35 | 81 | 0.23 | 0% |
| **D5** | 0.000 | 0.000 | 0.000 | 0.000 | 0.266 | 0.050 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.32 | 87 | 0.16 | 0% |
| **D6** | 0.000 | 0.474 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.599 | 0.014 | 0.000 | 0.000 | 0.000 | 1.09 | 80 | 0.24 | 0% |
| **D7** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.436 | 0.011 | 0.000 | 0.000 | 0.000 | 0.45 | 76 | 0.29 | 0% |
| **E1** | 0.206 | 0.063 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.27 | 78 | 0.27 | 0% |
| **E2** | 0.409 | 0.035 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.44 | 77 | 0.28 | 0% |
| **E3** | 0.707 | 0.301 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.01 | 79 | 0.26 | 0% |
| **E4** | 0.206 | 0.173 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.067 | 0.000 | 0.000 | 0.065 | 0.000 | 0.51 | 80 | 0.24 | 6% |
| **E5** | 0.207 | 0.049 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.26 | 78 | 0.27 | 0% |
| **E6** | 0.082 | 0.158 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.007 | 0.013 | 0.000 | 0.26 | 82 | 0.22 | 4% |
| **E7** | 0.307 | 0.136 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.034 | 0.015 | 0.000 | 0.49 | 79 | 0.26 | 5% |
| **E8** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.229 | 0.262 | 0.000 | 0.50 | 82 | 0.22 | 51% |
| **E9** | 0.278 | 0.204 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.48 | 80 | 0.24 | 0% |
| **E10** | 0.355 | 0.145 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.50 | 79 | 0.26 | 0% |
| **E11** | 0.323 | 0.661 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.98 | 82 | 0.22 | 0% |
| **E12** | 0.000 | 0.480 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.48 | 85 | 0.19 | 0% |
| **E13** | 0.000 | 0.473 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.48 | 85 | 0.19 | 0% |
| **E14** | 0.000 | 0.296 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.30 | 85 | 0.19 | 0% |
| **E15** | 0.053 | 0.423 | 0.054 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.53 | 85 | 0.19 | 0% |
| **E16** | 0.000 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.025 | 0.184 | 0.000 | 0.000 | 0.000 | 0.000 | 0.22 | 75 | 0.30 | 0% |
| **E17** | 0.000 | 0.000 | 0.000 | 0.000 | 0.446 | 0.006 | 0.000 | 0.160 | 0.029 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.64 | 86 | 0.18 | 27% |
| **E18** | 0.000 | 0.049 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.047 | 0.000 | 0.000 | 0.413 | 0.009 | 0.000 | 0.000 | 0.000 | 0.52 | 78 | 0.27 | 8% |
| **E19** | 0.000 | 0.000 | 0.000 | 0.000 | 0.143 | 0.151 | 0.000 | 0.025 | 0.020 | 0.000 | 0.272 | 0.076 | 0.000 | 0.000 | 0.000 | 0.69 | 84 | 0.20 | 6% |
| **E20** | 0.021 | 0.278 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.312 | 0.193 | 0.000 | 0.044 | 0.015 | 0.86 | 82 | 0.22 | 3% |
| **E21** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.677 | 0.167 | 0.000 | 0.000 | 0.000 | 0.84 | 78 | 0.27 | 0% |
| **E22** | 0.000 | 0.313 | 0.467 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.035 | 0.110 | 0.000 | 0.000 | 0.000 | 0.93 | 89 | 0.14 | 0% |

| | RI | | | % Impervious |
|---|---|---|---|---|
| **Cover type** | *Soil A* | *Soil B* | *Soil D* | |
| Agricultural - fallow condition | 76 | 85 | 92 | 0% |
| Barren | 78 | 86 | 93 | 0% |
| Commercial - barren type | 78 | 86 | 93 | 90% |
| Open Brush - poor condition | 62 | 76 | 88 | 0% |
| Residential -barren type | 78 | 86 | 93 | 50% |

## AREA ($mi^2$)

| | Agricultural Cover | | | Barren Cover | | | Commercial Cover | | | Open Brush Cover | | | Residential Cover | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Subarea** | *Soil A* | *Soil B* | *Soil D* | *Soil A* | *Soil B* | *Soil D* | *Soil A* | *Soil B* | *Soil D* | *Soil A* | *Soil B* | *Soil D* | *Soil A* | *Soil B* | *Soil D* | **Total Area** | **Area Average RI** | **Pervious Area Infiltration Rate (in/hr)** | **% Impervious** |
| **F1** | 0.553 | 0.023 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.58 | 76 | 0.29 | 0% |
| **F2** | 0.971 | 0.000 | 0.000 | 0.061 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.03 | 76 | 0.29 | 0% |
| **F3** | 0.422 | 0.022 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.44 | 76 | 0.29 | 0% |
| **F4** | 0.867 | 0.100 | 0.000 | 0.075 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.04 | 77 | 0.28 | 0% |
| **F5** | 0.407 | 0.089 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.50 | 78 | 0.27 | 0% |
| **F6** | 0.469 | 0.025 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.49 | 76 | 0.29 | 0% |
| **F7** | 1.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.02 | 76 | 0.29 | 0% |
| **F8** | 0.504 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.50 | 76 | 0.29 | 0% |
| **F9** | 0.522 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.52 | 76 | 0.29 | 0% |
| **F10** | 0.775 | 0.245 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.02 | 78 | 0.27 | 0% |
| **F11** | 0.668 | 0.754 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.42 | 81 | 0.23 | 0% |
| **F12** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.153 | 0.229 | 0.312 | 0.000 | 0.000 | 0.000 | 0.69 | 78 | 0.27 | 0% |
| **F13** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.087 | 1.361 | 0.000 | 0.000 | 0.000 | 1.45 | 87 | 0.16 | 0% |
| **I1** | 0.026 | 0.036 | 0.000 | 0.171 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.23 | 79 | 0.26 | 0% |
| **I2** | 0.251 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.25 | 76 | 0.29 | 0% |
| **I3** | 0.266 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.27 | 76 | 0.29 | 0% |
| **I4** | 0.478 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.48 | 76 | 0.29 | 0% |
| **I5** | 0.000 | 0.000 | 0.000 | 0.121 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.12 | 78 | 0.27 | 0% |
| **I6** | 0.013 | 0.000 | 0.000 | 0.701 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.71 | 78 | 0.27 | 0% |
| **I7** | 0.511 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.51 | 76 | 0.29 | 0% |
| **I8** | 0.454 | 0.000 | 0.000 | 0.062 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.52 | 76 | 0.29 | 0% |
| **I9** | 0.231 | 0.017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.25 | 77 | 0.28 | 0% |
| **J1** | 0.000 | 0.000 | 0.000 | 0.533 | 0.533 | 0.414 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.48 | 85 | 0.19 | 0% |
| **J2** | 0.000 | 0.000 | 0.000 | 0.299 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.315 | 0.000 | 0.000 | 0.62 | 78 | 0.27 | 26% |
| **J3** | 0.000 | 0.000 | 0.000 | 2.457 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 2.46 | 78 | 0.27 | 0% |
| **J4** | 0.000 | 0.000 | 0.000 | 0.967 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.97 | 78 | 0.27 | 0% |
| **K1** | 0.000 | 0.000 | 0.000 | 0.647 | 3.557 | 1.186 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 5.39 | 87 | 0.16 | 0% |
| **K2** | 0.000 | 0.000 | 0.000 | 0.390 | 1.041 | 0.195 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.63 | 85 | 0.19 | 0% |
| **K3** | 0.000 | 0.000 | 0.000 | 0.546 | 0.014 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.58 | 79 | 0.26 | 0% |
| **K4** | 0.000 | 0.000 | 0.000 | 0.034 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.532 | 0.000 | 0.000 | 0.57 | 78 | 0.27 | 47% |

| | RI | | | % Impervious |
|---|---|---|---|---|
| **Cover type** | *Soil A* | *Soil B* | *Soil D* | |
| Agricultural - fallow condition | 76 | 85 | 92 | 0% |
| Barren | 78 | 86 | 93 | 0% |
| Commercial - barren type | 78 | 86 | 93 | 90% |
| Open Brush - poor condition | 62 | 76 | 88 | 0% |
| Residential -barren type | 78 | 86 | 93 | 50% |

# Appendix E
# HEC-HMS Kinematic Wave Routing Parameter Summary

**Eastern Coachella Valley MDP**

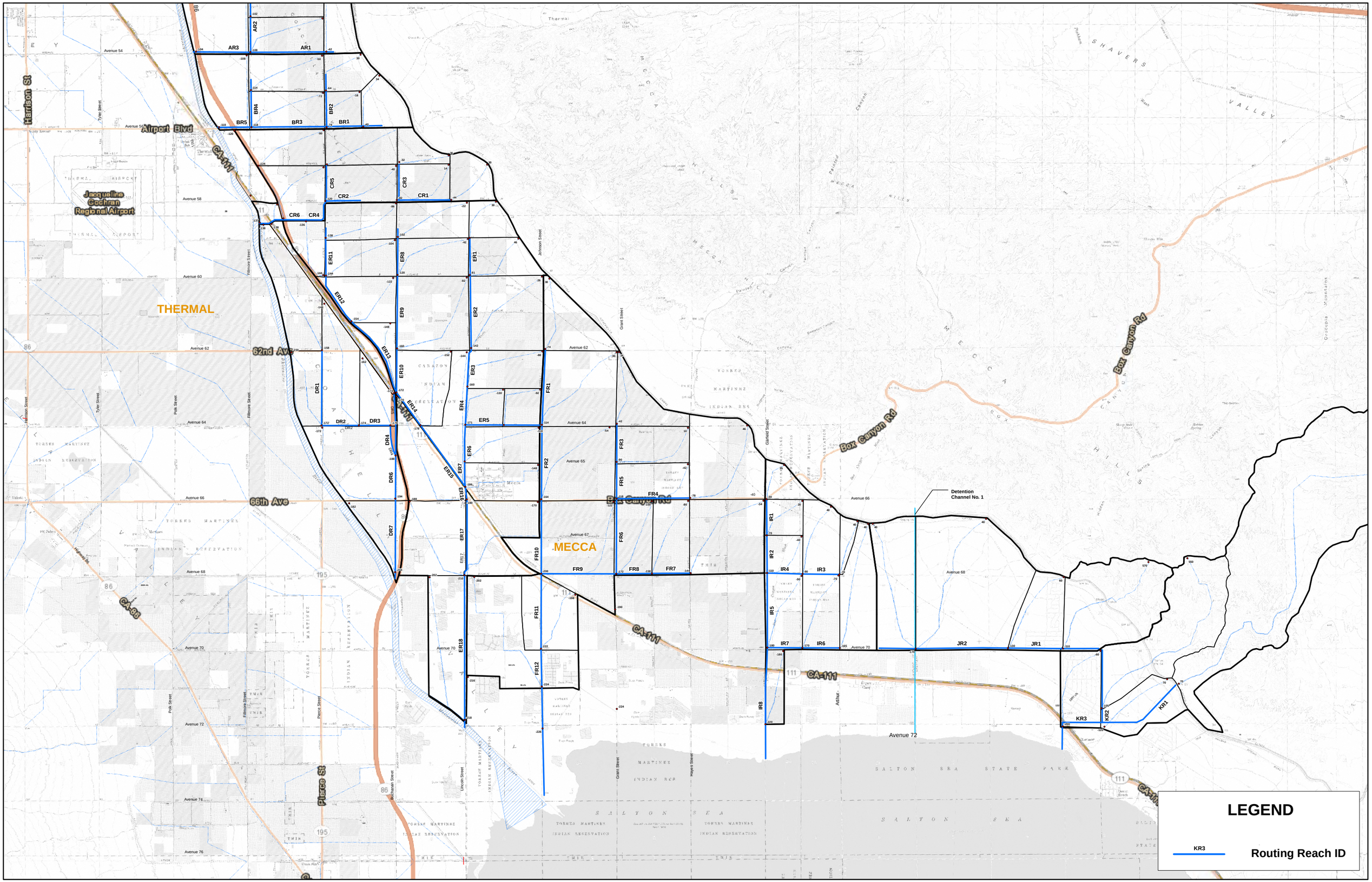
HEC-HMS Kinematic Wave Routing Parameter Summary Table

| *Reach ID* | *Length (ft)* | *Slope (ft/ft)* | *Mannings n-value* | *Shape* | *Bottom Width (ft)* | *Sideslope* |
|---|---|---|---|---|---|---|
| AR1 | 5401 | 0.0122 | 0.015 | trap | 5 | 1.5:1 |
| AR2 | 2590 | 0.0023 | 0.015 | trap | 10 | 1.5:1 |
| AR3 | 3886 | 0.002 | 0.015 | trap | 25 | 1.5:1 |
| BR1 | 2599 | 0.0146 | 0.015 | trap | 5 | 1.5:1 |
| BR2 | 2520 | 0.0024 | 0.015 | trap | 5 | 1.5:1 |
| BR3 | 5367 | 0.0075 | 0.015 | trap | 12 | 1.5:1 |
| BR4 | 2628 | 0.0015 | 0.015 | trap | 12 | 1.5:1 |
| BR5 | 2286 | 0.001 | 0.015 | trap | 35 | 1.5:1 |
| CR1 | 3707 | 0.0103 | 0.015 | trap | 5 | 1.5:1 |
| CR2 | 5160 | 0.0074 | 0.015 | trap | 15 | 1.5:1 |
| CR3 | 2593 | 0.0162 | 0.015 | trap | 5 | 1.5:1 |
| CR4 | 4150 | 0.0036 | 0.015 | trap | 35 | 1.5:1 |
| CR5 | 2591 | 0.0062 | 0.015 | trap | 8 | 1.5:1 |
| CR6 | 1823 | 0.001 | 0.015 | trap | 45 | 1.5:1 |
| CR7 | 4292 | 0.00233 | 0.015 | trap | 15 | 1.5:1 |
| DR1 | 5353 | 0.0026 | 0.015 | trap | 5 | 1.5:1 |
| DR2 | 2654 | 0.0008 | 0.015 | trap | 20 | 1.5:1 |
| DR3 | 2242 | 0.0018 | 0.015 | trap | 15 | 1.5:1 |
| DR4 | 2197 | 0.0046 | 0.015 | trap | 7 | 1.5:1 |
| DR5 | 4419 | 0.0036 | 0.015 | trap | 10 | 1.5:1 |
| DR6 | 3068 | 0.0039 | 0.015 | trap | 17 | 1.5:1 |
| DR7 | 5200 | 0.0019 | 0.015 | trap | 25 | 1.5:1 |
| ER1 | 2644 | 0.0163 | 0.015 | trap | 5 | 1.5:1 |
| ER2 | 5187 | 0.0118 | 0.015 | trap | 5 | 1.5:1 |
| ER3 | 2816 | 0.0064 | 0.015 | trap | 10 | 1.5:1 |
| ER4 | 2705 | 0.0037 | 0.015 | trap | 15 | 1.5:1 |
| ER5 | 2743 | 0.008 | 0.015 | trap | 5 | 1.5:1 |
| ER6 | 2621 | 0.0046 | 0.015 | trap | 20 | 1.5:1 |
| ER7 | 1801 | 0.0022 | 0.015 | trap | 30 | 1.5:1 |
| ER8 | 2701 | 0.0067 | 0.015 | trap | 5 | 1.5:1 |
| ER9 | 5221 | 0.0077 | 0.015 | trap | 5 | 1.5:1 |
| ER10 | 3118 | 0.0038 | 0.015 | trap | 15 | 1.5:1 |
| ER11 | 2682 | 0.0022 | 0.015 | trap | 10 | 1.5:1 |
| ER12 | 3842 | 0.0026 | 0.015 | trap | 10 | 1.5:1 |
| ER13 | 6136 | 0.0029 | 0.015 | trap | 20 | 1.5:1 |
| ER14 | 2889 | 0.0021 | 0.015 | trap | 40 | 1.5:1 |
| ER15 | 5422 | 0.0015 | 0.015 | trap | 50 | 1.5:1 |
| ER16 | 901 | 0.0044 | 0.015 | trap | 50 | 1.5:1 |
| ER17 | 5435 | 0.0037 | 0.015 | trap | 65 | 1.5:1 |
| ER18 | 10293 | 0.0008 | 0.015 | trap | 155 | 1.5:1 |

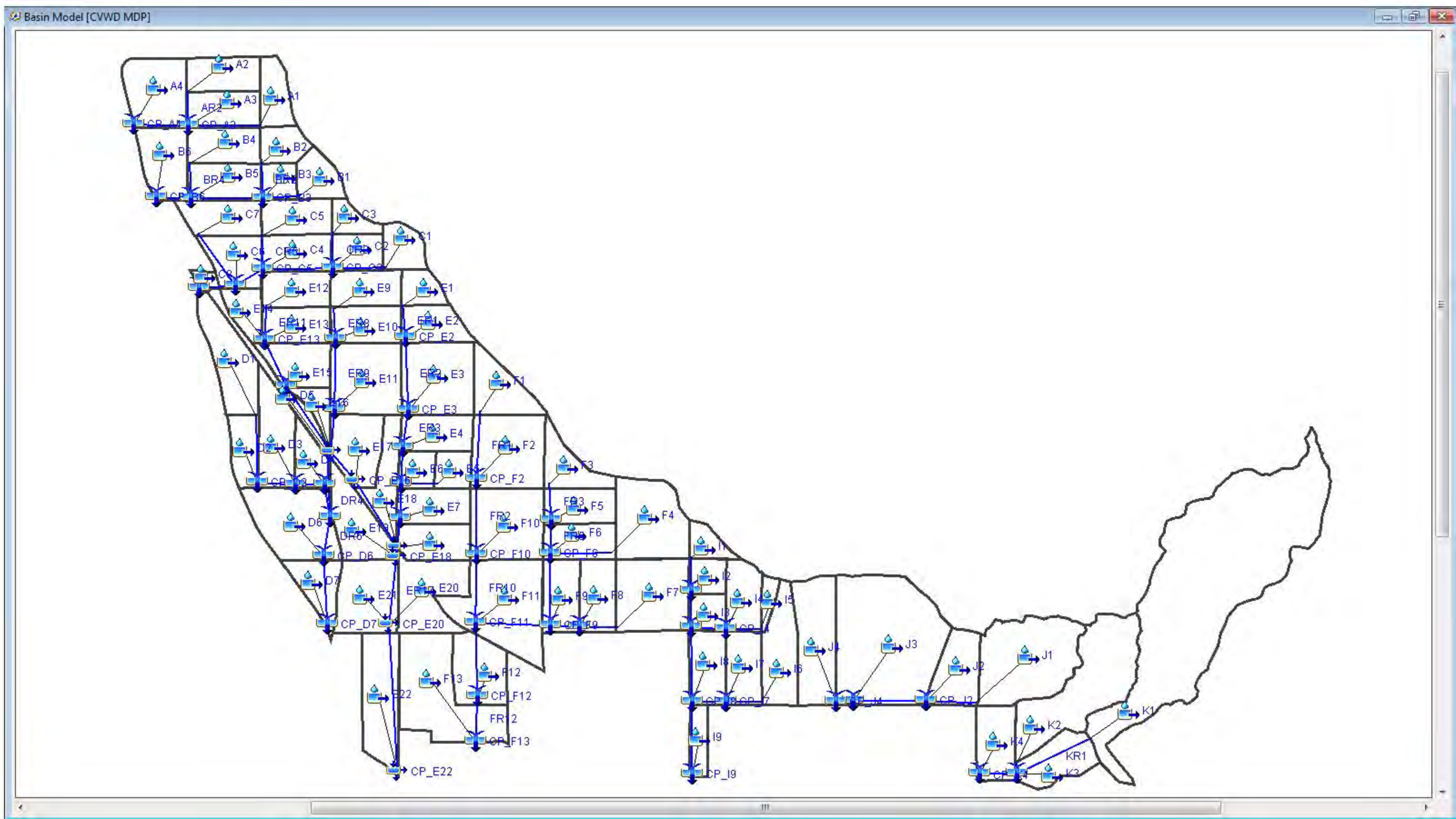
**Eastern Coachella Valley MDP**

HEC-HMS Kinematic Wave Routing Parameter Summary Table

| *Reach ID* | *Length (ft)* | *Slope (ft/ft)* | *Mannings n-value* | *Shape* | *Bottom Width (ft)* | *Sideslope* |
|---|---|---|---|---|---|---|
| FR1 | 5389 | 0.0074 | 0.015 | trap | 6 | 1.5:1 |
| FR2 | 5293 | 0.0094 | 0.015 | trap | 6 | 1.5:1 |
| FR3 | 2715 | 0.0177 | 0.015 | trap | 6 | 1.5:1 |
| FR4 | 5241 | 0.0076 | 0.015 | trap | 6 | 1.5:1 |
| FR5 | 2611 | 0.0107 | 0.015 | trap | 6 | 1.5:1 |
| FR6 | 5343 | 0.0101 | 0.015 | trap | 6 | 1.5:1 |
| FR7 | 2764 | 0.0051 | 0.015 | trap | 6 | 1.5:1 |
| FR8 | 2532 | 0.0055 | 0.015 | trap | 6 | 1.5:1 |
| FR9 | 5351 | 0.0052 | 0.015 | trap | 25 | 1.5:1 |
| FR10 | 5287 | 0.0068 | 0.015 | trap | 6 | 1.5:1 |
| FR11 | 5332 | 0.0041 | 0.015 | trap | 40 | 1.5:1 |
| FR12 | 2692 | 0.0007 | 0.015 | trap | 105 | 1.5:1 |
| IR1 | 2582 | 0.0155 | 0.013 | pipe | 6 | 1.5:1 |
| IR2 | 2675 | 0.0150 | 0.015 | trap | 6 | 1.5:1 |
| IR3 | 2636 | 0.0076 | 0.015 | trap | 6 | 1.5:1 |
| IR4 | 2534 | 0.0079 | 0.015 | trap | 6 | 1.5:1 |
| IR5 | 5298 | 0.0132 | 0.015 | trap | 10 | 1.5:1 |
| IR6 | 2673 | 0.0019 | 0.015 | trap | 10 | 1.5:1 |
| IR7 | 2491 | 0.0040 | 0.015 | trap | 20 | 1.5:1 |
| IR8 | 5445 | 0.0073 | 0.015 | trap | 20 | 1.5:1 |
| JR1 | 3919 | 0.0051 | 0.015 | trap | 10 | 1.5:1 |
| JR2 | 6561 | 0.0061 | 0.015 | trap | 30 | 1.5:1 |
| KR1 | 6905 | 0.0275 | 0.015 | trap | 6 | 1.5:1 |
| KR2 | 1345 | 0.0112 | 0.015 | trap | 15 | 1.5:1 |
| KR3 | 2715 | 0.0295 | 0.015 | trap | 15 | 1.5:1 |


Harrison St
Avenue 54
Airport Blvd
Avenue 58
Jacqueline Cochran Regional Airport
THERMAL AIRPORT
CA-111
Tyler Street
Fillmore Street
Avenue 60
THERMAL
Avenue 62
62nd Ave
Polk Street
Avenue 64
Johnson Street
Grant Street
Garfield Street
Box Canyon Rd
Avenue 65
Avenue 66
66th Ave
Detention Channel No. 1
Avenue 67
MECCA
Avenue 68
Avenue 70
Avenue 72
Avenue 74
Avenue 76
Pierce St
Lincoln Street
Hayes Street
Buchanan Street
Arthur
CA-86
CA-195
SALTON SEA
SALTON SEA STATE PARK
TORRES MARTINEZ INDIAN RESERVATION
CANYON HILLS
SHAVERS VALLEY
AR1
AR2
AR3
BR1
BR2
BR3
BR4
BR5
CR1
CR2
CR3
CR4
CR5
CR6
ER1
ER2
ER3
ER4
ER5
ER6
ER7
ER8
ER9
ER10
ER11
ER12
ER13
ER14
ER15
ER17
ER18
DR1
DR2
DR3
DR4
DR6
DR7
FR1
FR2
FR3
FR4
FR5
FR6
FR7
FR8
FR9
FR10
FR11
IR1
IR2
IR3
IR4
IR5
IR6
IR7
IR8
JR1
JR2
KR1
KR2
KR3
LEGEND
KR3
Routing Reach ID

# Appendix F
# HEC-HMS Summary Output Table


Basin Model [CVWD MDP]
A2
A4
A3
A1
AR2
B4
B6
B2
B5
B3
B1
C7
C5
C3
C1
C4
C2
E12
E9
E1
E13
E10
E2
CP_E13
CP_E2
D1
E15
E11
E3
F1
D5
CP_E3
E4
F2
D3
E7
E6
CP_F2
F3
DR4
E18
E7
F5
F4
D6
F10
F6
CP_D6
CP_E18
CP_F10
D7
E20
F11
F8
F7
CP_D7
CP_E20
CP_F11
I1
I2
I4
I5
I8
I7
I6
J4
J3
J2
J1
CP_I2
F13
F12
E22
CP_F12
FR12
CP_F13
I9
CP_I9
CP_E22
K2
K1
KR1

Project: cvwd-mpd Simulation Run: 100-Year Storm DARF = 1.0

Start of Run: 20Mar2013, 00:00 Basin Model: CVWD MDP
End of Run: 20Mar2013, 16:00 Meteorologic Model: 100-Year Storm
Compute Time: 08Aug2013, 08:26:33 Control Specifications: Control 1

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (IN) |
|---|---|---|---|---|
| A1 | 0.38 | 349.3 | 20Mar2013, 03:15 | 0.79 |
| A2 | 0.48 | 447.9 | 20Mar2013, 03:20 | 1.35 |
| A3 | 0.51 | 478.1 | 20Mar2013, 03:20 | 1.35 |
| A4 | 0.79 | 464.9 | 20Mar2013, 03:40 | 1.50 |
| AR1 | 0.38 | 336.8 | 20Mar2013, 03:20 | 0.79 |
| AR2 | 0.48 | 429.4 | 20Mar2013, 03:25 | 1.35 |
| AR3 | 1.37 | 1182.7 | 20Mar2013, 03:25 | 1.19 |
| B1 | 0.36 | 391.0 | 20Mar2013, 03:10 | 1.12 |
| B2 | 0.31 | 334.7 | 20Mar2013, 03:15 | 1.12 |
| B3 | 0.25 | 274.6 | 20Mar2013, 03:15 | 1.18 |
| B4 | 0.51 | 484.5 | 20Mar2013, 03:20 | 1.45 |
| B5 | 0.52 | 496.8 | 20Mar2013, 03:20 | 1.50 |
| B6 | 0.62 | 410.7 | 20Mar2013, 03:30 | 1.50 |
| BR1 | 0.36 | 387.2 | 20Mar2013, 03:15 | 1.12 |
| BR2 | 0.31 | 317.6 | 20Mar2013, 03:20 | 1.11 |
| BR3 | 0.92 | 911.4 | 20Mar2013, 03:20 | 1.13 |
| BR4 | 0.51 | 471.7 | 20Mar2013, 03:25 | 1.44 |
| BR5 | 1.95 | 1804.5 | 20Mar2013, 03:25 | 1.31 |
| C1 | 0.35 | 369.1 | 20Mar2013, 03:15 | 0.96 |
| C2 | 0.36 | 399.1 | 20Mar2013, 03:15 | 1.21 |
| C3 | 0.23 | 263.6 | 20Mar2013, 03:10 | 1.15 |
| C4 | 0.49 | 461.6 | 20Mar2013, 03:20 | 1.40 |
| C5 | 0.48 | 473.0 | 20Mar2013, 03:15 | 1.15 |
| C6 | 0.53 | 495.5 | 20Mar2013, 03:20 | 1.50 |
| C7 | 0.53 | 502.8 | 20Mar2013, 03:20 | 1.45 |
| C8 | 0.09 | 94.2 | 20Mar2013, 03:15 | 1.50 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (IN) |
|---|---|---|---|---|
| CP_11 | 8.56 | 6760.9 | 20Mar2013, 03:25 | 1.15 |
| CP_A3 | 1.37 | 1204.0 | 20Mar2013, 03:20 | 1.20 |
| CP_A4 | 2.16 | 1484.5 | 20Mar2013, 03:25 | 1.30 |
| CP_B3 | 0.92 | 931.8 | 20Mar2013, 03:15 | 1.13 |
| CP_B5 | 1.95 | 1862.7 | 20Mar2013, 03:20 | 1.31 |
| CP_B6 | 2.57 | 2145.8 | 20Mar2013, 03:25 | 1.35 |
| CP_C3 | 0.94 | 991.3 | 20Mar2013, 03:15 | 1.10 |
| CP_C5 | 1.91 | 1867.5 | 20Mar2013, 03:20 | 1.19 |
| CP_C7 | 2.97 | 2721.3 | 20Mar2013, 03:25 | 1.28 |
| CP_C8 | 3.06 | 2771.5 | 20Mar2013, 03:25 | 1.29 |
| CP_D2 | 1.16 | 702.0 | 20Mar2013, 03:40 | 1.54 |
| CP_D3 | 1.87 | 1127.0 | 20Mar2013, 03:35 | 1.59 |
| CP_D4 | 2.22 | 1322.7 | 20Mar2013, 03:35 | 1.56 |
| CP_D5 | 2.54 | 1440.0 | 20Mar2013, 03:40 | 1.56 |
| CP_D6 | 3.63 | 2071.6 | 20Mar2013, 03:35 | 1.47 |
| CP_D7 | 4.08 | 2272.4 | 20Mar2013, 03:40 | 1.43 |
| CP_E10 | 0.98 | 904.0 | 20Mar2013, 03:20 | 1.24 |
| CP_E11 | 1.96 | 1664.0 | 20Mar2013, 03:25 | 1.30 |
| CP_E13 | 1.26 | 1128.4 | 20Mar2013, 03:20 | 1.50 |
| CP_E15 | 1.79 | 1526.7 | 20Mar2013, 03:25 | 1.50 |
| CP_E15A | 3.97 | 3211.0 | 20Mar2013, 03:30 | 1.37 |
| CP_E16 | 4.61 | 3683.5 | 20Mar2013, 03:30 | 1.44 |
| CP_E17 | 8.87 | 6642.8 | 20Mar2013, 03:30 | 1.39 |
| CP_E18 | 9.56 | 6985.3 | 20Mar2013, 03:30 | 1.40 |
| CP_E2 | 0.71 | 749.4 | 20Mar2013, 03:15 | 1.16 |
| CP_E20 | 11.26 | ~~8058.4~~ | 20Mar2013, 03:35 | 1.40 |
| CP_E22 | 12.19 | ~~8471.4~~ | 20Mar2013, 03:45 | 1.41 |
| CP_E3 | 1.72 | 1635.6 | 20Mar2013, 03:20 | 1.19 |
| CP_E4 | 2.23 | 2001.7 | 20Mar2013, 03:20 | 1.22 |
| CP_E6 | 2.75 | 2340.2 | 20Mar2013, 03:25 | 1.23 |
| CP_E7 | 3.24 | 2705.6 | 20Mar2013, 03:25 | 1.24 |



Note: Line E Node CP_E20 = 7063.5 cfs and Node CP_E22 = 7353.4 cfs
from DARF = 0.90 analysis

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (IN) |
|---|---|---|---|---|
| CP_F10 | 2.63 | 2202.3 | 20Mar2013, 03:25 | 1.14 |
| CP_F12 | 9.25 | 7059.0 | 20Mar2013, 03:30 | 1.15 |
| CP_F13 | 10.70 | ~~7749.0~~ | 20Mar2013, 03:30 | 1.22 |
| CP_F14 | 11.78 | ~~8478.1~~ | 20Mar2013, 03:35 | 1.27 |
| CP_F2 | 1.61 | 1507.8 | 20Mar2013, 03:20 | 1.12 |
| CP_F5 | 0.94 | 873.0 | 20Mar2013, 03:15 | 1.15 |
| CP_F6 | 2.47 | 1997.6 | 20Mar2013, 03:20 | 1.14 |
| CP_F8 | 1.52 | 1218.2 | 20Mar2013, 03:20 | 1.12 |
| CP_F9 | 4.51 | 3559.0 | 20Mar2013, 03:25 | 1.13 |
| CP_I2 | 0.48 | 529.0 | 20Mar2013, 03:15 | 1.16 |
| CP_I3 | 1.35 | 1352.2 | 20Mar2013, 03:15 | 1.14 |
| CP_I4 | 0.60 | 605.9 | 20Mar2013, 03:15 | 1.13 |
| CP_I7 | 1.22 | 956.9 | 20Mar2013, 03:20 | 1.15 |
| CP_I8 | 3.09 | 2665.0 | 20Mar2013, 03:20 | 1.14 |
| CP_I9 | 3.34 | 2775.7 | 20Mar2013, 03:25 | 1.13 |
| CP_J2 | 2.10 | 1793.9 | 20Mar2013, 03:20 | 1.51 |
| CP_J3 | 4.56 | 3545.5 | 20Mar2013, 03:25 | 1.33 |
| CP_J4 | 5.53 | 4293.9 | 20Mar2013, 03:25 | 1.30 |
| CP_K3 | 7.56 | 3267.6 | 20Mar2013, 04:00 | 1.60 |
| CP_K4 | 8.13 | 3432.1 | 20Mar2013, 04:00 | 1.62 |
| CR1 | 0.35 | 340.7 | 20Mar2013, 03:15 | 0.95 |
| CR2 | 0.94 | 957.7 | 20Mar2013, 03:20 | 1.10 |
| CR3 | 0.23 | 251.5 | 20Mar2013, 03:15 | 1.15 |
| CR4 | 1.91 | 1790.9 | 20Mar2013, 03:25 | 1.18 |
| CR5 | 0.48 | 448.2 | 20Mar2013, 03:20 | 1.15 |
| CR6 | 2.97 | 2702.1 | 20Mar2013, 03:25 | 1.28 |
| CR7 | 0.53 | 498.6 | 20Mar2013, 03:25 | 1.44 |
| D1 | 0.78 | 518.7 | 20Mar2013, 03:35 | 1.56 |
| D2 | 0.38 | 315.1 | 20Mar2013, 03:20 | 1.50 |
| D3 | 0.71 | 515.7 | 20Mar2013, 03:30 | 1.68 |
| D4 | 0.35 | 321.6 | 20Mar2013, 03:20 | 1.40 |



Note: Node CP_F13 = 7059.0 cfs (taken from upstream Node CP_F12).
Using DARF = 0.91 analysis, results in a lesser value (e.g. downstream Node discharge cannot be less than upstream Node discharge).

Node CP_F14 not used in study

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (IN) |
|---|---|---|---|---|
| D5 | 0.32 | 179.2 | 20Mar2013, 03:45 | 1.56 |
| D6 | 1.09 | 716.8 | 20Mar2013, 03:30 | 1.28 |
| D7 | 0.45 | 344.7 | 20Mar2013, 03:25 | 1.12 |
| DR1 | 0.78 | 506.4 | 20Mar2013, 03:40 | 1.55 |
| DR2 | 1.16 | 696.0 | 20Mar2013, 03:45 | 1.53 |
| DR3 | 1.87 | 1126.2 | 20Mar2013, 03:40 | 1.59 |
| DR4 | 2.22 | 1310.3 | 20Mar2013, 03:35 | 1.56 |
| DR5 | 0.32 | 176.6 | 20Mar2013, 03:50 | 1.55 |
| DR6 | 2.54 | 1433.4 | 20Mar2013, 03:45 | 1.56 |
| DR7 | 3.63 | 2068.7 | 20Mar2013, 03:40 | 1.47 |
| DUMMY_REACH | 4.56 | 3536.9 | 20Mar2013, 03:25 | 1.33 |
| E1 | 0.27 | 297.7 | 20Mar2013, 03:15 | 1.18 |
| E10 | 0.50 | 456.1 | 20Mar2013, 03:20 | 1.21 |
| E11 | 0.98 | 790.0 | 20Mar2013, 03:25 | 1.35 |
| E12 | 0.48 | 459.3 | 20Mar2013, 03:20 | 1.50 |
| E13 | 0.48 | 458.5 | 20Mar2013, 03:20 | 1.50 |
| E14 | 0.30 | 248.7 | 20Mar2013, 03:25 | 1.50 |
| E15 | 0.53 | 534.8 | 20Mar2013, 03:15 | 1.50 |
| E16 | 0.22 | 175.8 | 20Mar2013, 03:20 | 1.09 |
| E17 | 0.64 | 548.7 | 20Mar2013, 03:25 | 1.85 |
| E18 | 0.52 | 361.8 | 20Mar2013, 03:30 | 1.29 |
| E19 | 0.69 | 450.0 | 20Mar2013, 03:35 | 1.52 |
| E2 | 0.44 | 463.6 | 20Mar2013, 03:15 | 1.15 |
| E20 | 0.86 | 647.1 | 20Mar2013, 03:30 | 1.70 |
| E21 | 0.84 | 618.4 | 20Mar2013, 03:25 | 1.18 |
| E22 | 0.93 | 569.4 | 20Mar2013, 03:40 | 1.80 |
| E3 | 1.01 | 920.5 | 20Mar2013, 03:20 | 1.21 |
| E4 | 0.51 | 452.3 | 20Mar2013, 03:20 | 1.34 |
| E5 | 0.26 | 237.7 | 20Mar2013, 03:15 | 1.18 |
| E6 | 0.26 | 257.8 | 20Mar2013, 03:15 | 1.40 |
| E7 | 0.49 | 450.9 | 20Mar2013, 03:20 | 1.28 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (IN) |
|---|---|---|---|---|
| E8 | 0.50 | 471.2 | 20Mar2013, 03:20 | 1.98 |
| E9 | 0.48 | 453.1 | 20Mar2013, 03:15 | 1.28 |
| ER1 | 0.27 | 285.9 | 20Mar2013, 03:15 | 1.18 |
| ER10 | 1.96 | 1601.3 | 20Mar2013, 03:25 | 1.30 |
| ER11 | 0.48 | 441.5 | 20Mar2013, 03:25 | 1.50 |
| ER12 | 1.26 | 1115.9 | 20Mar2013, 03:25 | 1.50 |
| ER13 | 1.79 | 1512.9 | 20Mar2013, 03:30 | 1.49 |
| ER14 | 3.97 | 3194.9 | 20Mar2013, 03:30 | 1.37 |
| ER15 | 4.61 | 3635.0 | 20Mar2013, 03:35 | 1.43 |
| ER16 | 8.87 | 6570.7 | 20Mar2013, 03:30 | 1.39 |
| ER17 | 9.56 | 6971.0 | 20Mar2013, 03:35 | 1.39 |
| ER18 | 11.26 | 7921.0 | 20Mar2013, 03:45 | 1.38 |
| ER2 | 0.71 | 715.1 | 20Mar2013, 03:20 | 1.15 |
| ER3 | 1.72 | 1549.4 | 20Mar2013, 03:20 | 1.19 |
| ER4 | 2.23 | 1925.6 | 20Mar2013, 03:25 | 1.22 |
| ER5 | 0.26 | 236.5 | 20Mar2013, 03:20 | 1.17 |
| ER6 | 2.75 | 2329.4 | 20Mar2013, 03:25 | 1.23 |
| ER7 | 3.24 | 2667.6 | 20Mar2013, 03:25 | 1.24 |
| ER8 | 0.48 | 447.8 | 20Mar2013, 03:20 | 1.27 |
| ER9 | 0.98 | 874.0 | 20Mar2013, 03:25 | 1.24 |
| F1 | 0.58 | 633.7 | 20Mar2013, 03:15 | 1.12 |
| F10 | 1.02 | 856.6 | 20Mar2013, 03:20 | 1.18 |
| F11 | 1.42 | 1271.0 | 20Mar2013, 03:20 | 1.28 |
| F12 | 0.69 | 624.0 | 20Mar2013, 03:20 | 1.18 |
| F13 | 1.45 | 932.5 | 20Mar2013, 03:35 | 1.68 |
| F14 | 1.08 | 814.5 | 20Mar2013, 03:30 | 1.80 |
| F2 | 1.03 | 893.9 | 20Mar2013, 03:20 | 1.12 |
| F3 | 0.44 | 474.3 | 20Mar2013, 03:15 | 1.12 |
| F4 | 1.04 | 860.6 | 20Mar2013, 03:20 | 1.15 |
| F5 | 0.50 | 452.1 | 20Mar2013, 03:20 | 1.18 |
| F6 | 0.49 | 437.6 | 20Mar2013, 03:20 | 1.12 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (IN) |
|---|---|---|---|---|
| F7 | 1.02 | 868.0 | 20Mar2013, 03:20 | 1.12 |
| F8 | 0.50 | 446.2 | 20Mar2013, 03:20 | 1.12 |
| F9 | 0.52 | 464.5 | 20Mar2013, 03:20 | 1.12 |
| FR1 | 0.58 | 614.0 | 20Mar2013, 03:20 | 1.11 |
| FR10 | 2.63 | 2176.5 | 20Mar2013, 03:25 | 1.14 |
| FR11 | 8.56 | 6623.5 | 20Mar2013, 03:30 | 1.15 |
| FR12 | 9.25 | 6941.0 | 20Mar2013, 03:30 | 1.15 |
| FR13 | 10.70 | 7734.6 | 20Mar2013, 03:35 | 1.22 |
| FR2 | 1.61 | 1416.7 | 20Mar2013, 03:25 | 1.11 |
| FR3 | 0.44 | 431.7 | 20Mar2013, 03:15 | 1.12 |
| FR4 | 1.04 | 846.8 | 20Mar2013, 03:25 | 1.14 |
| FR5 | 0.94 | 866.3 | 20Mar2013, 03:20 | 1.15 |
| FR6 | 2.47 | 1982.0 | 20Mar2013, 03:25 | 1.14 |
| FR7 | 1.02 | 816.6 | 20Mar2013, 03:25 | 1.12 |
| FR8 | 1.52 | 1194.9 | 20Mar2013, 03:25 | 1.12 |
| FR9 | 4.51 | 3474.0 | 20Mar2013, 03:25 | 1.13 |
| I1 | 0.23 | 297.3 | 20Mar2013, 03:10 | 1.21 |
| I2 | 0.25 | 269.3 | 20Mar2013, 03:15 | 1.12 |
| I3 | 0.27 | 296.4 | 20Mar2013, 03:15 | 1.12 |
| I4 | 0.48 | 487.5 | 20Mar2013, 03:15 | 1.12 |
| I5 | 0.12 | 133.3 | 20Mar2013, 03:15 | 1.18 |
| I6 | 0.71 | 608.3 | 20Mar2013, 03:20 | 1.18 |
| I7 | 0.51 | 469.2 | 20Mar2013, 03:15 | 1.12 |
| I8 | 0.52 | 474.6 | 20Mar2013, 03:15 | 1.12 |
| I9 | 0.25 | 224.9 | 20Mar2013, 03:20 | 1.15 |
| IR1 | 0.23 | 259.7 | 20Mar2013, 03:15 | 1.21 |
| IR2 | 0.48 | 525.6 | 20Mar2013, 03:15 | 1.16 |
| IR3 | 0.12 | 123.5 | 20Mar2013, 03:20 | 1.17 |
| IR4 | 0.60 | 567.9 | 20Mar2013, 03:20 | 1.13 |
| IR5 | 1.35 | 1304.4 | 20Mar2013, 03:20 | 1.13 |
| IR6 | 0.71 | 590.9 | 20Mar2013, 03:25 | 1.17 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (IN) |
|---|---|---|---|---|
| IR7 | 1.22 | 955.5 | 20Mar2013, 03:25 | 1.15 |
| IR8 | 3.09 | 2589.1 | 20Mar2013, 03:25 | 1.13 |
| J1 | 1.48 | 1377.1 | 20Mar2013, 03:20 | 1.50 |
| J2 | 0.62 | 608.4 | 20Mar2013, 03:15 | 1.56 |
| J3 | 2.46 | 1769.2 | 20Mar2013, 03:25 | 1.18 |
| J4 | 0.97 | 757.0 | 20Mar2013, 03:25 | 1.18 |
| JR1 | 1.48 | 1307.3 | 20Mar2013, 03:25 | 1.50 |
| JR2 | 2.10 | 1776.4 | 20Mar2013, 03:25 | 1.51 |
| K1 | 5.39 | 2509.4 | 20Mar2013, 04:00 | 1.68 |
| K2 | 1.63 | 1060.1 | 20Mar2013, 03:35 | 1.50 |
| K3 | 0.54 | 564.5 | 20Mar2013, 03:15 | 1.21 |
| K4 | 0.57 | 578.0 | 20Mar2013, 03:15 | 1.86 |
| KR1 | 5.39 | 2492.5 | 20Mar2013, 04:00 | 1.68 |
| KR2 | 1.63 | 1045.5 | 20Mar2013, 03:35 | 1.50 |
| KR3 | 7.56 | 3255.2 | 20Mar2013, 04:00 | 1.60 |

Project: cvwd-mdp Simulation Run: 100-Year Storm DARF = 0.90

Start of Run: 20Mar2013, 00:00 Basin Model: CVWD MDP
End of Run: 20Mar2013, 16:00 Meteorologic Model: 100-Year Storm DARF
Compute Time: 20Nov2013, 15:25:45 Control Specifications: Control 1

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| A1 | 0.38 | 305.0 | 20Mar2013, 03:15 | 13.3 |
| A2 | 0.48 | 396.7 | 20Mar2013, 03:20 | 29.0 |
| A3 | 0.51 | 423.4 | 20Mar2013, 03:20 | 30.8 |
| A4 | 0.79 | 409.9 | 20Mar2013, 03:40 | 52.9 |
| AR1 | 0.38 | 293.6 | 20Mar2013, 03:20 | 13.3 |
| AR2 | 0.48 | 381.3 | 20Mar2013, 03:25 | 29.0 |
| AR3 | 1.37 | 1052.0 | 20Mar2013, 03:25 | 72.9 |
| B1 | 0.36 | 345.3 | 20Mar2013, 03:10 | 17.7 |
| B2 | 0.31 | 295.6 | 20Mar2013, 03:15 | 15.2 |
| B3 | 0.25 | 242.9 | 20Mar2013, 03:15 | 13.0 |
| B4 | 0.51 | 429.7 | 20Mar2013, 03:20 | 33.0 |
| B5 | 0.52 | 441.0 | 20Mar2013, 03:20 | 34.8 |
| B6 | 0.62 | 362.8 | 20Mar2013, 03:30 | 41.5 |
| BR1 | 0.36 | 341.9 | 20Mar2013, 03:15 | 17.7 |
| BR2 | 0.31 | 280.8 | 20Mar2013, 03:20 | 15.2 |
| BR3 | 0.92 | 808.8 | 20Mar2013, 03:20 | 45.8 |
| BR4 | 0.51 | 420.9 | 20Mar2013, 03:25 | 32.9 |
| BR5 | 1.95 | 1603.4 | 20Mar2013, 03:25 | 113.2 |
| C1 | 0.35 | 324.6 | 20Mar2013, 03:15 | 14.8 |
| C2 | 0.36 | 353.3 | 20Mar2013, 03:15 | 19.3 |
| C3 | 0.23 | 233.1 | 20Mar2013, 03:10 | 11.6 |
| C4 | 0.49 | 409.1 | 20Mar2013, 03:20 | 30.6 |
| C5 | 0.48 | 417.4 | 20Mar2013, 03:15 | 24.3 |
| C6 | 0.53 | 439.7 | 20Mar2013, 03:20 | 35.5 |
| C7 | 0.53 | 445.9 | 20Mar2013, 03:20 | 34.3 |
| C8 | 0.09 | 83.7 | 20Mar2013, 03:15 | 6.0 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| CP_A3 | 1.37 | 1059.0 | 20Mar2013, 03:20 | 73.1 |
| CP_A4 | 2.16 | 1315.4 | 20Mar2013, 03:25 | 125.9 |
| CP_B3 | 0.92 | 821.0 | 20Mar2013, 03:15 | 45.9 |
| CP_B5 | 1.95 | 1650.3 | 20Mar2013, 03:20 | 113.5 |
| CP_B6 | 2.57 | 1903.9 | 20Mar2013, 03:25 | 154.7 |
| CP_C3 | 0.94 | 874.1 | 20Mar2013, 03:15 | 45.7 |
| CP_C5 | 1.91 | 1656.4 | 20Mar2013, 03:20 | 100.3 |
| CP_C7 | 2.97 | 2419.3 | 20Mar2013, 03:25 | 169.6 |
| CP_C8 | 3.06 | 2444.4 | 20Mar2013, 03:25 | 175.5 |
| CP_D2 | 1.16 | 618.2 | 20Mar2013, 03:40 | 79.6 |
| CP_D3 | 1.87 | 990.8 | 20Mar2013, 03:35 | 133.2 |
| CP_D4 | 2.22 | 1161.4 | 20Mar2013, 03:35 | 155.0 |
| CP_D5 | 2.54 | 1261.7 | 20Mar2013, 03:40 | 177.2 |
| CP_D6 | 3.63 | 1808.9 | 20Mar2013, 03:35 | 239.2 |
| CP_D7 | 4.08 | 1974.3 | 20Mar2013, 03:40 | 260.8 |
| CP_E10 | 0.98 | 798.7 | 20Mar2013, 03:20 | 54.1 |
| CP_E11 | 1.96 | 1475.5 | 20Mar2013, 03:25 | 113.3 |
| CP_E13 | 1.26 | 1000.2 | 20Mar2013, 03:20 | 84.4 |
| CP_E15 | 1.79 | 1350.4 | 20Mar2013, 03:25 | 119.8 |
| CP_E15A | 3.97 | 2835.7 | 20Mar2013, 03:30 | 243.1 |
| CP_E16 | 4.61 | 3244.9 | 20Mar2013, 03:30 | 297.3 |
| CP_E17 | 8.87 | 5803.7 | 20Mar2013, 03:30 | 552.2 |
| CP_E18 | 9.56 | 6138.2 | 20Mar2013, 03:35 | 599.6 |
| CP_E2 | 0.71 | 661.8 | 20Mar2013, 03:15 | 36.3 |
| CP_E20 | 11.26 | 7063.5 | 20Mar2013, 03:35 | 708.5 |
| CP_E22 | 12.19 | 7353.4 | 20Mar2013, 03:50 | 773.9 |
| CP_E3 | 1.72 | 1446.5 | 20Mar2013, 03:20 | 90.5 |
| CP_E4 | 2.23 | 1762.7 | 20Mar2013, 03:20 | 121.1 |
| CP_E6 | 2.75 | 2069.4 | 20Mar2013, 03:25 | 151.0 |
| CP_E7 | 3.24 | 2383.6 | 20Mar2013, 03:25 | 179.1 |
| CP_F10 | 2.63 | 1943.8 | 20Mar2013, 03:25 | 131.8 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| CP_F11 | 8.56 | 5919.2 | 20Mar2013, 03:25 | 435.6 |
| CP_F12 | 9.25 | 6205.6 | 20Mar2013, 03:30 | 470.3 |
| CP_F13 | 10.70 | 6822.2 | 20Mar2013, 03:35 | 578.1 |
| CP_F2 | 1.61 | 1330.4 | 20Mar2013, 03:20 | 79.0 |
| CP_F5 | 0.94 | 768.1 | 20Mar2013, 03:15 | 47.6 |
| CP_F6 | 2.47 | 1751.8 | 20Mar2013, 03:20 | 124.2 |
| CP_F8 | 1.52 | 1066.2 | 20Mar2013, 03:20 | 74.5 |
| CP_F9 | 4.51 | 3124.4 | 20Mar2013, 03:25 | 224.0 |
| CP_I2 | 0.48 | 468.2 | 20Mar2013, 03:15 | 24.6 |
| CP_I3 | 1.35 | 1188.9 | 20Mar2013, 03:15 | 67.7 |
| CP_I4 | 0.60 | 534.2 | 20Mar2013, 03:15 | 29.8 |
| CP_I7 | 1.22 | 839.4 | 20Mar2013, 03:25 | 61.9 |
| CP_I8 | 3.09 | 2341.1 | 20Mar2013, 03:20 | 154.8 |
| CP_I9 | 3.34 | 2446.4 | 20Mar2013, 03:25 | 166.9 |
| CP_J2 | 2.10 | 1585.0 | 20Mar2013, 03:25 | 143.3 |
| CP_J3 | 4.56 | 3118.8 | 20Mar2013, 03:25 | 271.2 |
| CP_J4 | 5.53 | 3775.3 | 20Mar2013, 03:25 | 321.8 |
| CP_K3 | 7.56 | 2863.4 | 20Mar2013, 04:00 | 545.4 |
| CP_K4 | 8.13 | 3003.6 | 20Mar2013, 04:00 | 595.1 |
| CR1 | 0.35 | 298.3 | 20Mar2013, 03:15 | 14.7 |
| CR2 | 0.94 | 851.3 | 20Mar2013, 03:20 | 45.5 |
| CR3 | 0.23 | 222.5 | 20Mar2013, 03:15 | 11.6 |
| CR4 | 1.91 | 1595.2 | 20Mar2013, 03:25 | 99.9 |
| CR5 | 0.48 | 396.0 | 20Mar2013, 03:20 | 24.2 |
| CR6 | 2.97 | 2382.9 | 20Mar2013, 03:25 | 169.4 |
| CR7 | 0.53 | 441.6 | 20Mar2013, 03:25 | 34.1 |
| D1 | 0.78 | 458.6 | 20Mar2013, 03:35 | 54.3 |
| D2 | 0.38 | 279.2 | 20Mar2013, 03:20 | 25.5 |
| D3 | 0.71 | 457.4 | 20Mar2013, 03:30 | 53.6 |
| D4 | 0.35 | 284.9 | 20Mar2013, 03:20 | 21.9 |
| D5 | 0.32 | 158.1 | 20Mar2013, 03:45 | 22.3 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| D6 | 1.09 | 630.5 | 20Mar2013, 03:30 | 62.0 |
| D7 | 0.45 | 302.5 | 20Mar2013, 03:25 | 22.1 |
| DR1 | 0.78 | 446.3 | 20Mar2013, 03:40 | 54.2 |
| DR2 | 1.16 | 613.7 | 20Mar2013, 03:45 | 79.5 |
| DR3 | 1.87 | 988.6 | 20Mar2013, 03:40 | 133.1 |
| DR4 | 2.22 | 1148.3 | 20Mar2013, 03:35 | 155.0 |
| DR5 | 0.32 | 155.2 | 20Mar2013, 03:50 | 22.2 |
| DR6 | 2.54 | 1257.4 | 20Mar2013, 03:45 | 177.1 |
| DR7 | 3.63 | 1798.5 | 20Mar2013, 03:40 | 238.8 |
| DUMMY_REACH | 4.56 | 3109.4 | 20Mar2013, 03:25 | 271.2 |
| E1 | 0.27 | 263.3 | 20Mar2013, 03:15 | 14.1 |
| E10 | 0.50 | 402.6 | 20Mar2013, 03:20 | 26.8 |
| E11 | 0.98 | 698.1 | 20Mar2013, 03:25 | 59.3 |
| E12 | 0.48 | 407.7 | 20Mar2013, 03:20 | 32.2 |
| E13 | 0.48 | 407.0 | 20Mar2013, 03:20 | 32.2 |
| E14 | 0.30 | 220.4 | 20Mar2013, 03:25 | 20.1 |
| E15 | 0.53 | 475.0 | 20Mar2013, 03:15 | 35.5 |
| E16 | 0.22 | 154.3 | 20Mar2013, 03:20 | 10.5 |
| E17 | 0.64 | 488.8 | 20Mar2013, 03:25 | 54.4 |
| E18 | 0.52 | 318.4 | 20Mar2013, 03:30 | 30.2 |
| E19 | 0.69 | 397.6 | 20Mar2013, 03:35 | 47.2 |
| E2 | 0.44 | 409.5 | 20Mar2013, 03:15 | 22.2 |
| E20 | 0.86 | 574.4 | 20Mar2013, 03:30 | 66.3 |
| E21 | 0.84 | 543.6 | 20Mar2013, 03:25 | 43.8 |
| E22 | 0.93 | 505.0 | 20Mar2013, 03:40 | 76.2 |
| E3 | 1.01 | 812.5 | 20Mar2013, 03:20 | 54.2 |
| E4 | 0.51 | 400.1 | 20Mar2013, 03:20 | 30.7 |
| E5 | 0.26 | 209.6 | 20Mar2013, 03:15 | 13.5 |
| E6 | 0.26 | 228.6 | 20Mar2013, 03:15 | 16.4 |
| E7 | 0.49 | 398.5 | 20Mar2013, 03:20 | 28.1 |
| E8 | 0.50 | 420.8 | 20Mar2013, 03:20 | 46.5 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| E9 | 0.48 | 400.7 | 20Mar2013, 03:15 | 27.3 |
| ER1 | 0.27 | 252.3 | 20Mar2013, 03:15 | 14.1 |
| ER10 | 1.96 | 1411.4 | 20Mar2013, 03:25 | 113.2 |
| ER11 | 0.48 | 394.0 | 20Mar2013, 03:25 | 32.1 |
| ER12 | 1.26 | 986.6 | 20Mar2013, 03:25 | 84.3 |
| ER13 | 1.79 | 1329.4 | 20Mar2013, 03:30 | 119.4 |
| ER14 | 3.97 | 2810.0 | 20Mar2013, 03:30 | 242.9 |
| ER15 | 4.61 | 3211.3 | 20Mar2013, 03:35 | 296.4 |
| ER16 | 8.87 | 5740.6 | 20Mar2013, 03:35 | 552.5 |
| ER17 | 9.56 | 6105.4 | 20Mar2013, 03:35 | 598.5 |
| ER18 | 11.26 | 6903.4 | 20Mar2013, 03:50 | 697.7 |
| ER2 | 0.71 | 634.0 | 20Mar2013, 03:20 | 36.2 |
| ER3 | 1.72 | 1362.7 | 20Mar2013, 03:20 | 90.5 |
| ER4 | 2.23 | 1702.8 | 20Mar2013, 03:25 | 121.1 |
| ER5 | 0.26 | 208.6 | 20Mar2013, 03:20 | 13.5 |
| ER6 | 2.75 | 2052.1 | 20Mar2013, 03:25 | 151.0 |
| ER7 | 3.24 | 2339.7 | 20Mar2013, 03:25 | 179.2 |
| ER8 | 0.48 | 396.2 | 20Mar2013, 03:20 | 27.3 |
| ER9 | 0.98 | 777.3 | 20Mar2013, 03:25 | 54.0 |
| F1 | 0.58 | 559.7 | 20Mar2013, 03:15 | 28.5 |
| F10 | 1.02 | 754.6 | 20Mar2013, 03:20 | 53.1 |
| F11 | 1.42 | 1123.3 | 20Mar2013, 03:20 | 80.8 |
| F12 | 0.69 | 550.3 | 20Mar2013, 03:20 | 35.9 |
| F13 | 1.45 | 825.8 | 20Mar2013, 03:35 | 109.5 |
| F2 | 1.03 | 786.6 | 20Mar2013, 03:20 | 50.6 |
| F3 | 0.44 | 418.8 | 20Mar2013, 03:15 | 21.6 |
| F4 | 1.04 | 757.3 | 20Mar2013, 03:20 | 52.6 |
| F5 | 0.50 | 398.7 | 20Mar2013, 03:20 | 26.0 |
| F6 | 0.49 | 385.2 | 20Mar2013, 03:20 | 24.1 |
| F7 | 1.02 | 763.6 | 20Mar2013, 03:20 | 50.1 |
| F8 | 0.50 | 392.7 | 20Mar2013, 03:20 | 24.5 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| F9 | 0.52 | 408.9 | 20Mar2013, 03:20 | 25.5 |
| FR1 | 0.58 | 543.8 | 20Mar2013, 03:20 | 28.4 |
| FR10 | 2.63 | 1908.3 | 20Mar2013, 03:25 | 131.5 |
| FR11 | 8.56 | 5824.4 | 20Mar2013, 03:30 | 434.3 |
| FR12 | 9.25 | 6034.7 | 20Mar2013, 03:30 | 468.6 |
| FR2 | 1.61 | 1253.1 | 20Mar2013, 03:25 | 78.7 |
| FR3 | 0.44 | 379.1 | 20Mar2013, 03:15 | 21.6 |
| FR4 | 1.04 | 742.0 | 20Mar2013, 03:25 | 52.5 |
| FR5 | 0.94 | 764.0 | 20Mar2013, 03:20 | 47.6 |
| FR6 | 2.47 | 1740.4 | 20Mar2013, 03:25 | 124.0 |
| FR7 | 1.02 | 718.8 | 20Mar2013, 03:25 | 50.0 |
| FR8 | 1.52 | 1049.0 | 20Mar2013, 03:25 | 74.5 |
| FR9 | 4.51 | 3031.9 | 20Mar2013, 03:25 | 223.3 |
| I1 | 0.23 | 263.7 | 20Mar2013, 03:10 | 12.3 |
| I2 | 0.25 | 237.7 | 20Mar2013, 03:15 | 12.3 |
| I3 | 0.27 | 261.8 | 20Mar2013, 03:15 | 13.3 |
| I4 | 0.48 | 430.1 | 20Mar2013, 03:15 | 23.6 |
| I5 | 0.12 | 117.9 | 20Mar2013, 03:15 | 6.3 |
| I6 | 0.71 | 536.0 | 20Mar2013, 03:20 | 37.0 |
| I7 | 0.51 | 413.2 | 20Mar2013, 03:15 | 25.0 |
| I8 | 0.52 | 417.9 | 20Mar2013, 03:15 | 25.5 |
| I9 | 0.25 | 198.2 | 20Mar2013, 03:20 | 12.6 |
| IR1 | 0.23 | 230.4 | 20Mar2013, 03:15 | 12.4 |
| IR2 | 0.48 | 464.4 | 20Mar2013, 03:15 | 24.6 |
| IR3 | 0.12 | 109.9 | 20Mar2013, 03:20 | 6.2 |
| IR4 | 0.60 | 501.5 | 20Mar2013, 03:20 | 29.8 |
| IR5 | 1.35 | 1151.6 | 20Mar2013, 03:20 | 67.4 |
| IR6 | 0.71 | 521.1 | 20Mar2013, 03:25 | 36.9 |
| IR7 | 1.22 | 838.7 | 20Mar2013, 03:25 | 61.8 |
| IR8 | 3.09 | 2282.6 | 20Mar2013, 03:25 | 154.3 |
| J1 | 1.48 | 1222.0 | 20Mar2013, 03:20 | 99.2 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| J2 | 0.62 | 540.1 | 20Mar2013, 03:15 | 44.3 |
| J3 | 2.46 | 1554.4 | 20Mar2013, 03:25 | 128.1 |
| J4 | 0.97 | 665.9 | 20Mar2013, 03:25 | 50.5 |
| JR1 | 1.48 | 1162.8 | 20Mar2013, 03:25 | 99.0 |
| JR2 | 2.10 | 1564.4 | 20Mar2013, 03:25 | 143.1 |
| K1 | 5.39 | 2210.7 | 20Mar2013, 04:00 | 407.2 |
| K2 | 1.63 | 936.2 | 20Mar2013, 03:35 | 109.2 |
| K3 | 0.54 | 499.3 | 20Mar2013, 03:15 | 29.0 |
| K4 | 0.57 | 515.3 | 20Mar2013, 03:15 | 49.7 |
| KR1 | 5.39 | 2195.1 | 20Mar2013, 04:00 | 407.1 |
| KR2 | 1.63 | 922.5 | 20Mar2013, 03:35 | 109.3 |
| KR3 | 7.56 | 2851.2 | 20Mar2013, 04:00 | 545.4 |

Project: cvwd-mdp Simulation Run: 100-Year Storm DARF = 0.91

Start of Run: 20Mar2013, 00:00 Basin Model: CVWD MDP
End of Run: 20Mar2013, 16:00 Meteorologic Model: 100-Storm DARF = 0.91
Compute Time: 20Nov2013, 15:53:12 Control Specifications: Control 1

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| A1 | 0.38 | 309.2 | 20Mar2013, 03:15 | 13.5 |
| A2 | 0.48 | 401.6 | 20Mar2013, 03:20 | 29.5 |
| A3 | 0.51 | 428.6 | 20Mar2013, 03:20 | 31.4 |
| A4 | 0.79 | 415.0 | 20Mar2013, 03:40 | 53.8 |
| AR1 | 0.38 | 301.9 | 20Mar2013, 03:20 | 13.5 |
| AR2 | 0.48 | 386.3 | 20Mar2013, 03:25 | 29.5 |
| AR3 | 1.37 | 1066.5 | 20Mar2013, 03:25 | 74.2 |
| B1 | 0.36 | 349.8 | 20Mar2013, 03:10 | 18.1 |
| B2 | 0.31 | 299.5 | 20Mar2013, 03:15 | 15.5 |
| B3 | 0.25 | 246.0 | 20Mar2013, 03:15 | 13.3 |
| B4 | 0.51 | 434.9 | 20Mar2013, 03:20 | 33.5 |
| B5 | 0.52 | 446.3 | 20Mar2013, 03:20 | 35.4 |
| B6 | 0.62 | 367.3 | 20Mar2013, 03:30 | 42.2 |
| BR1 | 0.36 | 346.3 | 20Mar2013, 03:15 | 18.1 |
| BR2 | 0.31 | 285.4 | 20Mar2013, 03:20 | 15.5 |
| BR3 | 0.92 | 820.8 | 20Mar2013, 03:20 | 46.7 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| BR4 | 0.51 | 422.9 | 20Mar2013, 03:25 | 33.5 |
| BR5 | 1.95 | 1622.6 | 20Mar2013, 03:25 | 115.2 |
| C1 | 0.35 | 328.9 | 20Mar2013, 03:15 | 15.1 |
| C2 | 0.36 | 357.8 | 20Mar2013, 03:15 | 19.7 |
| C3 | 0.23 | 236.1 | 20Mar2013, 03:10 | 11.9 |
| C4 | 0.49 | 414.1 | 20Mar2013, 03:20 | 31.1 |
| C5 | 0.48 | 422.8 | 20Mar2013, 03:15 | 24.8 |
| C6 | 0.53 | 445.1 | 20Mar2013, 03:20 | 36.1 |
| C7 | 0.53 | 451.4 | 20Mar2013, 03:20 | 34.8 |
| C8 | 0.09 | 84.7 | 20Mar2013, 03:15 | 6.1 |
| CP_A3 | 1.37 | 1077.4 | 20Mar2013, 03:20 | 74.4 |
| CP_A4 | 2.16 | 1333.3 | 20Mar2013, 03:25 | 128.0 |
| CP_B3 | 0.92 | 831.2 | 20Mar2013, 03:15 | 46.8 |
| CP_B5 | 1.95 | 1672.8 | 20Mar2013, 03:20 | 115.5 |
| CP_B6 | 2.57 | 1926.8 | 20Mar2013, 03:25 | 157.4 |
| CP_C3 | 0.94 | 885.5 | 20Mar2013, 03:15 | 46.6 |
| CP_C5 | 1.91 | 1677.9 | 20Mar2013, 03:20 | 102.3 |
| CP_C7 | 2.97 | 2449.5 | 20Mar2013, 03:25 | 172.6 |
| CP_C8 | 3.06 | 2473.1 | 20Mar2013, 03:25 | 178.4 |
| CP_D2 | 1.16 | 625.7 | 20Mar2013, 03:40 | 80.9 |
| CP_D3 | 1.87 | 1003.2 | 20Mar2013, 03:35 | 135.2 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| CP_D4 | 2.22 | 1176.1 | 20Mar2013, 03:35 | 157.4 |
| CP_D5 | 2.54 | 1277.8 | 20Mar2013, 03:40 | 180.0 |
| CP_D6 | 3.63 | 1833.5 | 20Mar2013, 03:35 | 243.1 |
| CP_D7 | 4.08 | 1998.9 | 20Mar2013, 03:40 | 265.3 |
| CP_E10 | 0.98 | 808.8 | 20Mar2013, 03:20 | 55.2 |
| CP_E11 | 1.96 | 1493.6 | 20Mar2013, 03:25 | 115.4 |
| CP_E13 | 1.26 | 1012.5 | 20Mar2013, 03:20 | 85.7 |
| CP_E15 | 1.79 | 1368.8 | 20Mar2013, 03:25 | 121.7 |
| CP_E15A | 3.97 | 2872.4 | 20Mar2013, 03:30 | 247.4 |
| CP_E16 | 4.61 | 3287.8 | 20Mar2013, 03:30 | 302.3 |
| CP_E17 | 8.87 | 5857.5 | 20Mar2013, 03:30 | 561.6 |
| CP_E18 | 9.56 | 6216.3 | 20Mar2013, 03:35 | 609.8 |
| CP_E2 | 0.71 | 670.4 | 20Mar2013, 03:15 | 37.1 |
| CP_E20 | 11.26 | 7142.0 | 20Mar2013, 03:35 | 720.4 |
| CP_E22 | 12.19 | 7449.9 | 20Mar2013, 03:50 | 786.8 |
| CP_E3 | 1.72 | 1464.7 | 20Mar2013, 03:20 | 92.2 |
| CP_E4 | 2.23 | 1784.8 | 20Mar2013, 03:20 | 123.5 |
| CP_E6 | 2.75 | 2094.0 | 20Mar2013, 03:25 | 153.8 |
| CP_E7 | 3.24 | 2412.9 | 20Mar2013, 03:25 | 182.5 |
| CP_F10 | 2.63 | 1966.2 | 20Mar2013, 03:25 | 134.7 |
| CP_F11 | 8.56 | 5998.3 | 20Mar2013, 03:25 | 445.0 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| CP_F12 | 9.25 | 6284.8 | 20Mar2013, 03:30 | 480.6 |
| CP_F13 | 10.70 | 6905.4 | 20Mar2013, 03:35 | 590.1 |
| CP_F2 | 1.61 | 1341.7 | 20Mar2013, 03:20 | 80.7 |
| CP_F5 | 0.94 | 778.2 | 20Mar2013, 03:15 | 48.6 |
| CP_F6 | 2.47 | 1774.9 | 20Mar2013, 03:20 | 126.9 |
| CP_F8 | 1.52 | 1081.1 | 20Mar2013, 03:20 | 76.2 |
| CP_F9 | 4.51 | 3167.3 | 20Mar2013, 03:25 | 228.9 |
| CP_I2 | 0.48 | 474.1 | 20Mar2013, 03:15 | 25.1 |
| CP_I3 | 1.35 | 1205.4 | 20Mar2013, 03:15 | 69.1 |
| CP_I4 | 0.60 | 541.2 | 20Mar2013, 03:15 | 30.4 |
| CP_I7 | 1.22 | 851.2 | 20Mar2013, 03:25 | 63.3 |
| CP_I8 | 3.09 | 2372.6 | 20Mar2013, 03:20 | 158.2 |
| CP_I9 | 3.34 | 2477.6 | 20Mar2013, 03:25 | 170.5 |
| CP_J2 | 2.10 | 1603.6 | 20Mar2013, 03:25 | 145.6 |
| CP_J3 | 4.56 | 3157.5 | 20Mar2013, 03:25 | 276.1 |
| CP_J4 | 5.53 | 3821.7 | 20Mar2013, 03:25 | 327.7 |
| CP_K3 | 7.56 | 2903.4 | 20Mar2013, 04:00 | 553.4 |
| CP_K4 | 8.13 | 3046.8 | 20Mar2013, 04:00 | 603.8 |
| CR1 | 0.35 | 302.4 | 20Mar2013, 03:15 | 15.0 |
| CR2 | 0.94 | 862.9 | 20Mar2013, 03:20 | 46.4 |
| CR3 | 0.23 | 225.3 | 20Mar2013, 03:15 | 11.9 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| CR4 | 1.91 | 1614.9 | 20Mar2013, 03:25 | 101.8 |
| CR5 | 0.48 | 400.9 | 20Mar2013, 03:20 | 24.7 |
| CR6 | 2.97 | 2410.9 | 20Mar2013, 03:25 | 172.3 |
| CR7 | 0.53 | 447.6 | 20Mar2013, 03:25 | 34.7 |
| D1 | 0.78 | 464.3 | 20Mar2013, 03:35 | 55.1 |
| D2 | 0.38 | 282.6 | 20Mar2013, 03:20 | 25.9 |
| D3 | 0.71 | 462.8 | 20Mar2013, 03:30 | 54.4 |
| D4 | 0.35 | 288.4 | 20Mar2013, 03:20 | 22.2 |
| D5 | 0.32 | 160.0 | 20Mar2013, 03:45 | 22.6 |
| D6 | 1.09 | 638.7 | 20Mar2013, 03:30 | 63.2 |
| D7 | 0.45 | 306.5 | 20Mar2013, 03:25 | 22.6 |
| DR1 | 0.78 | 451.7 | 20Mar2013, 03:40 | 55.0 |
| DR2 | 1.16 | 621.9 | 20Mar2013, 03:45 | 80.8 |
| DR3 | 1.87 | 1001.0 | 20Mar2013, 03:40 | 135.1 |
| DR4 | 2.22 | 1163.2 | 20Mar2013, 03:35 | 157.4 |
| DR5 | 0.32 | 157.3 | 20Mar2013, 03:50 | 22.6 |
| DR6 | 2.54 | 1273.5 | 20Mar2013, 03:45 | 179.9 |
| DR7 | 3.63 | 1820.6 | 20Mar2013, 03:40 | 242.7 |
| DUMMY_REACH | 4.56 | 3147.1 | 20Mar2013, 03:25 | 276.1 |
| E1 | 0.27 | 266.7 | 20Mar2013, 03:15 | 14.4 |
| E10 | 0.50 | 407.8 | 20Mar2013, 03:20 | 27.4 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| E11 | 0.98 | 706.8 | 20Mar2013, 03:25 | 60.3 |
| E12 | 0.48 | 412.6 | 20Mar2013, 03:20 | 32.7 |
| E13 | 0.48 | 412.0 | 20Mar2013, 03:20 | 32.7 |
| E14 | 0.30 | 223.0 | 20Mar2013, 03:25 | 20.4 |
| E15 | 0.53 | 480.8 | 20Mar2013, 03:15 | 36.1 |
| E16 | 0.22 | 156.4 | 20Mar2013, 03:20 | 10.7 |
| E17 | 0.64 | 494.5 | 20Mar2013, 03:25 | 55.1 |
| E18 | 0.52 | 322.5 | 20Mar2013, 03:30 | 30.7 |
| E19 | 0.69 | 402.5 | 20Mar2013, 03:35 | 47.9 |
| E2 | 0.44 | 414.8 | 20Mar2013, 03:15 | 22.7 |
| E20 | 0.86 | 581.2 | 20Mar2013, 03:30 | 67.2 |
| E21 | 0.84 | 550.7 | 20Mar2013, 03:25 | 44.6 |
| E22 | 0.93 | 511.0 | 20Mar2013, 03:40 | 77.2 |
| E3 | 1.01 | 822.9 | 20Mar2013, 03:20 | 55.3 |
| E4 | 0.51 | 405.1 | 20Mar2013, 03:20 | 31.2 |
| E5 | 0.26 | 212.3 | 20Mar2013, 03:15 | 13.8 |
| E6 | 0.26 | 231.4 | 20Mar2013, 03:15 | 16.7 |
| E7 | 0.49 | 403.5 | 20Mar2013, 03:20 | 28.7 |
| E8 | 0.50 | 425.6 | 20Mar2013, 03:20 | 47.0 |
| E9 | 0.48 | 405.8 | 20Mar2013, 03:15 | 27.8 |
| ER1 | 0.27 | 255.6 | 20Mar2013, 03:15 | 14.3 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| ER10 | 1.96 | 1429.9 | 20Mar2013, 03:25 | 115.3 |
| ER11 | 0.48 | 398.5 | 20Mar2013, 03:25 | 32.6 |
| ER12 | 1.26 | 1000.8 | 20Mar2013, 03:25 | 85.7 |
| ER13 | 1.79 | 1347.9 | 20Mar2013, 03:30 | 121.4 |
| ER14 | 3.97 | 2848.0 | 20Mar2013, 03:30 | 247.2 |
| ER15 | 4.61 | 3259.9 | 20Mar2013, 03:35 | 301.3 |
| ER16 | 8.87 | 5813.8 | 20Mar2013, 03:35 | 561.9 |
| ER17 | 9.56 | 6172.2 | 20Mar2013, 03:35 | 608.5 |
| ER18 | 11.26 | 6994.4 | 20Mar2013, 03:50 | 709.6 |
| ER2 | 0.71 | 641.7 | 20Mar2013, 03:20 | 36.9 |
| ER3 | 1.72 | 1379.7 | 20Mar2013, 03:20 | 92.2 |
| ER4 | 2.23 | 1723.0 | 20Mar2013, 03:25 | 123.4 |
| ER5 | 0.26 | 211.3 | 20Mar2013, 03:20 | 13.8 |
| ER6 | 2.75 | 2077.4 | 20Mar2013, 03:25 | 153.8 |
| ER7 | 3.24 | 2370.0 | 20Mar2013, 03:25 | 182.5 |
| ER8 | 0.48 | 401.1 | 20Mar2013, 03:20 | 27.8 |
| ER9 | 0.98 | 786.8 | 20Mar2013, 03:25 | 55.1 |
| F1 | 0.58 | 567.0 | 20Mar2013, 03:15 | 29.1 |
| F10 | 1.02 | 764.4 | 20Mar2013, 03:20 | 54.2 |
| F11 | 1.42 | 1137.6 | 20Mar2013, 03:20 | 82.3 |
| F12 | 0.69 | 557.5 | 20Mar2013, 03:20 | 36.7 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| F13 | 1.45 | 835.7 | 20Mar2013, 03:35 | 111.1 |
| F2 | 1.03 | 797.0 | 20Mar2013, 03:20 | 51.7 |
| F3 | 0.44 | 424.3 | 20Mar2013, 03:15 | 22.1 |
| F4 | 1.04 | 767.2 | 20Mar2013, 03:20 | 53.7 |
| F5 | 0.50 | 403.8 | 20Mar2013, 03:20 | 26.6 |
| F6 | 0.49 | 390.3 | 20Mar2013, 03:20 | 24.6 |
| F7 | 1.02 | 773.7 | 20Mar2013, 03:20 | 51.2 |
| F8 | 0.50 | 397.8 | 20Mar2013, 03:20 | 25.1 |
| F9 | 0.52 | 414.2 | 20Mar2013, 03:20 | 26.1 |
| FR1 | 0.58 | 544.7 | 20Mar2013, 03:20 | 29.0 |
| FR10 | 2.63 | 1933.3 | 20Mar2013, 03:25 | 134.3 |
| FR11 | 8.56 | 5898.8 | 20Mar2013, 03:30 | 444.0 |
| FR12 | 9.25 | 6126.7 | 20Mar2013, 03:30 | 479.0 |
| FR2 | 1.61 | 1266.6 | 20Mar2013, 03:25 | 80.4 |
| FR3 | 0.44 | 384.2 | 20Mar2013, 03:15 | 22.1 |
| FR4 | 1.04 | 756.2 | 20Mar2013, 03:25 | 53.6 |
| FR5 | 0.94 | 773.8 | 20Mar2013, 03:20 | 48.7 |
| FR6 | 2.47 | 1764.9 | 20Mar2013, 03:25 | 126.6 |
| FR7 | 1.02 | 728.3 | 20Mar2013, 03:25 | 51.1 |
| FR8 | 1.52 | 1063.1 | 20Mar2013, 03:25 | 76.2 |
| FR9 | 4.51 | 3073.8 | 20Mar2013, 03:25 | 228.4 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| I1 | 0.23 | 267.1 | 20Mar2013, 03:10 | 12.6 |
| I2 | 0.25 | 240.8 | 20Mar2013, 03:15 | 12.5 |
| I3 | 0.27 | 265.2 | 20Mar2013, 03:15 | 13.5 |
| I4 | 0.48 | 435.7 | 20Mar2013, 03:15 | 24.1 |
| I5 | 0.12 | 119.4 | 20Mar2013, 03:15 | 6.4 |
| I6 | 0.71 | 543.0 | 20Mar2013, 03:20 | 37.7 |
| I7 | 0.51 | 418.6 | 20Mar2013, 03:15 | 25.6 |
| I8 | 0.52 | 423.4 | 20Mar2013, 03:15 | 26.1 |
| I9 | 0.25 | 200.8 | 20Mar2013, 03:20 | 12.9 |
| IR1 | 0.23 | 233.3 | 20Mar2013, 03:15 | 12.6 |
| IR2 | 0.48 | 470.4 | 20Mar2013, 03:15 | 25.1 |
| IR3 | 0.12 | 111.2 | 20Mar2013, 03:20 | 6.4 |
| IR4 | 0.60 | 508.0 | 20Mar2013, 03:20 | 30.4 |
| IR5 | 1.35 | 1166.6 | 20Mar2013, 03:20 | 68.9 |
| IR6 | 0.71 | 528.9 | 20Mar2013, 03:25 | 37.7 |
| IR7 | 1.22 | 850.2 | 20Mar2013, 03:25 | 63.2 |
| IR8 | 3.09 | 2311.7 | 20Mar2013, 03:25 | 157.6 |
| J1 | 1.48 | 1236.9 | 20Mar2013, 03:20 | 100.8 |
| J2 | 0.62 | 546.6 | 20Mar2013, 03:15 | 45.0 |
| J3 | 2.46 | 1574.8 | 20Mar2013, 03:25 | 130.8 |
| J4 | 0.97 | 674.6 | 20Mar2013, 03:25 | 51.6 |

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|---|---|---|---|---|
| JR1 | 1.48 | 1176.5 | 20Mar2013, 03:25 | 100.6 |
| JR2 | 2.10 | 1582.7 | 20Mar2013, 03:25 | 145.4 |
| K1 | 5.39 | 2238.8 | 20Mar2013, 04:00 | 413.0 |
| K2 | 1.63 | 947.8 | 20Mar2013, 03:35 | 111.0 |
| K3 | 0.54 | 505.6 | 20Mar2013, 03:15 | 29.6 |
| K4 | 0.57 | 521.4 | 20Mar2013, 03:15 | 50.3 |
| KR1 | 5.39 | 2223.1 | 20Mar2013, 04:00 | 412.9 |
| KR2 | 1.63 | 933.9 | 20Mar2013, 03:35 | 111.0 |
| KR3 | 7.56 | 2890.9 | 20Mar2013, 04:00 | 553.5 |

# Appendix G
# Mecca/North Shore Cost Estimation Worksheets

## Drain System A Cost Estimate Breakdown

| ITEM | ITEM DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| | | | | | |
| | **Concrete Trapezoidal Channel** | | | | |
| 1 | Excavation | CY | 81983 | $7.50 | $614,873 |
| 2 | 3" Aggregate Base (2-15' foot maintenance roads) | SF | 303,400 | $0.70 | $212,380 |
| 3 | Trap Channel Concrete | CY | 7,759 | $430.00 | $3,336,370 |
| 4 | Levee Fill | CY | | $10.40 | $0 |
| | **RCB Culvert** | | | | |
| 4 | Excavation | CY | 15,285 | $7.50 | $114,638 |
| 5 | RCB Concrete (including steel) | CY | 1860 | $820.00 | $1,525,200 |
| 6 | Structural Backfill | CY | 9,339 | $10.40 | $97,126 |
| | **Concrete Pipe (diameter in inches)** | | | | |
| 7 | Excavation | CY | 17,354 | $7.50 | $130,155 |
| 11 | 60 | LF | | $279.00 | $0 |
| 12 | 66 | LF | | $313.00 | $0 |
| 13 | 72 | LF | | $350.00 | $0 |
| 14 | 78 | LF | 2,600 | $390.00 | $1,014,000 |
| 15 | 84 | LF | 1,200 | $433.00 | $519,600 |
| 16 | 90 | LF | | $483.00 | $0 |
| 17 | 96 | LF | | $533.00 | $0 |
| 18 | Manholes (400' spacing) | EA | 10 | $5,600.00 | $56,000 |
| | **Subtotal** | | | | $7,620,341 |
| | | | | | |
| | 15% Contingencies | | | | $1,143,051 |
| | 10% Engineering and Inspection | | | | $762,034 |
| | Right-of-Way Acquisition | AC | 15.5 | $30,000.00 | $465,000 |
| | 40 Years O&M | LS | 1 | 78,126 | $42,158 |
| | | | | | |
| | **Grand Total** | | | | $10,032,584 |
| | | | | | |

## Line B Cost Estimate Breakdown

| ITEM | ITEM DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| | | | | | |
| | **Concrete Trapezoidal Channel** | | | | |
| 1 | Excavation | CY | 92,530 | $7.50 | $693,978 |
| 2 | 3" Aggregate Base (2-15' foot maintenance roads) | SF | 326,036 | $0.70 | $228,225 |
| 3 | Trap Channel Concrete | CY | 8,514 | $430.00 | $3,661,034 |
| 4 | Levee Fill | CY | 0 | $10.40 | $0 |
| | **RCB Culvert** | | | | |
| 4 | Excavation | CY | 8,429 | $7.50 | $63,215 |
| 5 | RCB Concrete (including steel) | CY | 1,347 | $820.00 | $1,104,693 |
| 6 | Structural Backfill | CY | 3,941 | $10.40 | $40,990 |
| | **Concrete Pipe (diameter in inches)** | | | | |
| 7 | Excavation | CY | 49,200 | $7.50 | $368,999 |
| 11 | 60 | LF | | $279.00 | $0 |
| 12 | 66 | LF | 980 | $313.00 | $306,740 |
| 13 | 72 | LF | 1,040 | $350.00 | $364,000 |
| 14 | 78 | LF | 2,895 | $390.00 | $1,129,050 |
| 15 | 84 | LF | | $433.00 | $0 |
| 16 | 90 | LF | 2,554 | $483.00 | $1,233,746 |
| 17 | 96 | LF | 2,625 | $533.00 | $1,399,125 |
| 18 | Manholes (400' spacing) | EA | 26 | $5,600.00 | $145,600 |
| | **Subtotal** | | | | $10,739,394 |
| | | | | | |
| | 15% Contingencies | | | | $1,610,909 |
| | 10% Engineering and Inspection | | | | $1,073,939 |
| | Right-of-Way Acquisition | AC | 16.3 | $30,000.00 | $489,000 |
| | 40 Years O&M | LS | 1 | 90,622 | $48,900 |
| | | | | | |
| | **Grand Total** | | | | $13,962,143 |
| | | | | | |

## Line C Estimate Breakdown

| ITEM | ITEM DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| | | | | | |
| | **Concrete Trapezoidal Channel** | | | | |
| 1 | Excavation | CY | 131,215 | $7.50 | $984,114 |
| 2 | 3" Aggregate Base (2-15' foot maintenance roads) | SF | 495,253 | $0.70 | $346,677 |
| 3 | Trap Channel Concrete | CY | 12,585 | $430.00 | $5,411,617 |
| 4 | Levee Fill | CY | 0 | $10.40 | $0 |
| | **RCB Culvert** | | | | |
| 4 | Excavation | CY | 12,205 | $7.50 | $91,538 |
| 5 | RCB Concrete (including steel) | CY | 2,327 | $820.00 | $1,908,394 |
| 6 | Structural Backfill | CY | 5,205 | $10.40 | $54,136 |
| | **Concrete Pipe (diameter in inches)** | | | | |
| 7 | Excavation | CY | 15,001 | $7.50 | $112,506 |
| 11 | 60 | LF | 1,130 | $279.00 | $315,270 |
| 12 | 66 | LF | | $313.00 | $0 |
| 13 | 72 | LF | 1,220 | $350.00 | $427,000 |
| 14 | 78 | LF | | $390.00 | $0 |
| 15 | 84 | LF | 1,309 | $433.00 | $566,797 |
| 16 | 90 | LF | | $483.00 | $0 |
| 17 | 96 | LF | | $533.00 | $0 |
| 18 | Manholes (400' spacing) | EA | 10 | $5,600.00 | $56,000 |
| | **Subtotal** | | | | $10,274,050 |
| | | | | | |
| | 15% Contingencies | | | | $1,541,108 |
| | 10% Engineering and Inspection | | | | $1,027,405 |
| | Right-of-Way Acquisition | AC | 25.5 | $30,000.00 | $765,000 |
| | 40 Years O&M | LS | 1 | 170,541 | $92,025 |
| | | | | | |
| | **Grand Total** | | | | $13,699,588 |
| | | | | | |

## Line D Cost Estimate Breakdown

| ITEM | ITEM DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| | | | | | |
| | **Concrete Trapezoidal Channel** | | | | |
| 1 | Excavation | CY | 415,177 | $7.50 | $3,113,827 |
| 2 | 3" Aggregate Base (2-15' foot maintenance roads) | SF | 747,000 | $0.70 | $522,900 |
| 3 | Trap Channel Concrete | CY | 28,131 | $430.00 | $12,096,296 |
| 4 | Levee Fill | CY | 87,060 | $10.40 | $905,424 |
| | **RCB Culvert** | | | | |
| 4 | Excavation | CY | 3,830 | $7.50 | $28,726 |
| 5 | RCB Concrete (including steel) | CY | 635 | $820.00 | $521,035 |
| 6 | Structural Backfill | CY | 1,890 | $10.40 | $19,658 |
| | **Concrete Pipe (diameter in inches)** | | | | |
| 7 | Excavation | CY | | $7.50 | $0 |
| 11 | 60 | LF | | $279.00 | $0 |
| 12 | 66 | LF | | $313.00 | $0 |
| 13 | 72 | LF | | $350.00 | $0 |
| 14 | 78 | LF | | $390.00 | $0 |
| 15 | 84 | LF | | $433.00 | $0 |
| 16 | 90 | LF | | $483.00 | $0 |
| 17 | 96 | LF | | $533.00 | $0 |
| 18 | Manholes (400' spacing) | EA | 0 | $5,600.00 | $0 |
| | **Subtotal** | | | | $17,207,866 |
| | | | | | |
| | 15% Contingencies | | | | $2,581,180 |
| | 10% Engineering and Inspection | | | | $1,720,787 |
| | Right-of-Way Acquisition | AC | 25.6 | $30,000.00 | $768,000 |
| | 40 Years O&M | LS | 1 | 342,662 | $184,903 |
| | | | | | |
| | **Grand Total** | | | | $22,462,735 |
| | | | | | |

## Line E Cost Estimate Breakdown

| ITEM | ITEM DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| | | | | | |
| | **Concrete Trapezoidal Channel** | | | | |
| 1 | Excavation | CY | 1,094,148 | $7.50 | $8,206,113 |
| 2 | 3" Aggregate Base (2-15' foot maintenance roads) | SF | 2,180,540 | $0.70 | $1,526,378 |
| 3 | Trap Channel Concrete | CY | 79,228 | $430.00 | $34,068,070 |
| 4 | Levee Fill | CY | 38,529 | $10.40 | $400,707 |
| | **RCB Culvert** | | | | |
| 4 | Excavation | CY | 157,338 | $7.50 | $1,180,037 |
| 5 | RCB Concrete (including steel) | CY | 29,095 | $820.00 | $23,857,775 |
| 6 | Structural Backfill | CY | 70,733 | $10.40 | $735,619 |
| | **Concrete Pipe (diameter in inches)** | | | | |
| 7 | Excavation | CY | 39,706 | $7.50 | $297,794 |
| 11 | 60 | LF | | $279.00 | $0 |
| 12 | 66 | LF | 1,300 | $313.00 | $406,900 |
| 13 | 72 | LF | | $350.00 | $0 |
| 14 | 78 | LF | | $390.00 | $0 |
| 15 | 84 | LF | 4,115 | $433.00 | $1,781,795 |
| 16 | 90 | LF | | $483.00 | $0 |
| 17 | 96 | LF | 2,610 | $533.00 | $1,391,130 |
| 18 | Manholes (400' spacing) | EA | 21 | $5,600.00 | $117,600 |
| | **Subtotal** | | | | $73,969,918 |
| | | | | | |
| | 15% Contingencies | | | | $11,095,488 |
| | 10% Engineering and Inspection | | | | $7,396,992 |
| | Right-of-Way Acquisition | AC | 141.3 | $30,000.00 | $4,239,000 |
| | 40 Years O&M | LS | 1 | 1,591,346 | $858,701 |
| | | | | | |
| | **Grand Total** | | | | $97,560,099 |
| | | | | | |

## Line F Cost Estimate Breakdown

| ITEM | ITEM DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| | | | | | |
| | **Concrete Trapezoidal Channel** | | | | |
| 1 | Excavation | CY | 670,373 | $7.50 | $5,027,800 |
| 2 | 3" Aggregate Base (2-15' foot maintenance roads) | SF | 1,840,322 | $0.70 | $1,288,225 |
| 3 | Trap Channel Concrete | CY | 55,941 | $430.00 | $24,054,807 |
| 4 | Levee Fill | CY | 154,888 | $10.40 | $1,610,832 |
| | **RCB Culvert** | | | | |
| 4 | Excavation | CY | 28,089 | $7.50 | $210,670 |
| 5 | RCB Concrete (including steel) | CY | 5,697 | $820.00 | $4,671,809 |
| 6 | Structural Backfill | CY | 10,799 | $10.40 | $112,312 |
| | **Concrete Pipe (diameter in inches)** | | | | |
| 7 | Excavation | CY | 29,223 | $7.50 | $219,174 |
| 11 | 60 | LF | | $279.00 | $0 |
| 12 | 66 | LF | | $313.00 | $0 |
| 13 | 72 | LF | | $350.00 | $0 |
| 14 | 78 | LF | | $390.00 | $0 |
| 15 | 84 | LF | 2,680 | $433.00 | $1,160,440 |
| 16 | 90 | LF | | $483.00 | $0 |
| 17 | 96 | LF | 2,825 | $533.00 | $1,505,725 |
| 18 | Manholes (400' spacing) | EA | 14 | $5,600.00 | $78,400 |
| | **Subtotal** | | | | $39,940,193 |
| | | | | | |
| | 15% Contingencies | | | | $5,991,029 |
| | 10% Engineering and Inspection | | | | $3,994,019 |
| | Right-of-Way Acquisition | AC | 131.6 | $30,000.00 | $3,948,000 |
| | 40 Years O&M | LS | 1 | 2,321,722 | $1,252,817 |
| | | | | | |
| | **Grand Total** | | | | $55,126,059 |
| | | | | | |

## Line I Cost Estimate Breakdown

| ITEM | ITEM DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| | | | | | |
| | **Concrete Trapezoidal Channel** | | | | |
| 1 | Excavation | CY | 182,002 | $7.50 | $1,365,016 |
| 2 | 3" Aggregate Base (2-15' foot maintenance roads) | SF | 926,240 | $0.70 | $648,368 |
| 3 | Trap Channel Concrete | CY | 20,742 | $430.00 | $8,919,205 |
| 4 | Levee Fill | CY | 0 | $10.40 | $0 |
| | **RCB Culvert** | | | | |
| 4 | Excavation | CY | 4,283 | $7.50 | $32,119 |
| 5 | RCB Concrete (including steel) | CY | 630 | $820.00 | $516,397 |
| 6 | Structural Backfill | CY | 2,206 | $10.40 | $22,944 |
| | **Concrete Pipe (diameter in inches)** | | | | |
| 7 | Excavation | CY | 24,891 | $7.50 | $186,683 |
| 11 | 60 | LF | 218 | $279.00 | $60,822 |
| 12 | 66 | LF | | $313.00 | $0 |
| 13 | 72 | LF | 2,661 | $350.00 | $931,350 |
| 14 | 78 | LF | | $390.00 | $0 |
| 15 | 84 | LF | | $433.00 | $0 |
| 16 | 90 | LF | 2,540 | $483.00 | $1,226,820 |
| 17 | 96 | LF | | $533.00 | $0 |
| 18 | Manholes (400' spacing) | EA | 14 | $5,600.00 | $78,400 |
| | **Subtotal** | | | | $13,988,124 |
| | | | | | |
| | 15% Contingencies | | | | $2,098,219 |
| | 10% Engineering and Inspection | | | | $1,398,812 |
| | Right-of-Way Acquisition | AC | 44.4 | $30,000.00 | $1,332,000 |
| | 40 Years O&M | LS | 1 | 244,288 | $131,820 |
| | | | | | |
| | **Grand Total** | | | | $18,948,975 |
| | | | | | |

## Line J Cost Estimate Breakdown

| ITEM | ITEM DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| | | | | | |
| | **Concrete Trapezoidal Channel** | | | | |
| 1 | Excavation | CY | 147,505 | $7.50 | $1,106,288 |
| 2 | 3" Aggregate Base (2-15' foot maintenance roads) | SF | 628,800 | $0.70 | $440,160 |
| 3 | Trap Channel Concrete | CY | 15,167 | $430.00 | $6,521,734 |
| 4 | Levee Fill | CY | 0 | $10.40 | $0 |
| | **RCB Culvert** | | | | |
| 4 | Excavation | CY | 216 | $7.50 | $1,619 |
| 5 | RCB Concrete (including steel) | CY | 37 | $820.00 | $30,491 |
| 6 | Structural Backfill | CY | 107 | $10.40 | $1,110 |
| | **Concrete Pipe (diameter in inches)** | | | | |
| 7 | Excavation | CY | | $7.50 | $0 |
| 11 | 60 | LF | | $279.00 | $0 |
| 12 | 66 | LF | | $313.00 | $0 |
| 13 | 72 | LF | | $350.00 | $0 |
| 14 | 78 | LF | | $390.00 | $0 |
| 15 | 84 | LF | | $433.00 | $0 |
| 16 | 90 | LF | | $483.00 | $0 |
| 17 | 96 | LF | | $533.00 | $0 |
| 18 | Manholes (400' spacing) | EA | 0 | $5,600.00 | $0 |
| | **Subtotal** | | | | $8,101,400 |
| | | | | | |
| | 15% Contingencies | | | | $1,215,210 |
| | 10% Engineering and Inspection | | | | $810,140 |
| | Right-of-Way Acquisition | AC | 31.3 | $30,000.00 | $939,000 |
| | 40 Years O&M | LS | 1 | 167,244 | $90,246 |
| | | | | | |
| | **Grand Total** | | | | $11,155,996 |
| | | | | | |

## Line K Cost Estimate Breakdown

| ITEM | ITEM DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| | | | | | |
| | **Concrete Trapezoidal Channel** | | | | |
| 1 | Excavation | CY | 108,662 | $7.50 | $814,967 |
| 2 | 3" Aggregate Base (2-15' foot maintenance roads) | SF | 634,560 | $0.70 | $444,192 |
| 3 | Trap Channel Concrete | CY | 13,170 | $430.00 | $5,663,198 |
| 4 | Levee Fill | CY | 0 | $10.40 | $0 |
| | **RCB Culvert** | | | | |
| 4 | Excavation | CY | 3,515 | $7.50 | $26,362 |
| 5 | RCB Concrete (including steel) | CY | 768 | $820.00 | $629,466 |
| 6 | Structural Backfill | CY | 1,164 | $10.40 | $12,105 |
| | **Concrete Pipe (diameter in inches)** | | | | |
| 7 | Excavation | CY | | $7.50 | $0 |
| 11 | 60 | LF | | $279.00 | $0 |
| 12 | 66 | LF | | $313.00 | $0 |
| 13 | 72 | LF | | $350.00 | $0 |
| 14 | 78 | LF | | $390.00 | $0 |
| 15 | 84 | LF | | $433.00 | $0 |
| 16 | 90 | LF | | $483.00 | $0 |
| 17 | 96 | LF | | $533.00 | $0 |
| 18 | Manholes (400' spacing) | EA | 0 | $5,600.00 | $0 |
| | **Subtotal** | | | | $7,590,290 |
| | | | | | |
| | 15% Contingencies | | | | $1,138,543 |
| | 10% Engineering and Inspection | | | | $759,029 |
| | Right-of-Way Acquisition | AC | 29.0 | $30,000.00 | $870,000 |
| | 40 Years O&M | LS | 1 | 110,143 | $59,434 |
| | | | | | |
| | **Grand Total** | | | | $10,417,296 |
| | | | | | |

# RCB QUANTITY SUMMARY SHEET

Eastern Coachella Valley Stormwater Master Plan
**MDP / ADP**

October 29,2013
**DATE**

Mecca/North Shore Regions
**FACILITY**

L.Johnson
**ENGINEER**

| | Location | No. Cells | Cell Height (FT) | Cell Width (FT) | Concrete per Cell (CF/LF)[1] | Length (FT) | Depth from F.G. to Top of RCB (FT) | Avg. Overburden E.G. to F.G. (FT) | RCB Height (FT)[2] | RCB Width (FT)[2] | Concrete (CY) | Trench Depth Below F.G. (FT) | Sloped or Shored Trench | Height of Sloped Portion of Trench (FT) | Structural Excavation (CY)[3] | Structural Backfill (CY)[3] | R/W Width (FT)[4] | R/W (AC) | With Overburden: Overburden Excavation (CY) | With Overburden: R/W Width (FT)[5] | With Overburden: R/W (AC) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Line A01 at CVSC Levee/Hwy 86 | 3 | 6.0 | 10.0 | 25.6 | 614.5 | 10.0 | | 7.50 | 32.67 | 1744.4 | 17.5 | Shored | | 14603.2 | 9027.4 | 54.1 | 0.76 | | | |
| 2 | Line A01 at Fillmore St. | 2 | 6.0 | 10.0 | 25.6 | 40.0 | 4.0 | | 7.50 | 22.00 | 75.7 | 11.5 | Shored | | 443.0 | 198.5 | 40.2 | 0.04 | | | |
| 3 | Line A01-01 at Avenue 53 | 1 | 6.0 | 10.0 | 27.1 | 40.0 | 3.0 | | 7.50 | 11.33 | 40.1 | 10.5 | Shored | | 238.5 | 112.6 | 29.0 | 0.03 | | | |
| 4 | Line B01 at Hwy 86 SB On-Ramp | 3 | 7.0 | 12.0 | 32.9 | 90.0 | 6.0 | | 8.50 | 38.67 | 328.5 | 14.5 | Shored | | 2062.3 | 966.7 | 58.5 | 0.12 | | | |
| 5 | Line B01 at Hwy 86 | 3 | 7.0 | 12.0 | 32.9 | 230.0 | 6.0 | | 8.50 | 38.67 | 840.8 | 14.5 | Shored | | 5270.3 | 2470.4 | 58.5 | 0.31 | | | |
| 6 | Line B01 at Fillmore St. | 2 | 7.0 | 10.0 | 26.6 | 40.0 | 3.0 | | 8.50 | 22.00 | 78.8 | 11.5 | Shored | | 443.0 | 165.9 | 40.2 | 0.04 | | | |
| 7 | Line B01-01 at Avenue 55 | 1 | 6.0 | 10.0 | 27.1 | 100.0 | 4.0 | | 7.50 | 11.33 | 100.4 | 11.5 | Shored | | 653.1 | 338.3 | 29.5 | 0.07 | | | |
| 8 | Line C01 at Hwy 111/SPRR | 3 | 7.0 | 14.0 | 44.4 | 221.0 | 6.0 | | 8.50 | 44.67 | 1090.3 | 14.5 | Shored | | 5776.2 | 2668.4 | 64.5 | 0.33 | | | |
| 9 | Line C01 at 58TH Ave. | 3 | 7.0 | 14.0 | 44.4 | 40.0 | 5.0 | | 8.50 | 44.67 | 197.3 | 13.5 | Shored | | 973.4 | 410.9 | 64.0 | 0.06 | | | |
| 10 | Line C01 at Hwy 86 | 3 | 7.0 | 12.0 | 32.9 | 200.0 | 4.0 | | 8.50 | 38.67 | 730.0 | 12.5 | Shored | | 3950.7 | 1516.1 | 57.4 | 0.26 | | | |
| 11 | Line C01 at Pierce St. | 3 | 5.0 | 10.0 | 24.6 | 99.9 | 3.0 | | 6.50 | 32.67 | 272.5 | 9.5 | Shored | | 1289.0 | 503.3 | 49.8 | 0.11 | | | |
| 12 | Line C01 at Buchanan St. | 1 | 5.0 | 10.0 | 25.1 | 40.0 | 3.0 | | 6.50 | 11.33 | 37.2 | 9.5 | Shored | | 215.8 | 106.7 | 28.5 | 0.03 | | | |
| 13 | Line D01 at Avenue 66 | 3 | 7.0 | 14.0 | 44.4 | 70.0 | 8.0 | | 8.50 | 44.67 | 345.3 | 16.5 | Shored | | 2081.9 | 1097.6 | 65.6 | 0.11 | | | |
| 14 | Line D01 at Avenue 64 | 2 | 6.0 | 10.0 | 25.6 | 50.0 | 4.0 | | 7.50 | 22.00 | 94.6 | 11.5 | Shored | | 553.7 | 248.2 | 40.2 | 0.05 | | | |
| 15 | Line D01 at Pierce St. | 2 | 6.0 | 10.0 | 25.6 | 70.0 | 5.0 | | 7.50 | 22.00 | 132.5 | 12.5 | Shored | | 842.6 | 414.8 | 40.8 | 0.07 | | | |
| 16 | Line D01 at Avenue 62 | 2 | 6.0 | 7.0 | 17.0 | 50.0 | 2.0 | | 7.50 | 16.00 | 63.0 | 9.5 | Shored | | 351.9 | 129.6 | 33.1 | 0.04 | | | |
| 17 | Line E01 at Avenue 68 | 10 | 7.0 | 14.0 | 44.4 | 310.0 | 4.0 | | 8.50 | 147.34 | 5097.8 | 12.5 | Shored | | 21719.7 | 7340.7 | 166.1 | 1.18 | | | |
| 18 | Line E01 at Hwy 86/SPRR/Hammond F | 10 | 6.0 | 12.0 | 31.8 | 1785.0 | 6.0 | | 7.50 | 127.34 | 21023.3 | 13.5 | Shored | | 117218.3 | 54080.3 | 146.6 | 6.01 | | | |
| 19 | Line E01 at Avenue 62 | 2 | 6.0 | 10.0 | 25.6 | 80.0 | 4.0 | | 7.50 | 22.00 | 151.4 | 11.5 | Shored | | 886.0 | 397.0 | 40.2 | 0.07 | | | |
| 20 | Line E01-01 at E01 confluence | 5 | 6.0 | 12.0 | 31.8 | 300.0 | 6.0 | | 7.50 | 64.00 | 1766.7 | 13.5 | Shored | | 10200.3 | 4866.8 | 83.3 | 0.57 | | | |
| rev. 11/15/2012 | | | | | | 4,470 | | | | | 34,211 | | | | 189,773 | 87,060 | | 10.2 | 0 | | 0.0 |

1. Caltrans Standard Plans, 2010, D80 & D81.
2. Assumes wall thickness, t2 = 8", roof and invert slab thicknesses, t1, t3 = 9".
3. Below finish grade, per RCB pay lines (normal condition), Std. Dwg. No. M815. Refer to "Storm Drain Easement Widths," RCFC, Nov. 10, 1987 for sloped or shored trench sections.
4. "Storm Drain Easement Widths," RCFC, Nov. 10, 1987. Assumes a minimum width of 10' for construction access, the width of the sloped excavation, or the width of the shored excavation plus 8', whichever is greater.
5. Assumes cut slopes of 0.75H:1V between overburden and finish grade.

# RCB QUANTITY SUMMARY SHEET

Eastern Coachella Valley Stormwater Master Plan
**MDP / ADP**

October 29,2013
**DATE**

Mecca/North Shore Regions (sht. 2 of 2)
**FACILITY**

L.Johnson
**ENGINEER**

| | | | | | | | | | | | | | | | | | | | With Overburden | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location | No. Cells | Cell Height (FT) | Cell Width (FT) | Concrete per Cell (CF/LF)[1] | Length (FT) | Depth from F.G. to Top of RCB (FT) | Avg. Overburden E.G. to F.G. (FT) | RCB Height (FT)[2] | RCB Width (FT)[2] | Concrete (CY) | Trench Depth Below F.G. (FT) | Sloped or Shored Trench | Height of Sloped Portion of Trench (FT) | Structural Excavation (CY)[3] | Structural Backfill (CY)[3] | R/W Width (FT)[4] | R/W (AC) | Overburden Excavation (CY) | R/W Width (FT)[5] | R/W (AC) |
| 1 | Line E01-01 at Avenue 62 | 2 | 6.0 | 12.0 | 31.8 | 120.0 | 4.0 | 0.0 | 7.50 | 26.00 | 282.7 | 11.5 | Shored | | 1533.4 | 666.7 | 44.2 | 0.12 | | | |
| 2 | Line E01-01 at Avenue 60 | 2 | 6.0 | 8.0 | 20.0 | 70.0 | 4.0 | 0.0 | 7.50 | 18.00 | 103.4 | 11.5 | Shored | | 656.0 | 305.9 | 36.2 | 0.06 | | | |
| 3 | Line E01-02 at Avenue 62 | 2 | 5.0 | 10.0 | 24.6 | 60.0 | 5.0 | 0.0 | 6.50 | 22.00 | 109.1 | 11.5 | Shored | | 664.5 | 346.7 | 40.2 | 0.06 | | | |
| 4 | Line E01-03 at Lincoln St. to Las Flores | 1 | 6.0 | 6.0 | 17.8 | 850.0 | 5.0 | 0.0 | 7.50 | 7.33 | 560.4 | 12.5 | Shored | | 4460.1 | 2728.5 | 26.1 | 0.51 | | | |
| 5 | Line F01 at Avenue 70 | 9 | 6.0 | 12.0 | 31.8 | 40.0 | 4.0 | 0.0 | 7.50 | 114.67 | 424.0 | 11.5 | Shored | | 2021.8 | 747.7 | 132.9 | 0.12 | | | |
| 6 | Line F01 at Hwy 111/SPRR/Hammond | 7 | 6.0 | 12.0 | 31.8 | 591.0 | 4.0 | 0.0 | 7.50 | 89.34 | 4872.5 | 11.5 | Shored | | 23494.7 | 8828.8 | 107.5 | 1.46 | | | |
| 7 | Line F01 at Avenue 66 | 2 | 6.0 | 10.0 | 25.6 | 50.0 | 5.0 | 0.0 | 7.50 | 22.00 | 94.6 | 12.5 | Shored | | 601.9 | 296.3 | 40.8 | 0.05 | | | |
| 8 | Line F01 at Avenue 65 | 2 | 5.0 | 8.0 | 18.5 | 40.0 | 4.0 | 0.0 | 6.50 | 18.00 | 54.7 | 10.5 | Shored | | 342.2 | 168.9 | 35.7 | 0.03 | | | |
| 9 | Line F01-01 at Grant St. | 4 | 6.0 | 10.0 | 25.6 | 40.0 | 4.0 | 0.0 | 7.50 | 43.34 | 151.4 | 11.5 | Shored | | 806.4 | 324.9 | 61.5 | 0.06 | | | |
| 10 | Line F01-01 at Hayes St | 2 | 6.0 | 7.0 | 17.0 | 40.0 | 4.0 | 0.0 | 7.50 | 16.00 | 50.4 | 11.5 | Shored | | 340.8 | 163.0 | 34.2 | 0.03 | | | |
| 11 | Line F01-02 at Avenue 66 | 2 | 5.0 | 10.0 | 24.6 | 40.0 | 6.0 | 0.0 | 6.50 | 22.00 | 72.7 | 12.5 | Shored | | 481.5 | 269.6 | 40.8 | 0.04 | | | |
| 12 | Line I01 at Hwy 111 | 3 | 6.0 | 8.0 | 20.0 | 213.0 | 6.0 | 0.0 | 7.50 | 26.67 | 472.2 | 13.5 | Shored | | 3266.1 | 1688.3 | 46.0 | 0.22 | | | |
| 13 | Line I01 at Avenue 70 | 2 | 6.0 | 8.0 | 20.0 | 40.0 | 3.0 | 0.0 | 7.50 | 18.00 | 59.1 | 10.5 | Shored | | 342.2 | 142.2 | 35.7 | 0.03 | | | |
| 14 | Line I01-01 at Arthur St. | 1 | 6.0 | 10.0 | 27.1 | 81.0 | 4.0 | 0.0 | 7.50 | 11.33 | 81.3 | 11.5 | Shored | | 529.0 | 274.0 | 29.5 | 0.05 | | | |
| 15 | Line I01-02 ar Arthur St. | 1 | 4.0 | 4.0 | 11.6 | 40.0 | 5.0 | 0.0 | 5.50 | 5.33 | 17.2 | 10.5 | Shored | | 145.2 | 101.7 | 23.0 | 0.02 | | | |
| 16 | Line J01-02 at Avenue 70 | 1 | 5.0 | 10.0 | 25.1 | 40.0 | 3.0 | 0.0 | 6.50 | 11.33 | 37.2 | 9.5 | Shored | | 215.8 | 106.7 | 28.5 | 0.03 | | | |
| 17 | Line K01 at Hwy 111 | 2 | 6.0 | 12.0 | 31.8 | 305.0 | 2.0 | 0.0 | 7.50 | 26.00 | 718.4 | 9.5 | Shored | | 3219.6 | 1016.7 | 43.1 | 0.30 | | | |
| 18 | Line K01-01 at Avenue 72 | 1 | 6.0 | 12.0 | 33.2 | 40.0 | 4.0 | 0.0 | 7.50 | 13.33 | 49.2 | 11.5 | Shored | | 295.3 | 147.2 | 31.5 | 0.03 | | | |
| 19 | | | | | | | | | 0.00 | 0.00 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | | | |
| 20 | | | | | | | | | 0.00 | 0.00 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | | | |
| rev. 11/15/2012 | | | | | | 2,700 | | | | | 8,210 | | | | 43,417 | 18,324 | | 3.2 | 0 | | 0.0 |

1. Caltrans Standard Plans, 2010, D80 & D81.
2. Assumes wall thickness, t2 = 8", roof and invert slab thicknesses, t1, t3 = 9".
3. Below finish grade, per RCB pay lines (normal condition), Std. Dwg. No. M815. Refer to "Storm Drain Easement Widths," RCFC, Nov. 10, 1987 for sloped or shored trench sections.
4. "Storm Drain Easement Widths," RCFC, Nov. 10, 1987. Assumes a minimum width of 10' for construction access, the width of the sloped excavation, or the width of the shored excavation plus 8', whichever is greater.
5. Assumes cut slopes of 0.75H:1V between overburden and finish grade.

**Line A (Pipe and Concrete Lined Channel) Quantity Estimation Worksheet**

| Facility No. | Facility Name | Type | Alignment Stationing | | | Open Channel | | | | | | | | | | | Box | | | | Pipe | | | | | | | | Right of Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STA. | STA. | Length (ft) | Bottom Width (ft) | Bottom Area (sf) | Side Slope horiz/vert | Channel Depth (ft) | Top Width (ft) | Conc. Vol/ft (cy/ft) | Concrete Vol (cy) | Excav Area (sf) | Excav Vol (cy) | 3" Aggregate Base (sq ft) | Additional Levee Fill (cy/ft) | Additional Levee Fill (cy) | Conc. Vol/ft (cy/ft) | Conc. (cy) | Excav Vol (cy) | Structural Backfill (cy) | 60" (LF) | 66" (LF) | 72" (LF) | 78" (LF) | 84" (LF) | 90" (LF) | 96" (LF) | Excav Vol (cy) | Required Width (ft) | EXIST CVWD Width (ft) | Additional Area (ac) |
| A01 | A01 Storm Drain | 3-10'X6' RCB | 0+20.55 | 6+35.00 | 614.45 | | | | | | | | | | | | | 2.84 | 1744.4 | 14603.2 | 9027.4 | | | | | | | | | | | |
| A01 | A01 Storm Drain | Open Channel | 6+35.00 | 22+20.00 | 1585.00 | 20 | 31700 | 1.5 | 10.0 | 50 | 1.13 | 1792 | 350 | 20546 | 63400 | | | | | | | | | | | | | | 95 | | 3.5 |
| A01 | A01 Storm Drain | Open Channel | 22+20.00 | 41+80.00 | 1960.00 | 18 | 35280 | 1.5 | 10.0 | 48 | 1.09 | 2143 | 330 | 23956 | 78400 | | | | | | | | | | | | | | 93 | | 4.2 |
| A01 | A01 Storm Drain | 2-10'x6' RCB | 41+80.00 | 42+20.00 | 40.00 | | | | | | | | | | | | | 1.89 | 75.7 | 443.0 | 198.5 | | | | | | | | | | | |
| A01 | A01 Storm Drain | Open Channel | 42+20.00 | 56+00.00 | 1380.00 | 14 | 19320 | 1.5 | 10.0 | 44 | 1.02 | 1407 | 290 | 14822 | 55200 | | | | | | | | | | | | | | 89 | | 2.8 |
| A01 | A01 Storm Drain | 84" RCP | 56+00.00 | 68+00.00 | 1200.00 | | | | | | | | | | | | | | | | | | | | 1200 | | | 5823 | | | |
| A01 | A01 Storm Drain | 78" RCP | 68+00.00 | 94+00.00 | 2600.00 | | | | | | | | | | | | | | | | | | | 2600 | | | | 11532 | | | |
| A01-01 | A01-01 Storm Drain | Open Channel | 10+00.00 | 23+30.00 | 1330.00 | 10 | 13300 | 1.5 | 10.0 | 40 | 0.95 | 1257 | 250 | 12315 | 53200 | | | | | | | | | | | | | | 85 | | 2.6 |
| A01-01 | A01-01 Storm Drain | Open Channel | 23+30.00 | 36+15.00 | 1285.00 | 6 | 7710 | 1.5 | 10.0 | 36 | 0.87 | 1120 | 210 | 9994 | 51400 | | | | | | | | | | | | | | 81 | | 2.4 |
| A01-01 | A01-01 Storm Drain | 1-10'x6 RCB | 36+15.00 | 36+55.00 | 40.00 | | | | | | | | | | | | | 1.00 | 40.1 | 238.5 | 112.6 | | | | | | | | | | | |
| A01-01 | A01-01 Storm Drain | Open Channel | 36+55.00 | 37+00.00 | 45.00 | 6 | 270 | 1.5 | 10.0 | 36 | 0.87 | 39 | 210 | 350 | 1800 | | | | | | | | | | | | | | 81 | | 0.1 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **TOTALS** | | **SUM** | | | **12079** | | **107580** | | | | | **7759** | | **81983** | **303400** | | **0** | | **1860** | **15285** | **9338.5** | **0** | **0** | **0** | **2600** | **1200** | **0** | **0** | **17354** | | | **15.5** |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Line B (Pipe and Concrete Lined Channel) Quantity Estimation Worksheet**

| Facility No. | Facility Name | Type | Alignment Stationing | | | Open Channel | | | | | | | | | | | Box | | | | Pipe | | | | | | | | Right of Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STA. | STA. | Length (ft) | Bottom Width (ft) | Bottom Area (sf) | Side Slope horiz/vert | Channel Depth (ft) | Top Width (ft) | Conc. Vol/ft (cy/ft) | Concrete Vol (cy) | Excav Area (sf) | Excav Vol (cy) | 3" Aggregate Base (sq ft) | Additional Levee Fill (cy/ft) | Additional Levee Fill (cy) | Conc. Vol/ft (cy/ft) | Conc. (cy) | Excav Vol (cy) | Structural Backfill (cy) | 60" (LF) | 66" (LF) | 72" (LF) | 78" (LF) | 84" (LF) | 90" (LF) | 96" (LF) | Excav Vol (cy) | Required Width (ft) | EXIST CVWD Width (ft) | Additional Area (ac) |
| B01 | B01 Storm Drain | Open Channel | 11+10.11 | 17+80.00 | 669.89 | 32 | 21436 | 1.5 | 10.0 | 62 | 1.35 | 906 | 470 | 11661 | 26796 | | | | | | | | | | | | | | | 107 | | 1.6 |
| B01 | B01 Storm Drain | 3-12'x7' RCB | 17+80.00 | 18+70.00 | 90.00 | | | | | | | | | | | | | 3.65 | 328.5 | 2062.3 | 966.7 | | | | | | | | | | | |
| B01 | B01 Storm Drain | Open Channel | 18+70.00 | 21+50.00 | 280.00 | 32 | 8960 | 1.5 | 7.9 | 56 | 1.21 | 67 | 347 | 708 | 11200 | | | | | | | | | | | | | | | 101 | | 0.1 |
| B01 | B01 Storm Drain | Open Channel | 21+50.00 | 22+05.00 | 55.00 | 30 | 1650 | 1.5 | 10.0 | 60 | 1.32 | 303 | 450 | 3833 | 2200 | | | | | | | | | | | | | | | | | |
| B01 | B01 Storm Drain | 3-12'x7' RCB | 22+05.00 | 24+35.00 | 230.00 | | | | | 0 | | | | | | | | 3.65 | 839.5 | 5270.3 | 2470.4 | | | | | | | | | | | |
| B01 | B01 Storm Drain | Open Channel | 24+35.00 | 33+00.26 | 865.26 | 30 | 25958 | 1.5 | 10.0 | 60 | 1.32 | 1139 | 450 | 14421 | 34610 | | | | | | | | | | | | | | | 105 | | 2.1 |
| B01 | B01 Storm Drain | Open Channel | 33+00.26 | 35+76.00 | 275.74 | 16 | 4412 | 1.5 | 10.0 | 46 | 1.06 | 291 | 310 | 3166 | 11030 | | | | | | | | | | | | | | | 91 | | 0.6 |
| B01 | B01 Storm Drain | 2-10'x7' RCB | 35+76.00 | 36+16.00 | 40.00 | | | | | | | | | | | | | 1.97 | 78.8 | 443.0 | 165.9 | | | | | | | | | | | |
| B01 | B01 Storm Drain | Open Channel | 36+16.00 | 62+50.00 | 2634.00 | 16 | 42144 | 1.5 | 10.5 | 48 | 1.09 | 2871 | 333 | 32523 | 105360 | | | | | | | | | | | | | | | 93 | | 5.6 |
| B01 | B01 Storm Drain | 96" RCP | 62+50.00 | 88+75.00 | 2625.00 | | | | | | | | | | | | | | | | | | | | | | 2625 | 15071 | | | | |
| B01 | B01 Storm Drain | 78" RCP | 88+75.00 | 117+70.00 | 2895.00 | | | | | | | | | | | | | | | | | | | 2895 | | | | 12840 | | | | |
| B01 | B01 Storm Drain | 66" RCP | 117+70.00 | 127+50.00 | 980.00 | | | | | | | | | | | | | | | | | | 980 | | | | | | 3584 | | | |
| B01-01 | B01-01 Storm Drain | Open Channel | 10+29.00 | 36+10.00 | 2581.00 | 6 | 15486 | 1.5 | 10.0 | 36 | 0.87 | 2249 | 210 | 20074 | 103240 | | | | | | | | | | | | | | | 81 | | 4.8 |
| B01-01 | B01-01 Storm Drain | 1-10'x6'RCB | 36+10.00 | 37+10.00 | 100.00 | | | | | | | | | | | | | 1.00 | 100.4 | 653.1 | 338.3 | | | | | | | | | | | |
| B01-01 | B01-01 Storm Drain | Open Channel | 37+10.00 | 45+00.00 | 790.00 | 6 | 4740 | 1.5 | 10.0 | 36 | 0.87 | 688 | 210 | 6144 | 31600 | | | | | | | | | | | | | | | 81 | | 1.5 |
| B01-02 | B01-02 Storm Drain | 90" RCP | 10+05.66 | 35+60.00 | 2554.34 | | | | | | | | | | | | | | | | | | | | | | 2554 | 13506 | | | | |
| B01-02 | B01-02 Storm Drain | 72" RCP | 35+60.00 | 46+00.00 | 1040.00 | | | | | | | | | | | | | | | | | | | 1040 | | | | 4198 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **TOTALS** | | **SUM** | | | **18705** | | **124786** | | | | | **8514** | | **92530** | **326036** | | **0** | | **1347** | **8429** | **3941.3** | **0** | **980** | **1040** | **2895** | **0** | **2554** | **2625** | **49200** | | | **16.3** |

**Line C (Pipe and Concrete Lined Channel) Quantity Estimation Worksheet**

| Facility No. | Facility Name | Type | Alignment Stationing | | | Open Channel | | | | | | | | | | | Box | | | | Pipe | | | | | | | | Right of Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STA. | STA. | Length (ft) | Bottom Width (ft) | Bottom Area (sf) | Side Slope horiz/vert | Channel Depth (ft) | Top Width (ft) | Conc. Vol/ft (cy/ft) | Concrete Vol (cy) | Excav Area (sf) | Excav Vol (cy) | 3" Aggregate Base (sq ft) | Additional Levee Fill (cy/ft) | Additional Levee Fill (cy) | Conc. Vol/ft (cy/ft) | Conc. (cy) | Excav Vol (cy) | Structural Backfill (cy) | 60" (LF) | 66" (LF) | 72" (LF) | 78" (LF) | 84" (LF) | 90" (LF) | 96" (LF) | Excav Vol (cy) | Required Width (ft) | EXIST CVWD Width (ft) | Additional Area (ac) |
| C01 | C01 Storm Drain | Open Channel | 12+88.03 | 21+49.00 | 860.97 | 38 | 32717 | 1.5 | 10.5 | 70 | 1.50 | 1289 | 564 | 17997 | 34439 | | | | | | | | | | | | | | | 115 | | 2.3 |
| C01 | C01 Storm Drain | 3-14'x7' RCB | 21+49.00 | 23+70.00 | 221.00 | | | | | | | | | | | | | 4.93 | 1090.3 | 5776.2 | 2668.4 | | | | | | | | | | | |
| C01 | C01 Storm Drain | Open Channel | 23+70.00 | 26+00.00 | 230.00 | 38 | 8740 | 1.5 | 10.5 | 70 | 1.50 | 344 | 564 | 4808 | 9200 | | | | | | | | | | | | | | | 115 | | 0.6 |
| C01 | C01 Storm Drain | 3-14'x7' RCB | 26+00.00 | 26+40.00 | 40.00 | | | | | | | | | | | | | 4.93 | 197.3 | 973.4 | 410.9 | | | | | | | | | | | |
| C01 | C01 Storm Drain | Open Channel | 26+40.00 | 32+35.00 | 595.00 | 38 | 22610 | 1.5 | 10.5 | 70 | 1.50 | 891 | 564 | 12437 | 23800 | | | | | | | | | | | | | | | 115 | | 1.6 |
| C01 | C01 Storm Drain | 3-12'x7' RCB | 32+35.00 | 34+35.00 | 200.00 | | | | | | | | | | | | | 3.65 | 730.0 | 3950.7 | 1516.1 | | | | | | | | | | | |
| C01 | C01 Storm Drain | Open Channel | 34+35.00 | 50+00.00 | 1565.00 | 30 | 46950 | 1.5 | 10.0 | 60 | 1.32 | 2059 | 450 | 26083 | 62600 | | | | | | | | | | | | | | | 105 | | 3.8 |
| C01 | C01 Storm Drain | Open Channel | 50+00.00 | 55+30.00 | 530.00 | 26 | 13780 | 1.5 | 10.0 | 56 | 1.24 | 658 | 410 | 8048 | 21200 | | | | | | | | | | | | | | | 101 | | 1.2 |
| C01 | C01 Storm Drain | Open Channel | 55+30.00 | 73+65.00 | 1835.00 | 24 | 44040 | 1.5 | 8.0 | 48 | 1.07 | 1966 | 288 | 19573 | 73400 | | | | | | | | | | | | | | | 93 | | 3.9 |
| C01 | C01 Storm Drain | 3-10'x5' RCB | 73+65.00 | 74+64.91 | 99.91 | | | | | | | | | | | | | 2.73 | 272.5 | 1289.0 | 503.3 | | | | | | | | | | | |
| C01 | C01 Storm Drain | Open Channel | 74+64.91 | 76+90.00 | 225.09 | 24 | 5402 | 1.5 | 8.0 | 48 | 1.07 | 241 | 288 | 2401 | 9004 | | | | | | | | | | | | | | | 93 | | 0.5 |
| C01 | C01 Storm Drain | Open Channel | 76+90.00 | 100+15.00 | 2325.00 | 13 | 30225 | 1.5 | 8.0 | 37 | 0.87 | 2017 | 200 | 17222 | 93000 | | | | | | | | | | | | | | | 82 | | 4.4 |
| C01 | C01 Storm Drain | Open Channel | 100+15.00 | 125+55.00 | 2540.00 | 8 | 20320 | 1.5 | 8.0 | 32 | 0.77 | 1968 | 160 | 15052 | 101600 | | | | | | | | | | | | | | | 77 | | 4.5 |
| C01 | C01 Storm Drain | 1-10'x5' RCB | 125+55.00 | 125+95.00 | 40.00 | | | | | | | | | | | | | 0.93 | 37.2 | 215.8 | 106.7 | | | | | | | | | | | |
| C01 | C01 Storm Drain | Open Channel | 125+95.00 | 130+00.00 | 405.00 | 6 | 2430 | 1.5 | 8.0 | 30 | 0.74 | 299 | 144 | 2160 | 16200 | | | | | | | | | | | | | | | 75 | | 0.7 |
| C01-01 | C01-01 Storm Drain | Open Channel | 10+29.74 | 23+00.00 | 1270.26 | 6 | 7622 | 1.5 | 7.0 | 27 | 0.67 | 852 | 116 | 5434 | 50810 | | | | | | | | | | | | | | | 72 | | 2.1 |
| C01-01 | C01-01 Storm Drain | 84" RCP | 23+00.00 | 36+09.00 | 1309.00 | | | | | | | | | | | | | | | | | | | | 1309 | | | 6351 | | | |
| C01-02 | C01-01 Storm Drain | 72" RCP | 10+00.00 | 22+20.00 | 1220.00 | | | | | | | | | | | | | | | | | | 1220 | | | | | 4925 | | | |
| C01-02 | C01-01 Storm Drain | 60" RCP | 22+20.00 | 33+50.00 | 1130.00 | | | | | | | | | | | | | | | | | 1130 | | | | | | 3724 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **TOTALS** | | **SUM** | | | **16641** | | **234836** | | | | | **12585** | | **131215** | **495253** | | **0** | | **2327** | **12205** | **5205.4** | **1130** | **0** | **1220** | **0** | **1309** | **0** | **0** | **15001** | | | **25.5** |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Line D (Pipe and Concrete Lined Channel) Quantity Estimation Worksheet**

| Facility No. | Facility Name | Type | Alignment Stationing | | | Open Channel | | | | | | | | | | | Box | | | | Pipe | | | | | | | | Right of Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STA. | STA. | Length (ft) | Bottom Width (ft) | Bottom Area (sf) | Side Slope horiz/vert | Channel Depth (ft) | Top Width (ft) | Conc. Vol/ft (cy/ft) | Concrete Vol (cy) | Excav Area (sf) | Excav Vol (cy) | 3" Aggregate Base (sq ft) | Additional Levee Fill (cy/ft) | Additional Levee Fill (cy) | Conc. Vol/ft (cy/ft) | Conc. (cy) | Excav Vol (cy) | Structural Backfill (cy) | 60" (LF) | 66" (LF) | 72" (LF) | 78" (LF) | 84" (LF) | 90" (LF) | 96" (LF) | Excav Vol (cy) | Required Width (ft) | EXIST CVWD Width (ft) | Additional Area (ac) |
| D01 | D01 Storm Drain | Open Channel and Levee | 11+60.00 | 42+70.00 | 3110.00 | 35 | 108850 | 1.5 | 19.0 | 92 | 2.01 | 6249 | 1207 | 138971 | 124400 | 14.0 | 43540 | | | | | | | | | | | | | 137 | 80 | 4.1 |
| D01 | D01 Storm Drain | Open Channel and Levee | 42+70.00 | 68+50.00 | 2580.00 | 33 | 85140 | 1.5 | 16.5 | 83 | 1.81 | 4658 | 953 | 91053 | 103200 | 10.6 | 27348 | | | | | | | | | | | | | 128 | 80 | 2.8 |
| D01 | D01 Storm Drain | 3-14'x7' RCB | 68+50.00 | 69+20.00 | 70.00 | | | | | | | | | | | | | 4.93 | 345.3 | 2081.9 | 1097.6 | | | | | | | | | | | |
| D01 | D01 Storm Drain | Open Channel and Levee | 69+20.00 | 100+30.00 | 3110.00 | 33 | 102630 | 1.5 | 15.0 | 78 | 1.71 | 5303 | 833 | 95892 | 124400 | 5.2 | 16172 | | | | | | | | | | | | | 123 | 80 | 3.1 |
| D01 | D01 Storm Drain | Open Channel | 100+30.00 | 118+15.00 | 1785.00 | 22 | 39270 | 1.5 | 8.0 | 46 | 1.03 | 1846 | 272 | 17982 | 71400 | | | | | | | | | | | | | | | | | |
| D01 | D01 Storm Drain | Open Channel | 118+15.00 | 141+30.00 | 2315.00 | 20 | 46300 | 1.5 | 10.0 | 50 | 1.13 | 2617 | 350 | | | | | | | | | | | | | | | | | | | |
| D01 | D01 Storm Drain | Open Channel | 141+30.00 | 145+70.00 | 440.00 | 15 | 6600 | 1.5 | 10.0 | 45 | 1.04 | 457 | 300 | 4889 | 17600 | | | | | | | | | | | | | | | 90 | | 0.9 |
| D01 | D01 Storm Drain | 2-10'x6' RCB | 145+70.00 | 146+20.00 | 50.00 | | | | | | | | | | | | | 1.89 | 94.6 | 553.7 | 248.2 | | | | | | | | | | | |
| D01 | D01 Storm Drain | Open Channel | 146+20.00 | 170+15.00 | 2395.00 | 15 | 35925 | 1.5 | 10.0 | 45 | 1.04 | 2486 | 300 | 26611 | 95800 | | | | | | | | | | | | | | | 90 | | 4.9 |
| D01 | D01 Storm Drain | 2-10'x6' RCB | 170+15.00 | 170+85.00 | 70.00 | | | | | | | | | | | | | 1.89 | 132.5 | 842.6 | 414.8 | | | | | | | | | | | |
| D01 | D01 Storm Drain | Open Channel | 170+85.00 | 196+60.00 | 2575.00 | 10 | 25750 | 1.5 | 10.0 | 40 | 0.95 | 2435 | 250 | 23843 | 103000 | | | | | | | | | | | | | | | 85 | | 5.0 |
| D01 | D01 Storm Drain | Open Channel | 196+60.00 | 223+10.00 | 2650.00 | 8 | 21200 | 1.5 | 8.0 | 32 | 0.77 | 2053 | 160 | 15704 | 106000 | | | | | | | | | | | | | | | 77 | | 4.7 |
| D01 | D01 Storm Drain | 2-7'x6' RCB | 223+10.00 | 223+60.00 | 50.00 | | | | | | | | | | | | | 1.26 | 63.0 | 351.9 | 129.6 | | | | | | | | | | | |
| D01 | D01 Storm Drain | Open Channel | 223+60.00 | 223+90.00 | 30.00 | 6 | 180 | 1.5 | 10.0 | 36 | 0.87 | 26 | 210 | 233 | 1200 | | | | | | | | | | | | | | | 81 | | 0.06 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **TOTALS** | | **SUM** | | | **21230** | | **471845** | | | | | **28131** | | **415177** | **747000** | | **87060** | | **635** | **3830** | **1890.2** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | | | **25.6** |

**Line E (Pipe and Concrete Lined Channel) Quantity Estimation Worksheet**

| Facility No. | Facility Name | Type | Alignment Stationing | | | Open Channel | | | | | | | | | | | Box | | | | Pipe | | | | | | | | Right of Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STA. | STA. | Length (ft) | Bottom Width (ft) | Bottom Area (sf) | Side Slope horiz/vert | Channel Depth (ft) | Top Width (ft) | Conc. Vol/ft (cy/ft) | Concrete Vol (cy) | Excav Area (sf) | Excav Vol (cy) | 3" Aggregate Base (sq ft) | Additional Levee Fill (cy/ft) | Additional Levee Fill (cy) | Conc. Vol/ft (cy/ft) | Conc. (cy) | Excav Vol (cy) | Structural Backfill (cy) | 60" (LF) | 66" (LF) | 72" (LF) | 78" (LF) | 84" (LF) | 90" (LF) | 96" (LF) | Excav Vol (cy) | Required Width (ft) | EXIST CVWD Width (ft) | Additional Area (ac) |
| E01 | E01 Storm Drain | Open Channel and Levee | 64+67.88 | 88+15.00 | 2347.12 | 150 | 352068 | 1.5 | 14.0 | 192 | 3.81 | 8931 | 2394 | 208111 | 93885 | 10.6 | 24879 | | | | | | | | | | | | | 237 | 120(*) | 12.8 |
| E01 | E01 Storm Drain | Open Channel and Levee | 88+15.00 | 114+40.00 | 2625.00 | 150 | 393750 | 1.5 | 13.0 | 189 | 3.74 | 9813 | 2204 | 214229 | 105000 | 5.20 | 13650 | | | | | | | | | | | | | 234 | 120(*) | 14.1 |
| E01 | E01 Storm Drain | 10-14'x7' RCB | 114+40.00 | 117+50.00 | 310.00 | | | | | | | | | | | | | 16.44 | 5097.8 | 21719.7 | 7340.7 | | | | | | | | | | | |
| E01 | E01 Storm Drain | Open Channel | 117+50.00 | 144+20.00 | 2670.00 | 120 | 320400 | 1.5 | 8.0 | 144 | 2.85 | 7607 | 1056 | 104427 | 106800 | | | | | | | | | | | | | | | 189 | 120(*) | 11.6 |
| E01 | E01 Storm Drain | Open Channel | 144+20.00 | 170+00.00 | 2580.00 | 110 | 283800 | 1.5 | 8.0 | 134 | 2.66 | 6873 | 976 | 93262 | 103200 | | | | | | | | | | | | | | | 179 | 120(*) | 10.6 |
| E01 | E01 Storm Drain | 10-12'x6' RCB | 170+00.00 | 187+85.00 | 1785.00 | | | | | | | | | | | | | 11.78 | 21023.4 | 117218.3 | 54080.3 | | | | | | | | | | | |
| E01 | E01 Storm Drain | Open Channel | 187+85.00 | 197+50.00 | 965.00 | 25 | 24125 | 1.5 | 9.0 | 52 | 1.16 | 1116 | 347 | 12384 | 38600 | | | | | | | | | | | | | | | 97 | | 2.1 |
| E01 | E01 Storm Drain | Open Channel | 197+50.00 | 224+00.00 | 2650.00 | 20 | 53000 | 1.5 | 9.0 | 47 | 1.06 | 2819 | 302 | 29592 | 106000 | | | | | | | | | | | | | | | 92 | | 5.6 |
| E01 | E01 Storm Drain | Open Channel | 224+00.00 | 250+70.00 | 2670.00 | 16 | 42720 | 1.5 | 9.0 | 43 | 0.99 | 2643 | 266 | 26255 | 106800 | | | | | | | | | | | | | | | 88 | | 5.4 |
| E01 | E01 Storm Drain | Open Channel | 250+70.00 | 277+47.34 | 2677.34 | 12 | 32128 | 1.5 | 9.0 | 39 | 0.92 | 2452 | 230 | 22757 | 107094 | | | | | | | | | | | | | | | 84 | | 5.2 |
| E01 | E01 Storm Drain | 2-10'x6' RCB | 277+47.34 | 278+27.34 | 80.00 | | | | | | | | | | | | | 1.89 | 151.4 | 886.0 | 397.0 | | | | | | | | | | | |
| E01 | E01 Storm Drain | Open Channel | 278+27.34 | 305+15.00 | 2687.66 | 6 | 16126 | 1.5 | 9.0 | 33 | 0.80 | 2163 | 176 | 17470 | 107506 | | | | | | | | | | | | | | | 78 | | 4.8 |
| E01 | E01 Storm Drain | 96" RCP | 305+15.00 | 331+25.00 | 2610.00 | | | | | | | | | | | | | | | | | | | | | | 2610 | 14985 | | | | |
| E01 | E01 Storm Drain | 84" RCP | 331+25.00 | 345+00.00 | 1375.00 | | | | | | | | | | | | | | | | | | | | 1375 | | | 6672 | | | |
| E01 | E01 Storm Drain | 66" RCP | 345+00.00 | 358+00.00 | 1300.00 | | | | | | | | | | | | | | | | | | 1300 | | | | | 4754 | | | |
| E01-01 | E01-01 Storm Drain | 5-12'x6' RCB | 12+00.00 | 15+00.00 | 300.00 | | | | | | | | | | | | | 5.89 | 1766.7 | 10200.3 | 4866.8 | | | | | | | | | | | |
| E01-01 | E01-01 Storm Drain | Open Channel | 15+00.00 | 63+00.00 | 4800.00 | 55 | 264000 | 1.5 | 9.0 | 82 | 1.71 | 8218 | 617 | 109600 | 192000 | | | | | | | | | | | | | | | 127 | | 14.0 |
| E01-01 | E01-01 Storm Drain | Open Channel | 63+00.00 | 93+65.00 | 3065.00 | 47 | 144055 | 1.5 | 9.0 | 74 | 1.56 | 4793 | 545 | 61811 | 122600 | | | | | | | | | | | | | | | 119 | | 8.4 |
| E01-01 | E01-01 Storm Drain | Open Channel | 93+65.00 | 123+35.00 | 2970.00 | 16 | 47520 | 1.5 | 9.0 | 43 | 0.99 | 2940 | 266 | 29205 | 118800 | | | | | | | | | | | | | | | 88 | | 6.0 |
| E01-01 | E01-01 Storm Drain | 2-12'x6' RCB | 123+35.00 | 124+55.00 | 120.00 | | | | | | | | | | | | | 2.36 | 282.7 | 1533.4 | 666.7 | | | | | | | | | | | |
| E01-01 | E01-01 Storm Drain | Open Channel | 124+55.00 | 150+00.00 | 2545.00 | 16 | 40720 | 1.5 | 9.0 | 43 | 0.99 | 2519 | 266 | 25026 | 101800 | | | | | | | | | | | | | | | 88 | | 5.1 |
| E01-01 | E01-01 Storm Drain | Open Channel | 150+00.00 | 190+45.00 | 4045.00 | 10 | 40450 | 1.5 | 9.0 | 37 | 0.88 | 3554 | 212 | 31686 | 161800 | | | | | | | | | | | | | | | 82 | | 7.6 |
| E01-01 | E01-01 Storm Drain | 2-8'x6' RCB | 190+45.00 | 191+15.00 | 70.00 | | | | | | | | | | | | | 1.48 | 103.4 | 656.0 | 305.9 | | | | | | | | | | | |
| E01-01 | E01-01 Storm Drain | Open Channel | 191+15.00 | 218+49.00 | 2734.00 | 6 | 16404 | 1.5 | 9.0 | 33 | 0.80 | 2200 | 176 | 17771 | 109360 | | | | | | | | | | | | | | | 78 | | 4.9 |
| E01-02 | E01-02 Storm Drain | Open Channel | 10+67.63 | 25+15.00 | 1447.37 | 20 | 28947 | 1.5 | 9.0 | 47 | 1.06 | 1540 | 302 | 16162 | 57895 | | | | | | | | | | | | | | | 92 | | 3.1 |
| E01-02 | E01-02 Storm Drain | Open Channel | 25+15.00 | 37+95.00 | 1280.00 | 17 | 21760 | 1.5 | 8.0 | 41 | 0.94 | 1205 | 232 | 10999 | 51200 | | | | | | | | | | | | | | | 86 | | 2.5 |
| E01-02 | E01-02 Storm Drain | 2-10'x5' RCB | 37+95.00 | 38+55.00 | 60.00 | | | | | | | | | | | | | 1.82 | 109.1 | 664.5 | 346.7 | | | | | | | | | | | |
| E01-02 | E01-02 Storm Drain | Open Channel | 38+55.00 | 65+50.00 | 2695.00 | 10 | 26950 | 1.5 | 9.0 | 37 | 0.88 | 2368 | 212 | 21111 | 107800 | | | | | | | | | | | | | | | 82 | | 5.1 |
| E01-02 | E01-02 Storm Drain | Open Channel | 65+50.00 | 91+10.00 | 2560.00 | 6 | 15360 | 1.5 | 9.0 | 33 | 0.80 | 2060 | 176 | 16640 | 102400 | | | | | | | | | | | | | | | 78 | | 4.6 |

| Facility No. | Facility Name | Type | Alignment Stationing | | | Open Channel | | | | | | | | | | | Box | | | | Pipe | | | | | | | | Right of Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STA. | STA. | Length (ft) | Bottom Width (ft) | Bottom Area (sf) | Side Slope horiz/vert | Channel Depth (ft) | Top Width (ft) | Conc. Vol/ft (cy/ft) | Concrete Vol (cy) | Excav Area (sf) | Excav Vol (cy) | 3" Aggregate Base (sq ft) | Additional Levee Fill (cy/ft) | Additional Levee Fill (cy) | Conc. Vol/ft (cy/ft) | Conc. (cy) | Excav Vol (cy) | Structural Backfill (cy) | 60" (LF) | 66" (LF) | 72" (LF) | 78" (LF) | 84" (LF) | 90" (LF) | 96" (LF) | Excav Vol (cy) | Required Width (ft) | EXIST CVWD Width (ft) | Additional Area (ac) |
| E01-02 | E01-02 Storm Drain | 84" RCP | 91+10.00 | 118+50.00 | 2740.00 | | | | | | | | | | | | | | | | | | | | 2740 | | | 13295 | | | |
| E01-03 | E01-03 Storm Drain | 1-6'x6' RCB | 10+00.00 | 18+50.00 | 850.00 | | | | | | | | | | | | | 0.66 | 560.4 | 4460.1 | 2728.5 | | | | | | | | | | |
| E01-03 | E01-03 Storm Drain | Open Channel | 18+50.00 | 32+65.00 | 1415.00 | 6 | 8490 | 1.5 | 9.0 | 33 | 0.80 | 1139 | 176 | 9198 | 56600 | | | | | | | | | | | | | | | 78 | | 2.5 |
| E01-03 | E01-03 Storm Drain | Open Channel | 32+65.00 | 63+50.00 | 3085.00 | 6 | 18510 | 1.5 | 8.0 | 30 | 0.74 | 2276 | 144 | 16453 | 123400 | | | | | | | | | | | | | | | 75 | | 5.3 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **TOTALS** | | **SUM** | | | **66113** | | **2191283** | | | | | **79228** | | **1094148** | **2180540** | | **38529** | | **29095** | **157338** | **70732.6** | **0** | **1300** | **0** | **0** | **4115** | **0** | **2610** | **39706** | | | **141.3** |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Line F (Pipe and Concrete Lined Channel) Quantity Estimation Worksheet**

| Facility No. | Facility Name | Type | Alignment Stationing | | | Open Channel | | | | | | | | | | | Box | | | | Pipe | | | | | | | | Right of Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STA. | STA. | Length (ft) | Bottom Width (ft) | Bottom Area (sf) | Side Slope horiz/vert | Channel Depth (ft) | Top Width (ft) | Conc. Vol/ft (cy/ft) | Concrete Vol (cy) | Excav Area (sf) | Excav Vol (cy) | 3" Aggregate Base (sq ft) | Additional Levee Fill (cy/ft) | Additional Levee Fill (cy) | Conc. Vol/ft (cy/ft) | Conc. (cy) | Excav Vol (cy) | Structural Backfill (cy) | 60" (LF) | 66" (LF) | 72" (LF) | 78" (LF) | 84" (LF) | 90" (LF) | 96" (LF) | Excav Vol (cy) | Required Width (ft) | EXIST CVWD Width (ft) | Additional Area (ac) |
| F01 | F01 Storm Drain | Levee ( ht. varies 0 to 8') | 10+00.00 | 31+00.00 | 2100.00 | 855 | 1795500 | | | | | | | | 84000 | 11.0 | 23016 | | | | | | | | | | | | | varies | 75 | 39.6 |
| F01 | F01 Storm Drain | Open Channel and Levee (ht. = 8') | 31+00.00 | 49+73.00 | 1873.00 | 110 | 206030 | 1.5 | 9.5 | 139 | 2.76 | 5177 | 1180 | 81883 | 74920 | 21.9 | 41019 | | | | | | | | | | | | | 184 | 75 | 4.7 |
| F01 | F01 Storm Drain | 9-12'x6' RCB | 49+73.00 | 50+13.00 | 40.00 | | | | | | | | | | | | | 10.60 | 424.0 | 2021.8 | 747.7 | | | | | | | | | | | |
| F01 | F01 Storm Drain | Levee (ht. = 10') | 50+13.00 | 75+00.00 | | | | | | | | | | | | 31.5 | 78341 | | | | | | | | | | | | | | | |
| F01 | F01 Storm Drain | Open Channel and Levee | 50+13.00 | 85+30.00 | 3517.00 | 90 | 316530 | 1.5 | 9.5 | 119 | 2.39 | 8418 | 990 | 129006 | 140680 | | | | | | | | | | | | | | | 164 | 75 | 7.1 |
| F01 | F01 Storm Drain | Levee (ht. = 4') | 75+00.00 | 91+25.00 | | | | | | | | | | | | 7.7 | 12513 | | | | | | | | | | | | | | | |
| F01 | F01 Storm Drain | Open Channel and Levee | 85+30.00 | 99+88.00 | 1458.00 | 80 | 116640 | 1.5 | 9.0 | 107 | 2.17 | 3171 | 842 | 45441 | 58320 | | | | | | | | | | | | | | | 152 | 75(*) | 2.1 |
| F01 | F01 Storm Drain | 7-12'x6' RCB | 99+88.00 | 105+79.00 | 591.00 | | | | | | | | | | | | | 8.21 | 4849.5 | 23494.7 | 8828.8 | | | | | | | | | | | |
| F01 | F01 Storm Drain | Open Channel | 105+79.00 | 130+30.00 | 2451.00 | 20 | 49020 | 1.5 | 9.5 | 49 | 1.10 | 2689 | 325 | 29537 | 98040 | | | | | | | | | | | | | | | 94 | | 5.3 |
| F01 | F01 Storm Drain | Open Channel | 130+30.00 | 155+95.00 | 2565.00 | 110 | 282150 | 1.5 | 9.5 | 139 | 2.76 | 7090 | 1180 | 112136 | 102600 | | | | | | | | | | | | | | | 184 | | 10.8 |
| F01 | F01 Storm Drain | 2-10'x6' RCB | 155+95.00 | 156+45.00 | 50.00 | | | | | | | | | | | | | 1.89 | 94.6 | 601.9 | 296.3 | | | | | | | | | | | |
| F01 | F01 Storm Drain | Open Channel | 156+45.00 | 182+50.00 | 2605.00 | 10 | 26050 | 1.5 | 9.0 | 37 | 0.88 | 2289 | 212 | 20406 | 104200 | | | | | | | | | | | | | | | 82 | | 4.9 |
| F01 | F01 Storm Drain | 2-8'x5' RCB | 182+50.00 | 182+90.00 | 40.00 | | | | | | | | | | | | | 1.37 | 54.7 | 342.2 | 168.9 | | | | | | | | | | | |
| F01 | F01 Storm Drain | Open Channel | 182+90.00 | 209+20.00 | 2630.00 | 8 | 21040 | 1.5 | 9.0 | 35 | 0.84 | 2214 | 194 | 18848 | 105200 | | | | | | | | | | | | | | | 80 | | 4.8 |
| F01 | F01 Storm Drain | Open Channel | 209+20.00 | 236+15.00 | 2695.00 | 6 | 16170 | 1.5 | 9.0 | 33 | 0.80 | 2168 | 176 | 17518 | 107800 | | | | | | | | | | | | | | | 78 | | 4.8 |
| F01 | F01 Storm Drain | 96" RCP | 236+15.00 | 264+40.00 | 2825.00 | | | | | | | | | | | | | | | | | | | | | | 2825 | 16219 | | | | |
| F01-01 | F01-01 Storm Drain | Open Channel | 10+35.96 | 36+80.00 | 2644.04 | 40 | 105762 | 1.5 | 9.0 | 67 | 1.43 | 3792 | 482 | 47152 | 105762 | | | | | | | | | | | | | | | 112 | | 6.8 |
| F01-01 | F01-01 Storm Drain | Open Channel | 36+80.00 | 62+65.00 | 2585.00 | 35 | 90475 | 1.5 | 9.0 | 62 | 1.34 | 3468 | 437 | 41791 | 103400 | | | | | | | | | | | | | | | 107 | | 6.3 |
| F01-01 | F01-01 Storm Drain | 4-10'x6' RCB | 62+65.00 | 63+05.00 | 40.00 | | | | | | | | | | | | | 3.79 | 151.4 | 806.4 | 324.9 | | | | | | | | | | | |
| F01-01 | F01-01 Storm Drain | Open Channel | 63+05.00 | 89+80.00 | 2675.00 | 10 | 26750 | 1.5 | 9.0 | 37 | 0.88 | 2351 | 212 | 20954 | 107000 | | | | | | | | | | | | | | | 82 | | 5.0 |
| F01-01 | F01-01 Storm Drain | Open Channel | 89+80.00 | 116+32.00 | 2652.00 | 6 | 15912 | 1.5 | 9.0 | 33 | 0.80 | 2134 | 176 | 17238 | 106080 | | | | | | | | | | | | | | | 78 | | 4.7 |
| F01-01 | F01-01 Storm Drain | 2-7'x6' RCB | 116+32.00 | 116+72.00 | 40.00 | | | | | | | | | | | | | 1.26 | 50.4 | 340.8 | 163.0 | | | | | | | | | | | |
| F01-01 | F01-01 Storm Drain | Open Channel | 116+72.00 | 118+00.00 | 128.00 | 6 | 768 | 1.5 | 9.0 | 33 | 0.80 | 103 | 176 | 832 | 5120 | | | | | | | | | | | | | | | 78 | | 0.2 |
| F01-02 | F01-02 Storm Drain | Open Channel | 10+00.00 | 35+70.00 | 2570.00 | 15 | 38550 | 1.5 | 8.5 | 41 | 0.94 | 2410 | 236 | 22452 | 102800 | | | | | | | | | | | | | | | 86 | | 5.0 |
| F01-02 | F01-02 Storm Drain | Open Channel | 35+70.00 | 63+25.00 | 2755.00 | 13 | 35815 | 1.5 | 8.0 | 37 | 0.87 | 2390 | 200 | 20407 | 110200 | | | | | | | | | | | | | | | 82 | | 5.2 |
| F01-02 | F01-02 Storm Drain | 2-10'x5' RCB | 63+25.00 | 63+65.00 | 40.00 | | | | | | | | | | | | | 1.82 | 72.7 | 481.5 | 269.6 | | | | | | | | | | | |
| F01-02 | F01-02 Storm Drain | Open Channel | 63+65.00 | 89+70.00 | 2605.00 | 6 | 15630 | 1.5 | 8.0 | 30 | 0.74 | 1922 | 144 | 13893 | 104200 | | | | | | | | | | | | | | | 75 | | 4.5 |
| F01-02 | F01-02 Storm Drain | 84" RCP | 89+70.00 | 116+50.00 | 2680.00 | | | | | | | | | | | | | | | | | | | | | 2680 | | 13004 | | | |
| F01-03 | F01-03 Storm Drain | Open Channel | 10+00.00 | 36+10.00 | 2610.00 | 8 | 20880 | 1.5 | 8.0 | 32 | 0.77 | 2022 | 160 | 15467 | 104400 | | | | | | | | | | | | | | | 77 | | 4.6 |
| F01-03 | F01-03 Storm Drain | Open Channel | 36+10.00 | 65+00.00 | 2890.00 | 6 | 17340 | 1.5 | 8.0 | 30 | 0.74 | 2132 | 144 | 15413 | 115600 | | | | | | | | | | | | | | | 75 | | 5.0 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **TOTALS** | | **SUM** | | | **52354** | | **3197012** | | | | | **55941** | | **670373** | **1840322** | | **154888** | | **5697** | **28089** | **10799.2** | **0** | **0** | **0** | **0** | **2680** | **0** | **2825** | **29223** | | | **131.6** |

**Line I (Pipe and Concrete Lined Channel) Quantity Estimation Worksheet**

| Facility No. | Facility Name | Type | Alignment Stationing | | | Open Channel | | | | | | | | | | | Box | | | | Pipe | | | | | | | | Right of Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STA. | STA. | Length (ft) | Bottom Width (ft) | Bottom Area (sf) | Side Slope horiz/vert | Channel Depth (ft) | Top Width (ft) | Conc. Vol/ft (cy/ft) | Concrete Vol (cy) | Excav Area (sf) | Excav Vol (cy) | 3" Aggregate Base (sq ft) | Additional Levee Fill (cy/ft) | Additional Levee Fill (cy) | Conc. Vol/ft (cy/ft) | Conc. (cy) | Excav Vol (cy) | Structural Backfill (cy) | 60" (LF) | 66" (LF) | 72" (LF) | 78" (LF) | 84" (LF) | 90" (LF) | 96" (LF) | Excav Vol (cy) | Required Width (ft) | EXIST CVWD Width (ft) | Additional Area (ac) |
| I01 | I01 Storm Drain | Open Channel | 10+00.00 | 45+30.00 | 3530.00 | 30 | 105900 | 1.5 | 8.0 | 54 | 1.18 | 4174 | 336 | 43929 | 141200 | | | | | | | | | | | | | | | 99 | | 8.0 |
| I01 | I01 Storm Drain | Open Channel | 45+30.00 | 64+97.00 | 1967.00 | 20 | 39340 | 1.5 | 8.0 | 44 | 1.00 | 1961 | 256 | 18650 | 78680 | | | | | | | | | | | | | | | 89 | | 4.0 |
| I01 | I01 Storm Drain | 3-8'x6' RCB | 64+97.00 | 67+10.00 | 213.00 | | | | | | | | | | | | | 2.22 | 472.2 | 3266.1 | 1688.3 | | | | | | | | | | | |
| I01 | I01 Storm Drain | Open Channel | 67+10.00 | 80+45.00 | 1335.00 | 20 | 26700 | 1.5 | 8.0 | 44 | 1.00 | 1331 | 256 | 12658 | 53400 | | | | | | | | | | | | | | | 89 | | 2.7 |
| I01 | I01 Storm Drain | 2-8'x6' RCB | 80+45.00 | 80+85.00 | 40.00 | | | | | | | | | | | | | 1.48 | 59.1 | 342.2 | 142.2 | | | | | | | | | | | |
| I01 | I01 Storm Drain | Open Channel | 80+85.00 | 108+10.00 | 2725.00 | 9 | 24525 | 1.5 | 8.0 | 33 | 0.79 | 2162 | 168 | 16956 | 109000 | | | | | | | | | | | | | | | 78 | | 4.9 |
| I01 | I01 Storm Drain | Open Channel | 108+10.00 | 135+80.00 | 2770.00 | 8 | 22160 | 1.5 | 8.0 | 32 | 0.77 | 2146 | 160 | 16415 | 110800 | | | | | | | | | | | | | | | 77 | | 4.9 |
| I01 | I01 Storm Drain | 90" RCP | 135+80.00 | 161+20.00 | 2540.00 | | | | | | | | | | | | | | | | | | | | | 2540 | | 13430 | | | | |
| I01 | I01 Storm Drain | 72" RCP | 161+20.00 | 187+81.00 | 2661.00 | | | | | | | | | | | | | | | | | | 2661 | | | | | 10742 | | | | |
| I01 | I01 Storm Drain | 60" RCP | 187+81.00 | 189+99.00 | 218.00 | | | | | | | | | | | | | | | | | 218 | | | | | | 718 | | | | |
| I01-01 | I01-01 Storm Drain | Open Channel | 10+00.00 | 23+40.00 | 1340.00 | 16 | 21440 | 1.5 | 8.0 | 40 | 0.92 | 1237 | 224 | 11117 | 53600 | | | | | | | | | | | | | | | 85 | | 2.6 |
| I01-01 | I01-01 Storm Drain | Open Channel | 23+40.00 | 36+80.00 | 1340.00 | 12 | 16080 | 1.5 | 8.0 | 36 | 0.85 | 1138 | 192 | 9529 | 53600 | | | | | | | | | | | | | | | 81 | | 2.5 |
| I01-01 | I01-01 Storm Drain | Open Channel | 36+80.00 | 49+99.00 | 1319.00 | 10 | 13190 | 1.5 | 8.0 | 34 | 0.81 | 1071 | 176 | 8598 | 52760 | | | | | | | | | | | | | | | 79 | | 2.4 |
| I01-01 | I01-01 Storm Drain | Open Channel | 49+99.00 | 62+83.00 | 1284.00 | 6 | 7704 | 1.5 | 8.0 | 30 | 0.74 | 947 | 144 | 6848 | 51360 | | | | | | | | | | | | | | | 75 | | 2.2 |
| I01-01 | I01-01 Storm Drain | 1-10'x6' RCB | 62+83.00 | 63+64.00 | 81.00 | | | | | | | | | | | | | 1.00 | 81.3 | 529.0 | 274.0 | | | | | | | | | | | |
| I01-01 | I01-01 Storm Drain | Open Channel | 63+64.00 | 64+50.00 | 86.00 | 6 | 516 | 1.5 | 8.0 | 30 | 0.74 | 63 | 144 | 459 | 3440 | | | | | | | | | | | | | | | 75 | | 0.1 |
| I01-02 | I01-02 Storm Drain | Open Channel | 10+00.00 | 36+65.00 | 2665.00 | 6 | 15990 | 1.5 | 8.0 | 30 | 0.74 | 1966 | 144 | 14213 | 106600 | | | | | | | | | | | | | | | 75 | | 4.6 |
| I01-02 | I01-02 Storm Drain | Open Channel | 36+65.00 | 50+15.00 | 1350.00 | 16 | 21600 | 1.5 | 8.0 | 40 | 0.92 | 1246 | 224 | 11200 | 54000 | | | | | | | | | | | | | | | 85 | | 2.6 |
| I01-02 | I01-02 Storm Drain | Open Channel | 50+15.00 | 62+72.00 | 1257.00 | 16 | 20112 | 1.5 | 8.0 | 40 | 0.92 | 1160 | 224 | 10428 | 50280 | | | | | | | | | | | | | | | 85 | | 2.5 |
| I01-02 | I01-02 Storm Drain | 1-4'x4' RCB | 62+72.00 | 63+12.00 | 40.00 | | | | | | | | | | | | | 0.43 | 17.2 | 145.2 | 101.7 | | | | | | | | | | | |
| I01-02 | I01-01 Storm Drain | Open Channel | 63+12.00 | 65+00.00 | 188.00 | 6 | 1128 | 1.5 | 8.0 | 30 | 0.74 | 139 | 144 | 1003 | 7520 | | | | | | | | | | | | | | | 75 | | 0.3 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **TOTALS** | | **SUM** | | | **28949** | | **336385** | | | | | **20742** | | **182002** | **926240** | | **0** | | **630** | **4283** | **2206.2** | **218** | **0** | **2661** | **0** | **0** | **2540** | **0** | **24891** | | | **44.4** |

**Line J (Pipe and Concrete Lined Channel) Quantity Estimation Worksheet**

| Facility No. | Facility Name | Type | Alignment Stationing | | | Open Channel | | | | | | | | | | | Box | | | | Pipe | | | | | | | | Right of Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STA. | STA. | Length (ft) | Bottom Width (ft) | Bottom Area (sf) | Side Slope horiz/vert | Channel Depth (ft) | Top Width (ft) | Conc. Vol/ft (cy/ft) | Concrete Vol (cy) | Excav Area (sf) | Excav Vol (cy) | 3" Aggregate Base (sq ft) | Additional Levee Fill (cy/ft) | Additional Levee Fill (cy) | Conc. Vol/ft (cy/ft) | Conc. (cy) | Excav Vol (cy) | Structural Backfill (cy) | 60" (LF) | 66" (LF) | 72" (LF) | 78" (LF) | 84" (LF) | 90" (LF) | 96" (LF) | Excav Vol (cy) | Required Width (ft) | EXIST CVWD Width (ft) | Additional Area (ac) |
| J01-01 | J01-01 Storm Drain | Open Channel | 10+00.00 | 24+15.00 | 1415.00 | 10 | 14150 | 1.5 | 9.0 | 37 | 0.88 | 1243 | 212 | 11084 | 56600 | | | | | | | | | | | | | | | 82 | | 2.7 |
| J01-01 | J01-01 Storm Drain | Open Channel | 24+15.00 | 36+10.00 | 1195.00 | 6 | 7170 | 1.5 | 9.0 | 33 | 0.80 | 962 | 176 | 7768 | 47800 | | | | | | | | | | | | | | | 78 | | 2.1 |
| J01-02 | J01-02 Storm Drain | Open Channel | 10+00.00 | 42+80.00 | 3280.00 | 34 | 111520 | 1.5 | 9.0 | 61 | 1.32 | 4340 | 428 | 51933 | 131200 | | | | | | | | | | | | | | | 106 | | 8.0 |
| J01-02 | J01-02 Storm Drain | Open Channel | 42+80.00 | 75+65.00 | 3285.00 | 14 | 45990 | 1.5 | 9.0 | 41 | 0.95 | 3130 | 248 | 30113 | 131400 | | | | | | | | | | | | | | | 86 | | 6.5 |
| J01-02 | J01-02 Storm Drain | Open Channel | 75+65.00 | 116+30.00 | 4065.00 | 9 | 36585 | 1.5 | 9.0 | 36 | 0.86 | 3497 | 203 | 30488 | 162600 | | | | | | | | | | | | | | | 81 | | 7.6 |
| J01-02 | J01-02 Storm Drain | Open Channel | 116+30.00 | 118+10.00 | 180.00 | 6 | 1080 | 1.5 | 9.0 | 33 | 0.80 | 145 | 176 | 1170 | 7200 | | | | | | | | | | | | | | | 78 | | 0.3 |
| J01-02 | J01-02 Storm Drain | 1-10'x5' RCB | 118+10.00 | 118+50.00 | 40.00 | | | | | | | | | | | | | 0.93 | 37.2 | 215.8 | 106.7 | | | | | | | | | | | |
| J01-02 | J01-02 Storm Drain | Open Channel | 118+50.00 | 141+50.00 | 2300.00 | 6 | 13800 | 1.5 | 9.0 | 33 | 0.80 | 1851 | 176 | 14950 | 92000 | | | | | | | | | | | | | | | 78 | | 4.1 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **TOTALS** | | **SUM** | | | **15760** | | **230295** | | | | | **15167** | | **147505** | **628800** | | **0** | | **37** | **216** | **106.7** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | | | **31.3** |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Line K (Pipe and Concrete Lined Channel) Quantity Estimation Worksheet**

| Facility No. | Facility Name | Type | Alignment Stationing | | | Open Channel | | | | | | | | | | | Box | | | | Pipe | | | | | | | | Right of Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STA. | STA. | Length (ft) | Bottom Width (ft) | Bottom Area (sf) | Side Slope horiz/vert | Channel Depth (ft) | Top Width (ft) | Conc. Vol/ft (cy/ft) | Concrete Vol (cy) | Excav Area (sf) | Excav Vol (cy) | 3" Aggregate Base (sq ft) | Additional Levee Fill (cy/ft) | Additional Levee Fill (cy) | Conc. Vol/ft (cy/ft) | Conc. (cy) | Excav Vol (cy) | Structural Backfill (cy) | 60" (LF) | 66" (LF) | 72" (LF) | 78" (LF) | 84" (LF) | 90" (LF) | 96" (LF) | Excav Vol (cy) | Required Width (ft) | EXIST CVWD Width (ft) | Additional Area (ac) |
| K01 | K01 Storm Drain | Open Channel | 10+26.00 | 28+35.00 | 1809.00 | 20 | 36180 | 1.5 | 8.0 | 44 | 1.00 | 1804 | 256 | 17152 | 72360 | | | | | | | | | | | | | | | 89 | | 3.7 |
| K01 | K01 Storm Drain | 2-12'x6' RCB | 28+35.00 | 31+40.00 | 305.00 | | | | | | | | | | | | | 2.36 | 718.5 | 3219.6 | 1016.7 | | | | | | | | | | | |
| K01 | K01 Storm Drain | Open Channel | 31+40.00 | 54+77.00 | 2337.00 | 17 | 39729 | 1.5 | 8.0 | 41 | 0.94 | 2200 | 232 | 20081 | 93480 | | | | | | | | | | | | | | | 86 | | 4.6 |
| K01 | K01 Storm Drain | Open Channel | 54+77.00 | 117+50.00 | 6273.00 | 6 | 37638 | 1.5 | 9.0 | 33 | 0.80 | 5047 | 176 | 40775 | 250920 | | | | | | | | | | | | | | | 78 | | 11.2 |
| K01-01 | K01-01 Storm Drain | Open Channel | 10+00.00 | 12+13.00 | 213.00 | 8 | 1704 | 1.5 | 8.0 | 32 | 0.77 | 165 | 160 | 1262 | 8520 | | | | | | | | | | | | | | | 77 | | 0.4 |
| K01-01 | K01-01 Storm Drain | 1-12'x6' RCB | 12+13.00 | 12+53.00 | 40.00 | | | | | | | | | | | | | 1.23 | 49.2 | 295.3 | 147.2 | | | | | | | | | | | |
| K01-01 | K01-01 Storm Drain | Open Channel | 12+53.00 | 37+65.00 | 2512.00 | 8 | 20096 | 1.5 | 8.0 | 32 | 0.77 | 1947 | 160 | 14886 | 100480 | | | | | | | | | | | | | | | 77 | | 4.4 |
| K01-01 | K01-01 Storm Drain | Open Channel | 37+65.00 | 64+85.00 | 2720.00 | 6 | 16320 | 1.5 | 8.0 | 30 | 0.74 | 2007 | 144 | 14507 | 108800 | | | | | | | | | | | | | | | 75 | | 4.7 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **TOTALS** | | **SUM** | | | **16209** | | **151667** | | | | | **13170** | | **108662** | **634560** | | **0** | | **768** | **3515** | **1163.9** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | | | **29.0** |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Line A O & M Costs

Assume that Every 10 Year 6" of sediment/weeds needs to be removed from bottom of channels

| | | | |
|---|---|---|---|
| **Area of Channel Bottom** | 107,580 | sf | |
| **Assumed Sediment Depth** | 0.5 | ft | |
| **Sediment Volume** | 53,790 | CF | |
| | 1,992 | CY | |
| **Sediment removed per year** | 199 | | |
| **Cost per yard to remove** | $ 10.00 | /cy | |
| **Cost Per Year** | $ 1,992 | | |
| **Inflation Rate** | 2% | | |
| **Discount Rate** | 5.5% | | |

Cost over 40 Years

Assumptions

| Year | | | | |
|---|---|---|---|---|
| 1 | $ | 1,992 | Net Present Value | $42,158 |
| 2 | $ | 2,032 | | |
| 3 | $ | 2,073 | | |
| 4 | $ | 2,114 | | |
| 5 | $ | 2,156 | | |
| 6 | $ | 2,200 | | |
| 7 | $ | 2,244 | | |
| 8 | $ | 2,288 | | |
| 9 | $ | 2,334 | | |
| 10 | $ | 2,381 | | |
| 11 | $ | 2,429 | | |
| 12 | $ | 2,477 | | |
| 13 | $ | 2,527 | | |
| 14 | $ | 2,577 | | |
| 15 | $ | 2,629 | | |
| 16 | $ | 2,681 | | |
| 17 | $ | 2,735 | | |
| 18 | $ | 2,790 | | |
| 19 | $ | 2,845 | | |
| 20 | $ | 2,902 | | |
| 21 | $ | 2,960 | | |
| 22 | $ | 3,020 | | |
| 23 | $ | 3,080 | | |
| 24 | $ | 3,142 | | |
| 25 | $ | 3,204 | | |
| 26 | $ | 3,268 | | |
| 27 | $ | 3,334 | | |
| 28 | $ | 3,400 | | |
| 29 | $ | 3,469 | | |
| 30 | $ | 3,538 | | |
| 31 | $ | 3,609 | | |
| 32 | $ | 3,681 | | |
| 33 | $ | 3,754 | | |
| 34 | $ | 3,830 | | |
| 35 | $ | 3,906 | | |
| 36 | $ | 3,984 | | |
| 37 | $ | 4,064 | | |
| 38 | $ | 4,145 | | |
| 39 | $ | 4,228 | | |
| 40 | $ | 4,313 | | |

Line B O & M Costs

Assume that Every 10 Year 6" of sediment/weeds needs to be removed from bottom of channels

| | | | |
|---|---|---|---|
| **Area of Channel Bottom** | 124,786 | sf | |
| **Assumed Sediment Depth** | 0.5 | ft | |
| **Sediment Volume** | 62,393 | CF | |
| | 2,311 | CY | |
| **Sediment removed per year** | 231 | | |
| **Cost per yard to remove** | $ 10.00 | /cy | |
| **Cost Per Year** | $ 2,311 | | |
| **Inflation Rate** | 2% | | |
| **Discount Rate** | 5.5% | | |

Cost over 40 Years
Assumptions
Year

| Year | | | | |
|---|---|---|---|---|
| 1 | $ | 2,311 | Net Present Value | $48,900 |
| 2 | $ | 2,357 | | |
| 3 | $ | 2,404 | | |
| 4 | $ | 2,452 | | |
| 5 | $ | 2,501 | | |
| 6 | $ | 2,551 | | |
| 7 | $ | 2,602 | | |
| 8 | $ | 2,654 | | |
| 9 | $ | 2,708 | | |
| 10 | $ | 2,762 | | |
| 11 | $ | 2,817 | | |
| 12 | $ | 2,873 | | |
| 13 | $ | 2,931 | | |
| 14 | $ | 2,989 | | |
| 15 | $ | 3,049 | | |
| 16 | $ | 3,110 | | |
| 17 | $ | 3,172 | | |
| 18 | $ | 3,236 | | |
| 19 | $ | 3,300 | | |
| 20 | $ | 3,366 | | |
| 21 | $ | 3,434 | | |
| 22 | $ | 3,502 | | |
| 23 | $ | 3,573 | | |
| 24 | $ | 3,644 | | |
| 25 | $ | 3,717 | | |
| 26 | $ | 3,791 | | |
| 27 | $ | 3,867 | | |
| 28 | $ | 3,944 | | |
| 29 | $ | 4,023 | | |
| 30 | $ | 4,104 | | |
| 31 | $ | 4,186 | | |
| 32 | $ | 4,270 | | |
| 33 | $ | 4,355 | | |
| 34 | $ | 4,442 | | |
| 35 | $ | 4,531 | | |
| 36 | $ | 4,621 | | |
| 37 | $ | 4,714 | | |
| 38 | $ | 4,808 | | |
| 39 | $ | 4,904 | | |
| 40 | $ | 5,002 | | |

Line C O & M Costs

Assume that Every 10 Year 6" of sediment/weeds needs to be removed from bottom of channels

| | | | |
|---|---|---|---|
| **Area of Channel Bottom** | 234,836 | sf | |
| **Assumed Sediment Depth** | 0.5 | ft | |
| **Sediment Volume** | 117,418 | CF | |
| | 4,349 | CY | |
| **Sediment removed per year** | 435 | | |
| **Cost per yard to remove** | $ 10.00 | /cy | |
| **Cost Per Year** | $ 4,349 | | |
| **Inflation Rate** | 2% | | |
| **Discount Rate** | 5.5% | | |

Cost over 40 Years
Assumptions

| Year | | | | |
|---|---|---|---|---|
| 1 | $ | 4,349 | Net Present Value | $92,025 |
| 2 | $ | 4,436 | | |
| 3 | $ | 4,524 | | |
| 4 | $ | 4,615 | | |
| 5 | $ | 4,707 | | |
| 6 | $ | 4,801 | | |
| 7 | $ | 4,897 | | |
| 8 | $ | 4,995 | | |
| 9 | $ | 5,095 | | |
| 10 | $ | 5,197 | | |
| 11 | $ | 5,301 | | |
| 12 | $ | 5,407 | | |
| 13 | $ | 5,515 | | |
| 14 | $ | 5,626 | | |
| 15 | $ | 5,738 | | |
| 16 | $ | 5,853 | | |
| 17 | $ | 5,970 | | |
| 18 | $ | 6,089 | | |
| 19 | $ | 6,211 | | |
| 20 | $ | 6,335 | | |
| 21 | $ | 6,462 | | |
| 22 | $ | 6,591 | | |
| 23 | $ | 6,723 | | |
| 24 | $ | 6,858 | | |
| 25 | $ | 6,995 | | |
| 26 | $ | 7,135 | | |
| 27 | $ | 7,277 | | |
| 28 | $ | 7,423 | | |
| 29 | $ | 7,571 | | |
| 30 | $ | 7,723 | | |
| 31 | $ | 7,877 | | |
| 32 | $ | 8,035 | | |
| 33 | $ | 8,196 | | |
| 34 | $ | 8,359 | | |
| 35 | $ | 8,527 | | |
| 36 | $ | 8,697 | | |
| 37 | $ | 8,871 | | |
| 38 | $ | 9,048 | | |
| 39 | $ | 9,229 | | |
| 40 | $ | 9,414 | | |

Line D O & M Costs

Assume that Every 10 Year 6" of sediment/weeds needs to be removed from bottom of channels

| | | | |
|---|---|---|---|
| **Area of Channel Bottom** | 471,845 | sf | |
| **Assumed Sediment Depth** | 0.5 | ft | |
| **Sediment Volume** | 235,923 | CF | |
| | 8,738 | CY | |
| **Sediment removed per year** | 874 | | |
| **Cost per yard to remove** | $ 10.00 | /cy | |
| **Cost Per Year** | $ 8,738 | | |
| **Inflation Rate** | 2% | | |
| **Discount Rate** | 5.5% | | |

Cost over 40 Years
Assumptions

| Year | | | | |
|---|---|---|---|---|
| 1 | $ 8,738 | Net Present Value | $184,903 | |
| 2 | $ 8,913 | | | |
| 3 | $ 9,091 | | | |
| 4 | $ 9,273 | | | |
| 5 | $ 9,458 | | | |
| 6 | $ 9,647 | | | |
| 7 | $ 9,840 | | | |
| 8 | $ 10,037 | | | |
| 9 | $ 10,238 | | | |
| 10 | $ 10,443 | | | |
| 11 | $ 10,651 | | | |
| 12 | $ 10,864 | | | |
| 13 | $ 11,082 | | | |
| 14 | $ 11,303 | | | |
| 15 | $ 11,529 | | | |
| 16 | $ 11,760 | | | |
| 17 | $ 11,995 | | | |
| 18 | $ 12,235 | | | |
| 19 | $ 12,480 | | | |
| 20 | $ 12,729 | | | |
| 21 | $ 12,984 | | | |
| 22 | $ 13,244 | | | |
| 23 | $ 13,509 | | | |
| 24 | $ 13,779 | | | |
| 25 | $ 14,054 | | | |
| 26 | $ 14,335 | | | |
| 27 | $ 14,622 | | | |
| 28 | $ 14,915 | | | |
| 29 | $ 15,213 | | | |
| 30 | $ 15,517 | | | |
| 31 | $ 15,827 | | | |
| 32 | $ 16,144 | | | |
| 33 | $ 16,467 | | | |
| 34 | $ 16,796 | | | |
| 35 | $ 17,132 | | | |
| 36 | $ 17,475 | | | |
| 37 | $ 17,824 | | | |
| 38 | $ 18,181 | | | |
| 39 | $ 18,544 | | | |
| 40 | $ 18,915 | | | |

Line E O & M Costs

Assume that Every 10 Year 6" of sediment/weeds needs to be removed from bottom of channels

| | | | |
|---|---|---|---|
| **Area of Channel Bottom** | | 2,191,283 | sf |
| **Assumed Sediment Depth** | | 0.5 | ft |
| **Sediment Volume** | | 1,095,642 | CF |
| | | 40,579 | CY |
| **Sediment removed per year** | | 4,058 | |
| **Cost per yard to remove** | $ | 10.00 | /cy |
| **Cost Per Year** | $ | 40,579 | |
| **Inflation Rate** | | 2% | |
| **Discount Rate** | | 5.5% | |

Cost over 40 Years

Assumptions

| Year | | | | |
|---|---|---|---|---|
| 1 | $ | 40,579 | Net Present Value | $858,701 |
| 2 | $ | 41,391 | | |
| 3 | $ | 42,219 | | |
| 4 | $ | 43,063 | | |
| 5 | $ | 43,924 | | |
| 6 | $ | 44,803 | | |
| 7 | $ | 45,699 | | |
| 8 | $ | 46,613 | | |
| 9 | $ | 47,545 | | |
| 10 | $ | 48,496 | | |
| 11 | $ | 49,466 | | |
| 12 | $ | 50,455 | | |
| 13 | $ | 51,464 | | |
| 14 | $ | 52,494 | | |
| 15 | $ | 53,544 | | |
| 16 | $ | 54,614 | | |
| 17 | $ | 55,707 | | |
| 18 | $ | 56,821 | | |
| 19 | $ | 57,957 | | |
| 20 | $ | 59,116 | | |
| 21 | $ | 60,299 | | |
| 22 | $ | 61,505 | | |
| 23 | $ | 62,735 | | |
| 24 | $ | 63,990 | | |
| 25 | $ | 65,269 | | |
| 26 | $ | 66,575 | | |
| 27 | $ | 67,906 | | |
| 28 | $ | 69,264 | | |
| 29 | $ | 70,650 | | |
| 30 | $ | 72,063 | | |
| 31 | $ | 73,504 | | |
| 32 | $ | 74,974 | | |
| 33 | $ | 76,473 | | |
| 34 | $ | 78,003 | | |
| 35 | $ | 79,563 | | |
| 36 | $ | 81,154 | | |
| 37 | $ | 82,777 | | |
| 38 | $ | 84,433 | | |
| 39 | $ | 86,121 | | |
| 40 | $ | 87,844 | | |

Line F O & M Costs

Assume that Every 10 Year 6" of sediment/weeds needs to be removed from bottom of channels

| | | | |
|---|---|---|---|
| **Area of Channel Bottom** | 3,197,012 | sf | |
| **Assumed Sediment Depth** | 0.5 | ft | |
| **Sediment Volume** | 1,598,506 | CF | |
| | 59,204 | CY | |
| **Sediment removed per year** | 5,920 | | |
| **Cost per yard to remove** | $ 10.00 | /cy | |
| **Cost Per Year** | $ 59,204 | | |
| **Inflation Rate** | 2% | | |
| **Discount Rate** | 5.5% | | |

Cost over 40 Years

Assumptions

| Year | | | | |
|---|---|---|---|---|
| 1 | $ | 59,204 | Net Present Value | $1,252,817 |
| 2 | $ | 60,388 | | |
| 3 | $ | 61,596 | | |
| 4 | $ | 62,828 | | |
| 5 | $ | 64,084 | | |
| 6 | $ | 65,366 | | |
| 7 | $ | 66,673 | | |
| 8 | $ | 68,007 | | |
| 9 | $ | 69,367 | | |
| 10 | $ | 70,754 | | |
| 11 | $ | 72,169 | | |
| 12 | $ | 73,613 | | |
| 13 | $ | 75,085 | | |
| 14 | $ | 76,587 | | |
| 15 | $ | 78,118 | | |
| 16 | $ | 79,681 | | |
| 17 | $ | 81,274 | | |
| 18 | $ | 82,900 | | |
| 19 | $ | 84,558 | | |
| 20 | $ | 86,249 | | |
| 21 | $ | 87,974 | | |
| 22 | $ | 89,733 | | |
| 23 | $ | 91,528 | | |
| 24 | $ | 93,359 | | |
| 25 | $ | 95,226 | | |
| 26 | $ | 97,130 | | |
| 27 | $ | 99,073 | | |
| 28 | $ | 101,054 | | |
| 29 | $ | 103,075 | | |
| 30 | $ | 105,137 | | |
| 31 | $ | 107,240 | | |
| 32 | $ | 109,384 | | |
| 33 | $ | 111,572 | | |
| 34 | $ | 113,804 | | |
| 35 | $ | 116,080 | | |
| 36 | $ | 118,401 | | |
| 37 | $ | 120,769 | | |
| 38 | $ | 123,185 | | |
| 39 | $ | 125,648 | | |
| 40 | $ | 128,161 | | |

Line I O & M Costs

Assume that Every 10 Year 6" of sediment/weeds needs to be removed from bottom of channels

| | | | |
|---|---|---|---|
| **Area of Channel Bottom** | 336,385 | sf | |
| **Assumed Sediment Depth** | 0.5 | ft | |
| **Sediment Volume** | 168,193 | CF | |
| | 6,229 | CY | |
| **Sediment removed per year** | 623 | | |
| **Cost per yard to remove** | $ 10.00 | /cy | |
| **Cost Per Year** | $ 6,229 | | |
| **Inflation Rate** | 2% | | |
| **Discount Rate** | 5.5% | | |

Cost over 40 Years
Assumptions
Year

| Year | | | | |
|---|---|---|---|---|
| 1 | $ | 6,229 | Net Present Value | $131,820 |
| 2 | $ | 6,354 | | |
| 3 | $ | 6,481 | | |
| 4 | $ | 6,611 | | |
| 5 | $ | 6,743 | | |
| 6 | $ | 6,878 | | |
| 7 | $ | 7,015 | | |
| 8 | $ | 7,156 | | |
| 9 | $ | 7,299 | | |
| 10 | $ | 7,445 | | |
| 11 | $ | 7,594 | | |
| 12 | $ | 7,745 | | |
| 13 | $ | 7,900 | | |
| 14 | $ | 8,058 | | |
| 15 | $ | 8,219 | | |
| 16 | $ | 8,384 | | |
| 17 | $ | 8,552 | | |
| 18 | $ | 8,723 | | |
| 19 | $ | 8,897 | | |
| 20 | $ | 9,075 | | |
| 21 | $ | 9,256 | | |
| 22 | $ | 9,442 | | |
| 23 | $ | 9,630 | | |
| 24 | $ | 9,823 | | |
| 25 | $ | 10,020 | | |
| 26 | $ | 10,220 | | |
| 27 | $ | 10,424 | | |
| 28 | $ | 10,633 | | |
| 29 | $ | 10,845 | | |
| 30 | $ | 11,062 | | |
| 31 | $ | 11,284 | | |
| 32 | $ | 11,509 | | |
| 33 | $ | 11,739 | | |
| 34 | $ | 11,974 | | |
| 35 | $ | 12,214 | | |
| 36 | $ | 12,458 | | |
| 37 | $ | 12,707 | | |
| 38 | $ | 12,961 | | |
| 39 | $ | 13,221 | | |
| 40 | $ | 13,485 | | |

Line J O & M Costs

Assume that Every 10 Year 6" of sediment/weeds needs to be removed from bottom of channels

| | | | |
|---|---|---|---|
| **Area of Channel Bottom** | 230,295 | sf | |
| **Assumed Sediment Depth** | 0.5 | ft | |
| **Sediment Volume** | 115,148 | CF | |
| | 4,265 | CY | |
| **Sediment removed per year** | 426 | | |
| **Cost per yard to remove** | $ 10.00 | /cy | |
| **Cost Per Year** | $ 4,265 | | |
| **Inflation Rate** | 2% | | |
| **Discount Rate** | 5.5% | | |

Cost over 40 Years

Assumptions

| Year | | | | |
|---|---|---|---|---|
| 1 | $ | 4,265 | Net Present Value | $90,246 |
| 2 | $ | 4,350 | | |
| 3 | $ | 4,437 | | |
| 4 | $ | 4,526 | | |
| 5 | $ | 4,616 | | |
| 6 | $ | 4,709 | | |
| 7 | $ | 4,803 | | |
| 8 | $ | 4,899 | | |
| 9 | $ | 4,997 | | |
| 10 | $ | 5,097 | | |
| 11 | $ | 5,199 | | |
| 12 | $ | 5,303 | | |
| 13 | $ | 5,409 | | |
| 14 | $ | 5,517 | | |
| 15 | $ | 5,627 | | |
| 16 | $ | 5,740 | | |
| 17 | $ | 5,855 | | |
| 18 | $ | 5,972 | | |
| 19 | $ | 6,091 | | |
| 20 | $ | 6,213 | | |
| 21 | $ | 6,337 | | |
| 22 | $ | 6,464 | | |
| 23 | $ | 6,593 | | |
| 24 | $ | 6,725 | | |
| 25 | $ | 6,860 | | |
| 26 | $ | 6,997 | | |
| 27 | $ | 7,137 | | |
| 28 | $ | 7,279 | | |
| 29 | $ | 7,425 | | |
| 30 | $ | 7,573 | | |
| 31 | $ | 7,725 | | |
| 32 | $ | 7,879 | | |
| 33 | $ | 8,037 | | |
| 34 | $ | 8,198 | | |
| 35 | $ | 8,362 | | |
| 36 | $ | 8,529 | | |
| 37 | $ | 8,700 | | |
| 38 | $ | 8,874 | | |
| 39 | $ | 9,051 | | |
| 40 | $ | 9,232 | | |

Line K O & M Costs

Assume that Every 10 Year 6" of sediment/weeds needs to be removed from bottom of channels

| | | | |
|---|---|---|---|
| **Area of Channel Bottom** | 151,667 | sf | |
| **Assumed Sediment Depth** | 0.5 | ft | |
| **Sediment Volume** | 75,834 | CF | |
| | 2,809 | CY | |
| **Sediment removed per year** | 281 | | |
| **Cost per yard to remove** | $ 10.00 | /cy | |
| **Cost Per Year** | $ 2,809 | | |
| **Inflation Rate** | 2% | | |
| **Discount Rate** | 5.5% | | |

Cost over 40 Years

Assumptions

| Year | | | | |
|---|---|---|---|---|
| 1 | $ | 2,809 | Net Present Value | $59,434 |
| 2 | $ | 2,865 | | |
| 3 | $ | 2,922 | | |
| 4 | $ | 2,981 | | |
| 5 | $ | 3,040 | | |
| 6 | $ | 3,101 | | |
| 7 | $ | 3,163 | | |
| 8 | $ | 3,226 | | |
| 9 | $ | 3,291 | | |
| 10 | $ | 3,357 | | |
| 11 | $ | 3,424 | | |
| 12 | $ | 3,492 | | |
| 13 | $ | 3,562 | | |
| 14 | $ | 3,633 | | |
| 15 | $ | 3,706 | | |
| 16 | $ | 3,780 | | |
| 17 | $ | 3,856 | | |
| 18 | $ | 3,933 | | |
| 19 | $ | 4,011 | | |
| 20 | $ | 4,092 | | |
| 21 | $ | 4,174 | | |
| 22 | $ | 4,257 | | |
| 23 | $ | 4,342 | | |
| 24 | $ | 4,429 | | |
| 25 | $ | 4,518 | | |
| 26 | $ | 4,608 | | |
| 27 | $ | 4,700 | | |
| 28 | $ | 4,794 | | |
| 29 | $ | 4,890 | | |
| 30 | $ | 4,988 | | |
| 31 | $ | 5,087 | | |
| 32 | $ | 5,189 | | |
| 33 | $ | 5,293 | | |
| 34 | $ | 5,399 | | |
| 35 | $ | 5,507 | | |
| 36 | $ | 5,617 | | |
| 37 | $ | 5,729 | | |
| 38 | $ | 5,844 | | |
| 39 | $ | 5,961 | | |
| 40 | $ | 6,080 | | |

# Appendix H
# WSPG Input/Output Files

```
                                                                                                                A01
T1 CVWD                                                                                                                                 0
T2 MDP
T3 A01
SO     20.550-120.000  1      .014                -112.400
R     635.000-116.880  1      .014                                                .000
WE    635.000-116.880  2      .500
TS    650.000-116.810  3      .014                                                .000
R    2200.000-115.320  3      .015                                                .000
JX   2220.000-115.300  5 14   .015  232.000         -116.300                       45.0
R    2800.000-114.720  5      .015                                                .000
R    3869.000-113.650  5      .015
JX   4011.000-113.508  6  4   .015  616.000         -115.508                       40.0
R    4165.000-113.360  6      .015                                                .000
TS   4180.000-113.340  7      .015                                                .000
WX   4180.000-113.340  8
R    4220.000-113.100  8      .014                                                .000
WE   4220.000-113.100 12      .500
TS   4235.000-113.010  6      .015                                                .000
R    4265.000-112.980  6      .015
R    5590.000-111.650  6      .015                                                .000
TS   5600.000-111.640 13      .013                                                .000
WX   5600.000-111.640 10
R    6800.000-099.748 10      .013
JX   6810.000-099.088 15 14   .013  239.000          -098.00                       45.0
R    7210.000-095.448 15      .013                                                .000
R    9400.000-060.420 15      .013                                                .000
WE   9400.000-060.420 11      .500
SH   9400.000-060.420 11
CD   1  3   2    .670   6.000   31.340  .000  .000   .00
CD   2  2   0    .000  10.000   31.340  .000  .000   .00
CD   3  1   0    .000  10.000   20.000 1.500 1.500   .00
CD   4  1   0    .000   9.000   10.000 1.500 1.500   .00
CD   5  1   0    .000  10.000   18.000 1.500 1.500   .00
CD   6  1   0    .000  10.000   14.000 1.500 1.500   .00
CD   7  2   0    .000  10.000   16.670  .000  .000   .00
CD   8  3   1    .670   6.000   16.670  .000  .000   .00
CD   9  1   0    .000  10.000   15.000 1.500 1.500   .00
CD  10  4   1    .000   7.000     .000  .000  .000   .00
CD  11  2   0          20.000   50.000  .000  .000   .00
CD  12  2   0    .000  10.000   16.670  .000  .000   .00
CD  13  2   0    .000  10.000    9.000  .000  .000   .00
CD  14  4   1    .000   4.000     .000  .000  .000   .00
CD  15  4   1    .000   6.500     .000  .000  .000   .00
Q           349.000   .0
```

FILE: A01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 4- 1-2014 Time: 2: 9:10

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 3 | 2 | .670 | 6.000 | 31.340 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 2 | 2 | 0 | .000 | 10.000 | 31.340 | | | .00 | | | | | | | | | | |
| CD | 3 | 1 | 0 | .000 | 10.000 | 20.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 4 | 1 | 0 | .000 | 9.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 5 | 1 | 0 | .000 | 10.000 | 18.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 6 | 1 | 0 | .000 | 10.000 | 14.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 7 | 2 | 0 | .000 | 10.000 | 16.670 | | | .00 | | | | | | | | | | |
| CD | 8 | 3 | 1 | .670 | 6.000 | 16.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 9 | 1 | 0 | .000 | 10.000 | 15.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 10 | 4 | 1 | | 7.000 | | | | | | | | | | | | | | |
| CD | 11 | 2 | 0 | .000 | 20.000 | 50.000 | | | .00 | | | | | | | | | | |
| CD | 12 | 2 | 0 | .000 | 10.000 | 16.670 | | | .00 | | | | | | | | | | |
| CD | 13 | 2 | 0 | .000 | 10.000 | 9.000 | | | .00 | | | | | | | | | | |
| CD | 14 | 4 | 1 | | 4.000 | | | | | | | | | | | | | | |
| CD | 15 | 4 | 1 | | 6.500 | | | | | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD
HEADING LINE NO 2 IS -
MDP
HEADING LINE NO 3 IS -
A01

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 20.550 | -120.000 | 1 | -112.400 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 635.000 | -116.880 | 1 | .014 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 635.000 | -116.880 | 2 | .500 |

ELEMENT NO 4 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 650.000 | -116.810 | 3 | .014 | .000 | .000 |

ELEMENT NO 5 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2200.000 | -115.320 | 3 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 6 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2220.000 | -115.300 | 5 | 14 | 0 | .015 | 232.000 | .000 | -116.300 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 7 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2800.000 | -114.720 | 5 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 8 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3869.000 | -113.650 | 5 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 9 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4011.000 | -113.508 | 6 | 4 | 0 | .015 | 616.000 | .000 | -115.508 | .000 | 40.000 | .000 |

```
                                                                                                                RADIUS    ANGLE
                                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
                                                        W S P G W                                                                  PAGE NO   3
                                WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  10 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                                 RADIUS    ANGLE     ANG PT  MAN H
                               4165.000 -113.360    6              .015                                .000     .000      .000     0
 ELEMENT NO  11 IS A TRANSITION               *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                                 RADIUS   ANGLE
                               4180.000 -113.340    7              .015                                .000     .000
 ELEMENT NO  12 IS A  WALL  EXIT                                  *
                    U/S DATA   STATION    INVERT  SECT
                               4180.000 -113.340    8
 ELEMENT NO  13 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                                 RADIUS    ANGLE     ANG PT  MAN H
                               4220.000 -113.100    8              .014                                .000     .000      .000     0
 ELEMENT NO  14 IS A  WALL  ENTRANCE                              *
                    U/S DATA   STATION    INVERT  SECT             FP
                               4220.000 -113.100   12              .500
 ELEMENT NO  15 IS A TRANSITION               *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                                 RADIUS   ANGLE
                               4235.000 -113.010    6              .015                                .000     .000
 ELEMENT NO  16 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                                 RADIUS    ANGLE     ANG PT  MAN H
                               4265.000 -112.980    6              .015                                .000     .000      .000     0
 ELEMENT NO  17 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                                 RADIUS    ANGLE     ANG PT  MAN H
                               5590.000 -111.650    6              .015                                .000     .000      .000     0
 ELEMENT NO  18 IS A TRANSITION               *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                                 RADIUS   ANGLE
                               5600.000 -111.640   13              .013                                .000     .000
 ELEMENT NO  19 IS A  WALL  EXIT                                  *
                    U/S DATA   STATION    INVERT  SECT
                               5600.000 -111.640   10
 ELEMENT NO  20 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                                 RADIUS    ANGLE     ANG PT  MAN H
                               6800.000  -99.748   10              .013                                .000     .000      .000     0
 ELEMENT NO  21 IS A JUNCTION                 *          *      *      *              *                  *                  *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                               6810.000  -99.088   15    14     0   .013   239.000      .000   -98.000      .000  45.000     .000
                                                                                                                RADIUS    ANGLE
                                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
                                                        W S P G W                                                                  PAGE NO   4
                                WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  22 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                                 RADIUS    ANGLE     ANG PT  MAN H
                               7210.000  -95.448   15              .013                                .000     .000      .000     0
 ELEMENT NO  23 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                                 RADIUS    ANGLE     ANG PT  MAN H
                               9400.000  -60.420   15              .013                                .000     .000      .000     0
 ELEMENT NO  24 IS A  WALL  ENTRANCE                              *
                    U/S DATA   STATION    INVERT  SECT             FP
                               9400.000  -60.420   11              .500
 ELEMENT NO  25 IS A SYSTEM HEADWORKS                             *                  *
                    U/S DATA   STATION    INVERT  SECT                                        W S ELEV
                               9400.000  -60.420   11                                           .000
```

CVWD
MDP
A01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20.550 | -120.000 | 7.600 | -112.400 | 1436.00 | 7.98 | .99 | -111.41 | .00 | 4.14 | 31.34 | 6.000 | 31.340 | .00 | 2 .7 |
| 607.349 | .0051 | | | | | .0024 | 1.48 | 7.60 | .59 | 3.79 | .014 | .00 | .00 | BOX |
| 627.899 | -116.916 | 6.000 | -110.916 | 1436.00 | 7.98 | .99 | -109.93 | .00 | 4.14 | 31.34 | 6.000 | 31.340 | .00 | 2 .7 |
| 7.101 | .0051 | | | | | .0015 | .01 | 6.00 | .59 | 3.79 | .014 | .00 | .00 | BOX |
| 635.000 | -116.880 | 5.961 | -110.919 | 1436.00 | 8.03 | 1.00 | -109.92 | .00 | 4.14 | 31.34 | 6.000 | 31.340 | .00 | 2 .7 |
| WALL | ENTRANCE | | | | | | | | | | | | | |
| | | ---------- WARNING - Flow depth near top of box conduit ---------- | | | | | | | | | | | | |
| 635.000 | -116.880 | 6.317 | -110.563 | 1436.00 | 7.25 | .82 | -109.75 | .00 | 4.03 | 31.34 | 10.000 | 31.340 | .00 | 0 .0 |
| TRANS STR | .0047 | | | | | .0007 | .01 | 6.32 | .51 | | .014 | .00 | .00 | RECTANG |
| 650.000 | -116.810 | 6.177 | -110.633 | 1436.00 | 7.94 | .98 | -109.65 | .00 | 4.78 | 38.53 | 10.000 | 20.000 | 1.50 | 0 .0 |
| 1550.000 | .0010 | | | | | .0009 | 1.46 | 6.18 | .65 | 6.12 | .015 | .00 | 1.50 | TRAP |
| 2200.000 | -115.320 | 6.124 | -109.196 | 1436.00 | 8.03 | 1.00 | -108.19 | .00 | 4.78 | 38.37 | 10.000 | 20.000 | 1.50 | 0 .0 |
| JUNCT STR | .0010 | | | | | .0008 | .02 | 6.12 | .66 | | .015 | .00 | 1.50 | TRAP |
| 2220.000 | -115.300 | 6.402 | -108.898 | 1204.00 | 6.81 | .72 | -108.18 | .00 | 4.54 | 37.21 | 10.000 | 18.000 | 1.50 | 0 .0 |
| 546.893 | .0010 | | | | | .0007 | .40 | 6.40 | .55 | 5.76 | .015 | .00 | 1.50 | TRAP |
| 2766.893 | -114.753 | 6.179 | -108.574 | 1204.00 | 7.15 | .79 | -107.78 | .00 | 4.54 | 36.54 | 10.000 | 18.000 | 1.50 | 0 .0 |
| 33.107 | .0010 | | | | | .0008 | .03 | 6.18 | .59 | 5.76 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
A01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 2800.000 | -114.720 | 6.168 | -108.552 | 1204.00 | 7.16 | .80 | -107.76 | .00 | 4.54 | 36.50 | 10.000 | 18.000 | 1.50 | 0 .0 |
| 809.481 | .0010 | | | | | .0008 | .67 | 6.17 | .59 | 5.76 | .015 | .00 | 1.50 | TRAP |
| 3609.481 | -113.910 | 5.952 | -107.958 | 1204.00 | 7.51 | .88 | -107.08 | .00 | 4.54 | 35.86 | 10.000 | 18.000 | 1.50 | 0 .0 |
| 259.519 | .0010 | | | | | .0009 | .23 | 5.95 | .63 | 5.76 | .015 | .00 | 1.50 | TRAP |
| 3869.000 | -113.650 | 5.908 | -107.742 | 1204.00 | 7.59 | .89 | -106.85 | .00 | 4.54 | 35.72 | 10.000 | 18.000 | 1.50 | 0 .0 |
| JUNCT STR | .0010 | | | | | .0005 | .08 | 5.91 | .63 | | .015 | .00 | 1.50 | TRAP |
| 4011.000 | -113.508 | 6.894 | -106.614 | 588.00 | 3.50 | .19 | -106.42 | .00 | 3.35 | 34.68 | 10.000 | 14.000 | 1.50 | 0 .0 |
| 154.000 | .0010 | | | | | .0002 | .03 | 6.89 | .28 | 4.42 | .015 | .00 | 1.50 | TRAP |
| 4165.000 | -113.360 | 6.764 | -106.596 | 588.00 | 3.60 | .20 | -106.39 | .00 | 3.35 | 34.29 | 10.000 | 14.000 | 1.50 | 0 .0 |
| TRANS STR | .0013 | | | | | .0004 | .01 | 6.76 | .29 | | .015 | .00 | 1.50 | TRAP |
| 4180.000 | -113.340 | 6.550 | -106.790 | 588.00 | 5.39 | .45 | -106.34 | .00 | 3.38 | 16.67 | 10.000 | 16.670 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 4180.000 | -113.340 | 6.551 | -106.789 | 588.00 | 6.12 | .58 | -106.21 | .00 | 3.47 | 16.67 | 6.000 | 16.670 | .00 | 1 .7 |
| 40.000 | .0060 | | | | | .0016 | .06 | 6.55 | .45 | 3.09 | .014 | .00 | .00 | BOX |
| 4220.000 | -113.100 | 6.376 | -106.724 | 588.00 | 6.12 | .58 | -106.14 | .00 | 3.47 | 16.67 | 6.000 | 16.670 | .00 | 1 .7 |
| WALL ENTRANCE | | | | | | | | | | | | | | |
| 4220.000 | -113.100 | 6.580 | -106.520 | 588.00 | 5.36 | .45 | -106.07 | .00 | 3.38 | 16.67 | 10.000 | 16.670 | .00 | 0 .0 |
| TRANS STR | .0060 | | | | | .0004 | .01 | 6.58 | .37 | | .015 | .00 | .00 | RECTANG |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 4- 1-2014 Time: 2: 9:13

CVWD
MDP
A01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 4235.000 | -113.010 | 6.766 | -106.244 | 588.00 | 3.60 | .20 | -106.04 | .00 | 3.35 | 34.30 | 10.000 | 14.000 | 1.50 | 0 .0 |
| 30.000 | .0010 | | | | | .0002 | .01 | 6.77 | .29 | 4.37 | .015 | .00 | 1.50 | TRAP |
| 4265.000 | -112.980 | 6.740 | -106.240 | 588.00 | 3.62 | .20 | -106.04 | .00 | 3.35 | 34.22 | 10.000 | 14.000 | 1.50 | 0 .0 |
| 254.831 | .0010 | | | | | .0002 | .05 | 6.74 | .29 | 4.37 | .015 | .00 | 1.50 | TRAP |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4519.831 | -112.724 | 6.517 | -106.208 | 588.00 | 3.80 | .22 | -105.98 | .00 | 3.35 | 33.55 | 10.000 | 14.000 | 1.50 | 0 .0 |
| 253.788 | .0010 | | | | | .0002 | .06 | 6.52 | .31 | 4.37 | .015 | .00 | 1.50 | TRAP |
| 4773.618 | -112.469 | 6.300 | -106.170 | 588.00 | 3.98 | .25 | -105.92 | .00 | 3.35 | 32.90 | 10.000 | 14.000 | 1.50 | 0 .0 |
| 253.982 | .0010 | | | | | .0003 | .07 | 6.30 | .33 | 4.37 | .015 | .00 | 1.50 | TRAP |
| 5027.600 | -112.215 | 6.089 | -106.126 | 588.00 | 4.17 | .27 | -105.86 | .00 | 3.35 | 32.27 | 10.000 | 14.000 | 1.50 | 0 .0 |
| 255.775 | .0010 | | | | | .0003 | .08 | 6.09 | .35 | 4.37 | .015 | .00 | 1.50 | TRAP |
| 5283.375 | -111.958 | 5.883 | -106.074 | 588.00 | 4.38 | .30 | -105.78 | .00 | 3.35 | 31.65 | 10.000 | 14.000 | 1.50 | 0 .0 |
| 259.715 | .0010 | | | | | .0004 | .09 | 5.88 | .37 | 4.37 | .015 | .00 | 1.50 | TRAP |
| 5543.090 | -111.697 | 5.684 | -106.013 | 588.00 | 4.59 | .33 | -105.69 | .00 | 3.35 | 31.05 | 10.000 | 14.000 | 1.50 | 0 .0 |
| 16.493 | .0010 | | | | | .0004 | .01 | 5.68 | .40 | 4.37 | .015 | .00 | 1.50 | TRAP |
| 5559.583 | -111.681 | 5.670 | -106.010 | 588.00 | 4.61 | .33 | -105.68 | .00 | 3.35 | 31.01 | 10.000 | 14.000 | 1.50 | 0 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |
| 5559.583 | -111.681 | 1.713 | -109.968 | 588.00 | 20.72 | 6.67 | -103.30 | .00 | 3.35 | 19.14 | 10.000 | 14.000 | 1.50 | 0 .0 |
| 10.044 | .0010 | | | | | .0286 | .29 | 1.71 | 3.00 | 4.37 | .015 | .00 | 1.50 | TRAP |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 4- 1-2014 Time: 2: 9:13

CVWD
MDP
A01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 5569.627 | -111.670 | 1.684 | -109.987 | 588.00 | 21.13 | 6.93 | -103.05 | .00 | 3.35 | 19.05 | 10.000 | 14.000 | 1.50 | 0 .0 |
| 20.373 | .0010 | | | | | .0317 | .65 | 1.68 | 3.08 | 4.37 | .015 | .00 | 1.50 | TRAP |
| 5590.000 | -111.650 | 1.615 | -110.035 | 588.00 | 22.16 | 7.63 | -102.41 | .00 | 3.35 | 18.85 | 10.000 | 14.000 | 1.50 | 0 .0 |
| TRANS STR | .0010 | | | | | .0197 | .20 | 1.62 | 3.29 | | .013 | .00 | 1.50 | TRAP |
| 5600.000 | -111.640 | 3.187 | -108.453 | 588.00 | 20.50 | 6.53 | -101.93 | .00 | 5.10 | 9.00 | 10.000 | 9.000 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 5600.000 | -111.640 | 5.314 | -106.326 | 588.00 | 18.76 | 5.46 | -100.86 | .00 | 6.22 | 5.99 | 7.000 | .000 | .00 | 1 .0 |
| 573.932 | .0099 | | | | | .0099 | 5.69 | 5.31 | 1.44 | 5.31 | .013 | .00 | .00 | PIPE |
| 6173.933 | -105.952 | 5.314 | -100.639 | 588.00 | 18.76 | 5.46 | -95.17 | .00 | 6.22 | 5.99 | 7.000 | .000 | .00 | 1 .0 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 483.015 | .0099 | | | | | .0094 | 4.55 | 5.31 | 1.44 | 5.31 | .013 | .00 | .00 | PIPE | |
| 6656.948 | -101.166 | 5.573 | -95.593 | 588.00 | 17.90 | 4.97 | -90.62 | .00 | 6.22 | 5.64 | 7.000 | .000 | .00 | 1 | .0 |
| 113.938 | .0099 | | | | | .0085 | .97 | 5.57 | 1.31 | 5.31 | .013 | .00 | .00 | PIPE | |
| 6770.886 | -100.037 | 5.870 | -94.166 | 588.00 | 17.06 | 4.52 | -89.65 | .00 | 6.22 | 5.15 | 7.000 | .000 | .00 | 1 | .0 |
| 29.114 | .0099 | | | | | .0078 | .23 | 5.87 | 1.16 | 5.31 | .013 | .00 | .00 | PIPE | |
| 6800.000 | -99.748 | 6.222 | -93.526 | 588.00 | 16.27 | 4.11 | -89.42 | .00 | 6.22 | 4.40 | 7.000 | .000 | .00 | 1 | .0 |
| JUNCT STR | .0660 | | | | | .0060 | .06 | 6.22 | 1.00 | | .013 | .00 | .00 | PIPE | |
| 6810.000 | -99.088 | 8.023 | -91.065 | 349.00 | 10.52 | 1.72 | -89.35 | .00 | 5.01 | .00 | 6.500 | .000 | .00 | 1 | .0 |
| 264.526 | .0091 | | | | | .0044 | 1.17 | 8.02 | .00 | 4.00 | .013 | .00 | .00 | PIPE | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 4- 1-2014 Time: 2: 9:13

CVWD
MDP
A01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 7074.526 | -96.681 | 6.788 | -89.893 | 349.00 | 10.52 | 1.72 | -88.18 | .00 | 5.01 | .00 | 6.500 | .000 | .00 | 1 | .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | | |
| 7074.526 | -96.681 | 3.565 | -93.116 | 349.00 | 18.73 | 5.45 | -87.67 | .00 | 5.01 | 6.47 | 6.500 | .000 | .00 | 1 | .0 |
| 60.049 | .0091 | | | | | .0136 | .81 | 3.56 | 1.94 | 4.00 | .013 | .00 | .00 | PIPE | |
| 7134.575 | -96.134 | 3.480 | -92.654 | 349.00 | 19.30 | 5.78 | -86.87 | .00 | 5.01 | 6.48 | 6.500 | .000 | .00 | 1 | .0 |
| 75.425 | .0091 | | | | | .0150 | 1.13 | 3.48 | 2.04 | 4.00 | .013 | .00 | .00 | PIPE | |
| 7210.000 | -95.448 | 3.351 | -92.097 | 349.00 | 20.24 | 6.36 | -85.74 | .00 | 5.01 | 6.50 | 6.500 | .000 | .00 | 1 | .0 |
| 1292.806 | .0160 | | | | | .0160 | 20.68 | 3.35 | 2.19 | 3.35 | .013 | .00 | .00 | PIPE | |
| 8502.806 | -74.770 | 3.351 | -71.420 | 349.00 | 20.24 | 6.36 | -65.06 | .00 | 5.01 | 6.50 | 6.500 | .000 | .00 | 1 | .0 |
| 474.114 | .0160 | | | | | .0153 | 7.24 | 3.35 | 2.19 | 3.35 | .013 | .00 | .00 | PIPE | |
| 8976.920 | -67.187 | 3.446 | -63.741 | 349.00 | 19.53 | 5.92 | -57.82 | .00 | 5.01 | 6.49 | 6.500 | .000 | .00 | 1 | .0 |
| 175.764 | .0160 | | | | | .0137 | 2.41 | 3.45 | 2.07 | 3.35 | .013 | .00 | .00 | PIPE | |
| 9152.684 | -64.376 | 3.581 | -60.795 | 349.00 | 18.62 | 5.38 | -55.41 | .00 | 5.01 | 6.47 | 6.500 | .000 | .00 | 1 | .0 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 89.060 | .0160 | | | | | .0121 | 1.08 | 3.58 | 1.93 | 3.35 | .013 | .00 | .00 | PIPE |
| 9241.743 | -62.951 | 3.723 | -59.228 | 349.00 | 17.76 | 4.90 | -54.33 | .00 | 5.01 | 6.43 | 6.500 | .000 | .00 | 1 .0 |
| 55.752 | .0160 | | | | | .0107 | .60 | 3.72 | 1.79 | 3.35 | .013 | .00 | .00 | PIPE |
| 9297.495 | -62.060 | 3.872 | -58.187 | 349.00 | 16.93 | 4.45 | -53.74 | .00 | 5.01 | 6.38 | 6.500 | .000 | .00 | 1 .0 |
| 37.545 | .0160 | | | | | .0095 | .35 | 3.87 | 1.66 | 3.35 | .013 | .00 | .00 | PIPE |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 9335.040 | -61.459 | 4.031 | -57.428 | 349.00 | 16.14 | 4.05 | -53.38 | .00 | 5.01 | 6.31 | 6.500 | .000 | .00 | 1 .0 |
| 26.231 | .0160 | | | | | .0084 | .22 | 4.03 | 1.54 | 3.35 | .013 | .00 | .00 | PIPE |
| 9361.271 | -61.039 | 4.199 | -56.840 | 349.00 | 15.39 | 3.68 | -53.16 | .00 | 5.01 | 6.22 | 6.500 | .000 | .00 | 1 .0 |
| 18.040 | .0160 | | | | | .0074 | .13 | 4.20 | 1.42 | 3.35 | .013 | .00 | .00 | PIPE |
| 9379.312 | -60.751 | 4.379 | -56.372 | 349.00 | 14.67 | 3.34 | -53.03 | .00 | 5.01 | 6.10 | 6.500 | .000 | .00 | 1 .0 |
| 11.836 | .0160 | | | | | .0066 | .08 | 4.38 | 1.31 | 3.35 | .013 | .00 | .00 | PIPE |
| 9391.147 | -60.562 | 4.572 | -55.989 | 349.00 | 13.99 | 3.04 | -52.95 | .00 | 5.01 | 5.94 | 6.500 | .000 | .00 | 1 .0 |
| 6.676 | .0160 | | | | | .0059 | .04 | 4.57 | 1.20 | 3.35 | .013 | .00 | .00 | PIPE |
| 9397.823 | -60.455 | 4.781 | -55.674 | 349.00 | 13.34 | 2.76 | -52.91 | .00 | 5.01 | 5.73 | 6.500 | .000 | .00 | 1 .0 |
| 2.177 | .0160 | | | | | .0053 | .01 | 4.78 | 1.10 | 3.35 | .013 | .00 | .00 | PIPE |
| 9400.000 | -60.420 | 5.010 | -55.410 | 349.00 | 12.72 | 2.51 | -52.90 | .00 | 5.01 | 5.46 | 6.500 | .000 | .00 | 1 .0 |
| WALL ENTRANCE | | | | | | | | | | | | | | |
| 9400.000 | -60.420 | 9.252 | -51.168 | 349.00 | .75 | .01 | -51.16 | .00 | 1.15 | 50.00 | 20.000 | 50.000 | .00 | 0 .0 |

```
                                                                                                                A01-01
T1 CVWD                                                                                                                  0
T2 MDP
T3 A01-01
SO    1000.000-113.618  3       .015                  -107.178
R     1169.090-113.449  3       .015                                                  .000
R     1326.410-113.292  3       .015                                                45.000     .000 0
R     2300.000-112.318  3       .015                                                  .000     .000 0
JX    2330.000-112.288  4 10    .015   239.000           -112.000                     45.0
R     3585.000-111.033  4       .015                                                  .000
TS    3615.000-111.003  2       .015                                                  .000
WX    3615.000-111.003  1
R     3655.000-110.963  1       .015                                                  .000
WE    3655.000-110.963  2       .500
TS    3685.000-110.933  4       .015                                                  .000
R     3700.000-110.918  4       .015                                                  .000
SH    3700.000-110.918  4
CD    1  3   0    .670   6.000   10.000  .000  .000   .00
CD    2  2   0    .000  10.000   10.000  .000  .000   .00
CD    3  1   0    .000  10.000   10.000 1.500 1.500   .00
CD    4  1   0    .000  10.000    6.000 1.500 1.500   .00
CD    5  3   0    .000  10.000   50.000 3.000 3.000   .00
CD    6  1   0    .000  10.000   35.000 3.000 3.000   .00
CD    7  2   0    .000  10.000   37.340  .000  .000   .00
CD    8  3   2    .670   6.000   37.340  .000  .000   .00
CD    9  1   0    .000  10.000   40.000 3.000 3.000   .00
CD   10  4   1    .000   7.000     .000  .000  .000   .00
CD   11  2   0          20.000   50.000  .000  .000   .00
CD   12  2   0    .000  10.000   40.000  .000  .000   .00
CD   13  2   0    .000  10.000   10.000  .000  .000   .00
Q           448.000   .0
```

FILE: A01-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 3-24-2014 Time: 4:40:56

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 3 | 0 | .670 | 6.000 | 10.000 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 2 | 2 | 0 | .000 | 10.000 | 10.000 | | | .00 | | | | | | | | | | |
| CD | 3 | 1 | 0 | .000 | 10.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 4 | 1 | 0 | .000 | 10.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 5 | 3 | 0 | .000 | 10.000 | 50.000 | 3.000 | 3.000 | .00 | | | | | | | | | | |
| CD | 6 | 1 | 0 | .000 | 10.000 | 35.000 | 3.000 | 3.000 | .00 | | | | | | | | | | |
| CD | 7 | 2 | 0 | .000 | 10.000 | 37.340 | | | .00 | | | | | | | | | | |
| CD | 8 | 3 | 2 | .670 | 6.000 | 37.340 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 9 | 1 | 0 | .000 | 10.000 | 40.000 | 3.000 | 3.000 | .00 | | | | | | | | | | |
| CD | 10 | 4 | 1 | | 7.000 | | | | | | | | | | | | | | |
| CD | 11 | 2 | 0 | .000 | 20.000 | 50.000 | | | .00 | | | | | | | | | | |
| CD | 12 | 2 | 0 | .000 | 10.000 | 40.000 | | | .00 | | | | | | | | | | |
| CD | 13 | 2 | 0 | .000 | 10.000 | 10.000 | | | .00 | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
A01-01

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1000.000 | -113.618 | 3 | -107.178 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1169.090 | -113.449 | 3 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1326.410 | -113.292 | 3 | .015 | 200.306 | 45.000 | .000 | 0 |

ELEMENT NO 4 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2300.000 | -112.318 | 3 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 5 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2330.000 | -112.288 | 4 | 10 | 0 | .015 | 239.000 | .000 | -112.000 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 6 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3585.000 | -111.033 | 4 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 7 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 3615.000 | -111.003 | 2 | .015 | .000 | .000 |

ELEMENT NO 8 IS A WALL EXIT *

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 3615.000 | -111.003 | 1 |

ELEMENT NO 9 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3655.000 | -110.963 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 10 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|

3655.000 -110.963 2 .500

ELEMENT NO 11 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 3685.000 | -110.933 | 4 | .015 | .000 | .000 |



WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 12 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3700.000 | -110.918 | 4 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 13 IS A SYSTEM HEADWORKS * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 3700.000 | -110.918 | 4 | .000 |

CVWD
MDP
A01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 1000.000 | -113.618 | 6.440 | -107.178 | 687.00 | 5.43 | .46 | -106.72 | .00 | 4.24 | 29.32 | 10.000 | 10.000 | 1.50 | 0 .0 |
| 169.090 | .0010 | | | | | .0005 | .09 | 6.44 | .46 | 5.42 | .015 | .00 | 1.50 | TRAP |
| 1169.090 | -113.449 | 6.337 | -107.112 | 687.00 | 5.56 | .48 | -106.63 | .08 | 4.24 | 29.01 | 10.000 | 10.000 | 1.50 | 0 .0 |
| 157.320 | .0010 | | | | | .0006 | .09 | 6.42 | .47 | 5.43 | .015 | .00 | 1.50 | TRAP |
| 1326.410 | -113.292 | 6.247 | -107.045 | 687.00 | 5.68 | .50 | -106.54 | .00 | 4.24 | 28.74 | 10.000 | 10.000 | 1.50 | 0 .0 |
| 378.030 | .0010 | | | | | .0006 | .23 | 6.25 | .49 | 5.42 | .015 | .00 | 1.50 | TRAP |
| 1704.440 | -112.914 | 6.049 | -106.865 | 687.00 | 5.96 | .55 | -106.31 | .00 | 4.24 | 28.15 | 10.000 | 10.000 | 1.50 | 0 .0 |
| 448.179 | .0010 | | | | | .0007 | .31 | 6.05 | .52 | 5.42 | .015 | .00 | 1.50 | TRAP |
| 2152.619 | -112.465 | 5.856 | -106.610 | 687.00 | 6.25 | .61 | -106.00 | .00 | 4.24 | 27.57 | 10.000 | 10.000 | 1.50 | 0 .0 |
| 147.381 | .0010 | | | | | .0008 | .11 | 5.86 | .55 | 5.42 | .015 | .00 | 1.50 | TRAP |
| 2300.000 | -112.318 | 5.803 | -106.515 | 687.00 | 6.33 | .62 | -105.89 | .00 | 4.24 | 27.41 | 10.000 | 10.000 | 1.50 | 0 .0 |
| JUNCT STR | .0010 | | | | | .0006 | .02 | 5.80 | .56 | | .015 | .00 | 1.50 | TRAP |
| 2330.000 | -112.288 | 6.087 | -106.201 | 448.00 | 4.86 | .37 | -105.83 | .00 | 4.02 | 24.26 | 10.000 | 6.000 | 1.50 | 0 .0 |
| 298.778 | .0010 | | | | | .0005 | .16 | 6.09 | .44 | 5.15 | .015 | .00 | 1.50 | TRAP |
| 2628.778 | -111.989 | 5.909 | -106.081 | 448.00 | 5.10 | .40 | -105.68 | .00 | 4.02 | 23.73 | 10.000 | 6.000 | 1.50 | 0 .0 |
| 331.603 | .0010 | | | | | .0006 | .20 | 5.91 | .47 | 5.15 | .015 | .00 | 1.50 | TRAP |
| 2960.381 | -111.658 | 5.734 | -105.923 | 448.00 | 5.35 | .44 | -105.48 | .00 | 4.02 | 23.20 | 10.000 | 6.000 | 1.50 | 0 .0 |
| 389.283 | .0010 | | | | | .0007 | .26 | 5.73 | .50 | 5.15 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
A01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| L/Elem | Ch Slope | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3349.664 | -111.268 | 5.565 | -105.704 | 448.00 | 5.61 | .49 | -105.21 | .00 | 4.02 | 22.69 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 235.336 | .0010 | | | | .0007 | .18 | 5.56 | .53 | 5.15 | .015 | .00 | 1.50 | TRAP | | |
| 3585.000 | -111.033 | 5.481 | -105.552 | 448.00 | 5.75 | .51 | -105.04 | .00 | 4.02 | 22.44 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| TRANS STR | .0010 | | | | .0017 | .05 | 5.48 | .54 | | .015 | .00 | 1.50 | TRAP | | |
| 3615.000 | -111.003 | 4.854 | -106.149 | 448.00 | 9.23 | 1.32 | -104.83 | .00 | 3.97 | 10.00 | 10.000 | 10.000 | .00 | 0 | .0 |
| WALL | EXIT | | | | | | | | | | | | | | |
| 3615.000 | -111.003 | 4.854 | -106.149 | 448.00 | 9.23 | 1.32 | -104.83 | .00 | 3.97 | 10.00 | 6.000 | 10.000 | .00 | 0 | .7 |
| 40.000 | .0010 | | | | .0024 | .10 | 4.85 | .74 | 6.00 | .015 | .00 | .00 | BOX | | |
| WALL | ENTRANCE | | | | | | | | | | | | | | |
| 3655.000 | -110.963 | 4.983 | -105.980 | 448.00 | 8.99 | 1.26 | -104.72 | .00 | 3.97 | 10.00 | 10.000 | 10.000 | .00 | 0 | .0 |
| TRANS STR | .0010 | | | | .0015 | .04 | 4.98 | .71 | | .015 | .00 | .00 | RECTANG | | |
| 3685.000 | -110.933 | 5.942 | -104.991 | 448.00 | 5.06 | .40 | -104.59 | .00 | 4.02 | 23.83 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 15.000 | .0010 | | | | .0005 | .01 | 5.94 | .46 | 5.15 | .015 | .00 | 1.50 | TRAP | | |
| 3700.000 | -110.918 | 5.934 | -104.984 | 448.00 | 5.07 | .40 | -104.59 | .00 | 4.02 | 23.80 | 10.000 | 6.000 | 1.50 | 0 | .0 |

```
T1 CVWD                                                                                                  0
T2 MDP
T3 B01
SO   1110.110-131.425  1      .015                -125.425
R    1750.000-130.785  1      .015                                        .000
TS   1780.000-130.755  2      .015                                        .000
WX   1780.000-130.755  3
R    1870.000-130.530  3      .015                                        .000
WE   1870.000-130.530  2      .500
TS   1900.000-130.500  1      .015
R    2120.000-130.280  1      .015                                        .000
JX   2150.000-130.250  9  7   .015  205.000         -129.250             45.0
R    2175.000-130.225  9      .015                                        .000
TS   2205.000-130.195 10      .015                                        .000
WX   2205.000-130.195 11
R    2435.000-129.620 11      .015                                        .000
WE   2435.000-129.620 10      .500
TS   2465.000-129.590  9      .015
R    2650.000-129.405  9      .015                                        .000
R    3225.510-128.830  9      .015                                        .000
JX   3300.260-128.756 16  4   .015  683.000         -127.756             45.0
R    3556.000-128.500 16      .015                                        .000
TS   3576.000-128.480 14      .015                                        .000
WX   3576.000-128.480 15
R    3616.000-128.380 15      .015                                        .000
WE   3616.000-128.380 14      .500
TS   3636.000-128.360 16      .015                                        .000
R    5500.000-126.499 16      .015                                        .000
R    6235.000-125.761 16      .015                                        .000
JX   6250.000-125.746  8  7   .013  249.000         -124.746             45.0
WX   6250.000-125.746  5      .013                                        .000
R    8860.000-094.165  5      .013                                        .000
JX   8875.000-092.475  6 17   .013  403.000         -092.475             30.0
R    11310.00-057.655  6      .013                                        .000
R    11750.00-051.363  6      .013                                        .000
JX   11770.00-049.985 13 12   .013  137.000         -048.985             45.0
R    12750.00-030.385 13      .013                                        .000
SH   12750.00-030.385 13
CD   1  1   0    .000  10.000   32.000 1.500 1.500   .00
CD   2  2   0    .000  10.000   37.340  .000  .000   .00
CD   3  3   2    .670   7.000   37.340  .000  .000   .00
CD   4  1   0    .000  10.000   30.000 1.500 1.500   .00
CD   5  4   1           8.000
CD   6  4   1           6.500
CD   7  4   1           4.000
CD   8  2   0    .000  10.000    9.000  .000  .000   .00
CD   9  1   0    .000  10.000   30.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   37.340  .000  .000   .00
CD  11  3   2    .670   7.000   37.340  .000  .000   .00
CD  12  4   1           3.000
CD  13  4   1           5.500
CD  14  2   0    .000  10.000   20.670  .000  .000   .00
CD  15  3   1    .670   7.000   20.670  .000  .000   .00
CD  16  1   0    .000  10.000   16.000 1.500 1.500   .00
CD  17  4   1           7.000
Q           391.000   .0
```

FILE: B01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 8- 2-2013 Time: 3:49:33

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 10.000 | 32.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 2 | 0 | .000 | 10.000 | 37.340 | | | .00 | | | | | | | | | | |
| CD | 3 | 3 | 2 | .670 | 7.000 | 37.340 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 4 | 1 | 0 | .000 | 10.000 | 30.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 5 | 4 | 1 | | 8.000 | | | | | | | | | | | | | | |
| CD | 6 | 4 | 1 | | 6.500 | | | | | | | | | | | | | | |
| CD | 7 | 4 | 1 | | 4.000 | | | | | | | | | | | | | | |
| CD | 8 | 2 | 0 | .000 | 10.000 | 9.000 | | | .00 | | | | | | | | | | |
| CD | 9 | 1 | 0 | .000 | 10.000 | 30.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 10 | 2 | 0 | .000 | 10.000 | 37.340 | | | .00 | | | | | | | | | | |
| CD | 11 | 3 | 2 | .670 | 7.000 | 37.340 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 12 | 4 | 1 | | 3.000 | | | | | | | | | | | | | | |
| CD | 13 | 4 | 1 | | 5.500 | | | | | | | | | | | | | | |
| CD | 14 | 2 | 0 | .000 | 10.000 | 20.670 | | | .00 | | | | | | | | | | |
| CD | 15 | 3 | 1 | .670 | 7.000 | 20.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 16 | 1 | 0 | .000 | 10.000 | 16.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 17 | 4 | 1 | | 7.000 | | | | | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
B01

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1110.110 | -131.425 | 1 | -125.425 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1750.000 | -130.785 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 1780.000 | -130.755 | 2 | .015 | .000 | .000 |

ELEMENT NO 4 IS A WALL EXIT *

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 1780.000 | -130.755 | 3 |

ELEMENT NO 5 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1870.000 | -130.530 | 3 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 6 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 1870.000 | -130.530 | 2 | .500 |

ELEMENT NO 7 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 1900.000 | -130.500 | 1 | .015 | .000 | .000 |

ELEMENT NO 8 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2120.000 | -130.280 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 9 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2150.000 | -130.250 | 9 | 7 | 0 | .015 | 205.000 | .000 | -129.250 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 10 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2175.000 | -130.225 | 9 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 11 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 2205.000 | -130.195 | 10 | .015 | .000 | .000 |



ELEMENT NO 12 IS A WALL EXIT *

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 2205.000 | -130.195 | 11 |

ELEMENT NO 13 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2435.000 | -129.620 | 11 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 14 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 2435.000 | -129.620 | 10 | .500 |

ELEMENT NO 15 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 2465.000 | -129.590 | 9 | .015 | .000 | .000 |

ELEMENT NO 16 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2650.000 | -129.405 | 9 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 17 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3225.510 | -128.830 | 9 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 18 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3300.260 | -128.756 | 16 | 4 | 0 | .015 | 683.000 | .000 | -127.756 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 19 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3556.000 | -128.500 | 16 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 20 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 3576.000 | -128.480 | 14 | .015 | .000 | .000 |

ELEMENT NO 21 IS A WALL EXIT *

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 3576.000 | -128.480 | 15 |

ELEMENT NO 22 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3616.000 | -128.380 | 15 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 23 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 3616.000 | -128.380 | 14 | .500 |



ELEMENT NO 24 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|

```
                          3636.000 -128.360   16              .015                          .000     .000
 ELEMENT NO  25 IS A REACH              *         *     *
                   U/S DATA   STATION    INVERT  SECT              N                      RADIUS    ANGLE     ANG PT  MAN H
                          5500.000 -126.499   16              .015                          .000     .000      .000     0
 ELEMENT NO  26 IS A REACH              *         *     *
                   U/S DATA   STATION    INVERT  SECT              N                      RADIUS    ANGLE     ANG PT  MAN H
                          6235.000 -125.761   16              .015                          .000     .000      .000     0
 ELEMENT NO  27 IS A JUNCTION           *         *     *     *               *              *                  *
                   U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                          6250.000 -125.746    8     7     0   .013   249.000      .000  -124.746      .000  45.000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  28 IS A  WALL  EXIT                      *
                   U/S DATA   STATION    INVERT  SECT
                          6250.000 -125.746    5
 ELEMENT NO  29 IS A REACH              *         *     *
                   U/S DATA   STATION    INVERT  SECT              N                      RADIUS    ANGLE     ANG PT  MAN H
                          8860.000  -94.165    5               .013                          .000     .000      .000     0
 ELEMENT NO  30 IS A JUNCTION           *         *     *     *               *              *                  *
                   U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                          8875.000  -92.475    6    17     0   .013   403.000      .000   -92.475      .000  30.000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  31 IS A REACH              *         *     *
                   U/S DATA   STATION    INVERT  SECT              N                      RADIUS    ANGLE     ANG PT  MAN H
                         11310.000  -57.655    6               .013                          .000     .000      .000     0
 ELEMENT NO  32 IS A REACH              *         *     *
                   U/S DATA   STATION    INVERT  SECT              N                      RADIUS    ANGLE     ANG PT  MAN H
                         11750.000  -51.363    6               .013                          .000     .000      .000     0
 ELEMENT NO  33 IS A JUNCTION           *         *     *     *               *              *                  *
                   U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                         11770.000  -49.985   13    12     0   .013   137.000      .000   -48.985      .000  45.000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
                                                W S P G W                                                          PAGE NO   5
                              WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  34 IS A REACH              *         *     *
                   U/S DATA   STATION    INVERT  SECT              N                      RADIUS    ANGLE     ANG PT  MAN H
                         12750.000  -30.385   13              .013                          .000     .000      .000     0
 ELEMENT NO  35 IS A SYSTEM HEADWORKS                 *                         *
                   U/S DATA   STATION    INVERT  SECT                                 W S ELEV
                         12750.000  -30.385   13                                       .000
```

CVWD
MDP
B01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1110.110 | -131.425 | 6.000 | -125.425 | 2068.00 | 8.41 | 1.10 | -124.33 | .00 | 4.69 | 50.00 | 10.000 | 32.000 | 1.50 | 0 .0 |
| 639.890 | .0010 | | | | | .0010 | .61 | 6.00 | .67 | 5.90 | .015 | .00 | 1.50 | TRAP |
| 1750.000 | -130.785 | 5.952 | -124.833 | 2068.00 | 8.49 | 1.12 | -123.71 | .00 | 4.69 | 49.86 | 10.000 | 32.000 | 1.50 | 0 .0 |
| TRANS STR | .0010 | | | | | .0012 | .04 | 5.95 | .68 | | .015 | .00 | 1.50 | TRAP |
| 1780.000 | -130.755 | 5.666 | -125.089 | 2068.00 | 9.77 | 1.48 | -123.61 | .00 | 4.57 | 37.34 | 10.000 | 37.340 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 1780.000 | -130.755 | 5.667 | -125.088 | 2068.00 | 10.14 | 1.60 | -123.49 | .00 | 4.68 | 37.34 | 7.000 | 37.340 | .00 | 2 .7 |
| 90.000 | .0025 | | | | | .0025 | .23 | 5.67 | .76 | 5.68 | .015 | .00 | .00 | BOX |
| 1870.000 | -130.530 | 5.670 | -124.860 | 2068.00 | 10.13 | 1.59 | -123.27 | .00 | 4.68 | 37.34 | 7.000 | 37.340 | .00 | 2 .7 |
| WALL ENTRANCE | | | | | | | | | | | | | | |
| 1870.000 | -130.530 | 6.080 | -124.450 | 2068.00 | 9.11 | 1.29 | -123.16 | .00 | 4.57 | 37.34 | 10.000 | 37.340 | .00 | 0 .0 |
| TRANS STR | .0010 | | | | | .0009 | .03 | 6.08 | .65 | | .015 | .00 | .00 | RECTANG |
| 1900.000 | -130.500 | 6.505 | -123.995 | 2068.00 | 7.61 | .90 | -123.09 | .00 | 4.69 | 51.52 | 10.000 | 32.000 | 1.50 | 0 .0 |
| 220.000 | .0010 | | | | | .0007 | .16 | 6.51 | .58 | 5.90 | .015 | .00 | 1.50 | TRAP |
| 2120.000 | -130.280 | 6.414 | -123.866 | 2068.00 | 7.75 | .93 | -122.93 | .00 | 4.69 | 51.24 | 10.000 | 32.000 | 1.50 | 0 .0 |
| JUNCT STR | .0010 | | | | | .0007 | .02 | 6.41 | .60 | | .015 | .00 | 1.50 | TRAP |
| 2150.000 | -130.250 | 6.543 | -123.707 | 1863.00 | 7.15 | .79 | -122.91 | .00 | 4.55 | 49.63 | 10.000 | 30.000 | 1.50 | 0 .0 |
| 25.000 | .0010 | | | | | .0006 | .02 | 6.54 | .55 | 5.75 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
B01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2175.000 | -130.225 | 6.530 | -123.695 | 1863.00 | 7.17 | .80 | -122.90 | .00 | 4.55 | 49.59 | 10.000 | 30.000 | 1.50 | 0 | .0 |
| TRANS STR | .0010 | | | | | .0007 | .02 | 6.53 | .55 | | .015 | .00 | 1.50 | TRAP | |
| 2205.000 | -130.195 | 6.419 | -123.776 | 1863.00 | 7.77 | .94 | -122.84 | .00 | 4.26 | 37.34 | 10.000 | 37.340 | .00 | 0 | .0 |
| WALL | EXIT | | | | | | | | | | | | | | |
| 2205.000 | -130.195 | 6.420 | -123.775 | 1863.00 | 8.06 | 1.01 | -122.77 | .00 | 4.37 | 37.34 | 7.000 | 37.340 | .00 | 2 | .7 |
| 211.029 | .0025 | | | | | .0015 | .31 | 6.42 | .57 | 5.26 | .015 | .00 | .00 | BOX | |

---------- WARNING - Flow depth near top of box conduit ----------

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2416.029 | -129.667 | 6.121 | -123.546 | 1863.00 | 8.45 | 1.11 | -122.44 | .00 | 4.37 | 37.34 | 7.000 | 37.340 | .00 | 2 | .7 |
| 18.971 | .0025 | | | | | .0017 | .03 | 6.12 | .61 | 5.26 | .015 | .00 | .00 | BOX | |
| 2435.000 | -129.620 | 6.097 | -123.523 | 1863.00 | 8.49 | 1.12 | -122.40 | .00 | 4.37 | 37.34 | 7.000 | 37.340 | .00 | 2 | .7 |
| WALL | ENTRANCE | | | | | | | | | | | | | | |
| 2435.000 | -129.620 | 6.326 | -123.294 | 1863.00 | 7.89 | .97 | -122.33 | .00 | 4.26 | 37.34 | 10.000 | 37.340 | .00 | 0 | .0 |
| TRANS STR | .0010 | | | | | .0007 | .02 | 6.33 | .55 | | .015 | .00 | .00 | RECTANG | |
| 2465.000 | -129.590 | 6.497 | -123.093 | 1863.00 | 7.21 | .81 | -122.28 | .00 | 4.55 | 49.49 | 10.000 | 30.000 | 1.50 | 0 | .0 |
| 185.000 | .0010 | | | | | .0007 | .12 | 6.50 | .56 | 5.75 | .015 | .00 | 1.50 | TRAP | |
| 2650.000 | -129.405 | 6.407 | -122.998 | 1863.00 | 7.34 | .84 | -122.16 | .00 | 4.55 | 49.22 | 10.000 | 30.000 | 1.50 | 0 | .0 |
| 575.510 | .0010 | | | | | .0007 | .42 | 6.41 | .57 | 5.75 | .015 | .00 | 1.50 | TRAP | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 2-2013 Time: 3:49:43

CVWD
MDP
B01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 3225.510 | -128.830 | 6.171 | -122.659 | 1863.00 | 7.69 | .92 | -121.74 | .00 | 4.55 | 48.51 | 10.000 | 30.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0010 | | | | | .0007 | .05 | 6.17 | .61 | | .015 | .00 | 1.50 | TRAP | |
| 3300.260 | -128.756 | 6.894 | -121.862 | 1180.00 | 6.50 | .66 | -121.21 | .00 | 4.73 | 36.68 | 10.000 | 16.000 | 1.50 | 0 | .0 |
| 255.740 | .0010 | | | | | .0006 | .16 | 6.89 | .51 | 5.99 | .015 | .00 | 1.50 | TRAP | |
| 3556.000 | -128.500 | 6.757 | -121.743 | 1180.00 | 6.68 | .69 | -121.05 | .00 | 4.73 | 36.27 | 10.000 | 16.000 | 1.50 | 0 | .0 |
| TRANS STR | .0010 | | | | | .0010 | .02 | 6.76 | .53 | | .015 | .00 | 1.50 | TRAP | |
| 3576.000 | -128.480 | 6.334 | -122.146 | 1180.00 | 9.01 | 1.26 | -120.88 | .00 | 4.66 | 20.67 | 10.000 | 20.670 | .00 | 0 | .0 |
| WALL | EXIT | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3576.000 | -128.480 | 6.335 | -122.145 | 1180.00 | 9.31 | 1.35 | -120.80 | .00 | 4.76 | 20.67 | 7.000 | 20.670 | .00 | 1 | .7 |
| 40.000 | .0025 | | | | .0022 | .09 | 6.34 | .66 | 6.08 | .015 | | .00 | .00 | BOX | |

WARNING - Flow depth near top of box conduit

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3616.000 | -128.380 | 6.318 | -122.062 | 1180.00 | 9.34 | 1.35 | -120.71 | .00 | 4.76 | 20.67 | 7.000 | 20.670 | .00 | 1 | .7 |
| WALL | ENTRANCE | | | | | | | | | | | | | | |

WARNING - Flow depth near top of box conduit

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3616.000 | -128.380 | 6.590 | -121.790 | 1180.00 | 8.66 | 1.17 | -120.62 | .00 | 4.66 | 20.67 | 10.000 | 20.670 | .00 | 0 | .0 |
| TRANS STR | .0010 | | | | .0008 | .02 | 6.59 | .59 | | .015 | | .00 | .00 | RECTANG | |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 3636.000 | -128.360 | 7.262 | -121.098 | 1180.00 | 6.04 | .57 | -120.53 | .00 | 4.73 | 37.79 | 10.000 | 16.000 | 1.50 | 0 | .0 |
| 385.782 | .0010 | | | | .0005 | .20 | 7.26 | .47 | 6.00 | .015 | | .00 | 1.50 | TRAP | |
| 4021.782 | -127.975 | 7.019 | -120.956 | 1180.00 | 6.34 | .62 | -120.33 | .00 | 4.73 | 37.06 | 10.000 | 16.000 | 1.50 | 0 | .0 |
| 423.324 | .0010 | | | | .0006 | .25 | 7.02 | .50 | 6.00 | .015 | | .00 | 1.50 | TRAP | |
| 4445.106 | -127.552 | 6.783 | -120.769 | 1180.00 | 6.65 | .69 | -120.08 | .00 | 4.73 | 36.35 | 10.000 | 16.000 | 1.50 | 0 | .0 |
| 490.516 | .0010 | | | | .0007 | .33 | 6.78 | .53 | 6.00 | .015 | | .00 | 1.50 | TRAP | |
| 4935.623 | -127.062 | 6.554 | -120.509 | 1180.00 | 6.97 | .75 | -119.75 | .00 | 4.73 | 35.66 | 10.000 | 16.000 | 1.50 | 0 | .0 |
| 564.377 | .0010 | | | | .0008 | .43 | 6.55 | .56 | 6.00 | .015 | | .00 | 1.50 | TRAP | |
| 5500.000 | -126.499 | 6.351 | -120.148 | 1180.00 | 7.28 | .82 | -119.33 | .00 | 4.73 | 35.05 | 10.000 | 16.000 | 1.50 | 0 | .0 |
| 384.487 | .0010 | | | | .0008 | .32 | 6.35 | .60 | 5.99 | .015 | | .00 | 1.50 | TRAP | |
| 5884.487 | -126.113 | 6.257 | -119.856 | 1180.00 | 7.43 | .86 | -119.00 | .00 | 4.73 | 34.77 | 10.000 | 16.000 | 1.50 | 0 | .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | | |
| 5884.487 | -126.113 | 3.447 | -122.666 | 1180.00 | 16.17 | 4.06 | -118.61 | .00 | 4.73 | 26.34 | 10.000 | 16.000 | 1.50 | 0 | .0 |
| 28.850 | .0010 | | | | .0080 | .23 | 3.45 | 1.71 | 5.99 | .015 | | .00 | 1.50 | TRAP | |
| 5913.336 | -126.084 | 3.351 | -122.733 | 1180.00 | 16.75 | 4.35 | -118.38 | .00 | 4.73 | 26.05 | 10.000 | 16.000 | 1.50 | 0 | .0 |
| 38.624 | .0010 | | | | .0090 | .35 | 3.35 | 1.79 | 5.99 | .015 | | .00 | 1.50 | TRAP | |
| 5951.960 | -126.045 | 3.224 | -122.821 | 1180.00 | 17.56 | 4.79 | -118.03 | .00 | 4.73 | 25.67 | 10.000 | 16.000 | 1.50 | 0 | .0 |
| 38.258 | .0010 | | | | .0103 | .39 | 3.22 | 1.91 | 5.99 | .015 | | .00 | 1.50 | TRAP | |

CVWD
MDP
B01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5990.218 | -126.007 | 3.102 | -122.905 | 1180.00 | 18.42 | 5.27 | -117.64 | .00 | 4.73 | 25.30 | 10.000 | 16.000 | 1.50 | 0 .0 |
| 37.679 | .0010 | | | | | .0118 | .45 | 3.10 | 2.04 | 5.99 | .015 | .00 | 1.50 | TRAP |
| 6027.897 | -125.969 | 2.983 | -122.986 | 1180.00 | 19.32 | 5.80 | -117.19 | .00 | 4.73 | 24.95 | 10.000 | 16.000 | 1.50 | 0 .0 |
| 36.936 | .0010 | | | | | .0136 | .50 | 2.98 | 2.18 | 5.99 | .015 | .00 | 1.50 | TRAP |
| 6064.833 | -125.932 | 2.868 | -123.064 | 1180.00 | 20.26 | 6.38 | -116.69 | .00 | 4.73 | 24.60 | 10.000 | 16.000 | 1.50 | 0 .0 |
| 36.069 | .0010 | | | | | .0156 | .56 | 2.87 | 2.32 | 5.99 | .015 | .00 | 1.50 | TRAP |
| 6100.901 | -125.896 | 2.757 | -123.138 | 1180.00 | 21.25 | 7.01 | -116.12 | .00 | 4.73 | 24.27 | 10.000 | 16.000 | 1.50 | 0 .0 |
| 35.109 | .0010 | | | | | .0179 | .63 | 2.76 | 2.48 | 5.99 | .015 | .00 | 1.50 | TRAP |
| 6136.011 | -125.860 | 2.650 | -123.210 | 1180.00 | 22.29 | 7.71 | -115.50 | .00 | 4.73 | 23.95 | 10.000 | 16.000 | 1.50 | 0 .0 |
| 34.082 | .0010 | | | | | .0206 | .70 | 2.65 | 2.64 | 5.99 | .015 | .00 | 1.50 | TRAP |
| 6170.093 | -125.826 | 2.547 | -123.279 | 1180.00 | 23.38 | 8.49 | -114.79 | .00 | 4.73 | 23.64 | 10.000 | 16.000 | 1.50 | 0 .0 |
| 33.007 | .0010 | | | | | .0237 | .78 | 2.55 | 2.82 | 5.99 | .015 | .00 | 1.50 | TRAP |
| 6203.100 | -125.793 | 2.447 | -123.346 | 1180.00 | 24.52 | 9.33 | -114.01 | .00 | 4.73 | 23.34 | 10.000 | 16.000 | 1.50 | 0 .0 |
| 31.900 | .0010 | | | | | .0272 | .87 | 2.45 | 3.01 | 5.99 | .015 | .00 | 1.50 | TRAP |
| 6235.000 | -125.761 | 2.350 | -123.411 | 1180.00 | 25.72 | 10.27 | -113.14 | .00 | 4.73 | 23.05 | 10.000 | 16.000 | 1.50 | 0 .0 |
| JUNCT STR | .0010 | | | | | .0185 | .28 | 2.35 | 3.21 | | .013 | .00 | 1.50 | TRAP |

---------- WARNING - Junction Analysis - Change in Channel Type ----------



CVWD
MDP
B01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6250.000 | -125.746 | 4.331 | -121.415 | 931.00 | 23.88 | 8.86 | -112.56 | .00 | 6.93 | 9.00 | 10.000 | 9.000 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6250.000 | -125.746 | 6.092 | -119.654 | 931.00 | 22.67 | 7.98 | -111.68 | .00 | 7.39 | 6.82 | 8.000 | .000 | .00 | 1 .0 |
| 1395.325 | .0121 | | | | | .0121 | 16.88 | 6.09 | 1.63 | 6.09 | .013 | .00 | .00 | PIPE |
| 7645.325 | -108.863 | 6.092 | -102.770 | 931.00 | 22.67 | 7.98 | -94.79 | .00 | 7.39 | 6.82 | 8.000 | .000 | .00 | 1 .0 |
| 728.532 | .0121 | | | | | .0118 | 8.59 | 6.09 | 1.63 | 6.09 | .013 | .00 | .00 | PIPE |
| 8373.857 | -100.047 | 6.237 | -93.810 | 931.00 | 22.14 | 7.61 | -86.20 | .00 | 7.39 | 6.63 | 8.000 | .000 | .00 | 1 .0 |
| 324.750 | .0121 | | | | | .0110 | 3.56 | 6.24 | 1.55 | 6.09 | .013 | .00 | .00 | PIPE |
| 8698.607 | -96.118 | 6.557 | -89.561 | 931.00 | 21.11 | 6.92 | -82.64 | .00 | 7.39 | 6.15 | 8.000 | .000 | .00 | 1 .0 |
| 122.171 | .0121 | | | | | .0100 | 1.22 | 6.56 | 1.39 | 6.09 | .013 | .00 | .00 | PIPE |
| 8820.778 | -94.640 | 6.928 | -87.711 | 931.00 | 20.13 | 6.29 | -81.42 | .00 | 7.39 | 5.45 | 8.000 | .000 | .00 | 1 .0 |
| 39.222 | .0121 | | | | | .0093 | .36 | 6.93 | 1.22 | 6.09 | .013 | .00 | .00 | PIPE |
| 8860.000 | -94.165 | 7.391 | -86.774 | 931.00 | 19.19 | 5.72 | -81.06 | .00 | 7.39 | 4.24 | 8.000 | .000 | .00 | 1 .0 |
| JUNCT STR | .1127 | | | | | .0096 | .14 | 7.39 | 1.00 | | .013 | .00 | .00 | PIPE |
| 8875.000 | -92.475 | 10.262 | -82.213 | 528.00 | 15.91 | 3.93 | -78.28 | .00 | 5.92 | .00 | 6.500 | .000 | .00 | 1 .0 |
| 695.580 | .0143 | | | | | .0101 | 7.05 | 10.26 | .00 | 4.57 | .013 | .00 | .00 | PIPE |
| 9570.580 | -82.528 | 7.369 | -75.159 | 528.00 | 15.91 | 3.93 | -71.23 | .00 | 5.92 | .00 | 6.500 | .000 | .00 | 1 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 2-2013 Time: 3:49:43

CVWD
MDP
B01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 9570.580 | -82.528 | 4.571 | -77.958 | 528.00 | 21.18 | 6.96 | -70.99 | .00 | 5.92 | 5.94 | 6.500 | .000 | .00 | 1 .0 |
| 1170.146 | .0143 | | | | | .0143 | 16.73 | 4.57 | 1.82 | 4.57 | .013 | .00 | .00 | PIPE |
| 10740.730 | -65.796 | 4.571 | -61.225 | 528.00 | 21.18 | 6.96 | -54.26 | .00 | 5.92 | 5.94 | 6.500 | .000 | .00 | 1 .0 |
| 569.274 | .0143 | | | | | .0143 | 8.11 | 4.57 | 1.82 | 4.57 | .013 | .00 | .00 | PIPE |
| 11310.000 | -57.655 | 4.583 | -53.072 | 528.00 | 21.12 | 6.92 | -46.15 | .00 | 5.92 | 5.93 | 6.500 | .000 | .00 | 1 .0 |
| 440.000 | .0143 | | | | | .0139 | 6.10 | 4.58 | 1.81 | 4.57 | .013 | .00 | .00 | PIPE |
| 11750.000 | -51.363 | 4.671 | -46.692 | 528.00 | 20.69 | 6.64 | -40.05 | .00 | 5.92 | 5.85 | 6.500 | .000 | .00 | 1 .0 |
| JUNCT STR | .0689 | | | | | .0168 | .34 | 4.67 | 1.74 | | .013 | .00 | .00 | PIPE |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11770.000 | -49.985 | 3.801 | -46.184 | 391.00 | 22.32 | 7.74 | -38.45 | .00 | 5.17 | 5.08 | 5.500 | .000 | .00 | 1 | .0 |
| 139.092 | .0200 | | | | | .0200 | 2.78 | 3.80 | 2.12 | 3.80 | .013 | .00 | .00 | PIPE | |
| 11909.090 | -47.203 | 3.801 | -43.402 | 391.00 | 22.32 | 7.74 | -35.67 | .00 | 5.17 | 5.08 | 5.500 | .000 | .00 | 1 | .0 |
| 497.603 | .0200 | | | | | .0191 | 9.49 | 3.80 | 2.12 | 3.80 | .013 | .00 | .00 | PIPE | |
| 12406.700 | -37.251 | 3.948 | -33.303 | 391.00 | 21.42 | 7.12 | -26.18 | .00 | 5.17 | 4.95 | 5.500 | .000 | .00 | 1 | .0 |
| 164.399 | .0200 | | | | | .0172 | 2.82 | 3.95 | 1.97 | 3.80 | .013 | .00 | .00 | PIPE | |
| 12571.100 | -33.963 | 4.132 | -29.831 | 391.00 | 20.42 | 6.48 | -23.36 | .00 | 5.17 | 4.75 | 5.500 | .000 | .00 | 1 | .0 |
| 84.661 | .0200 | | | | | .0154 | 1.31 | 4.13 | 1.79 | 3.80 | .013 | .00 | .00 | PIPE | |
| 12655.760 | -32.270 | 4.334 | -27.936 | 391.00 | 19.47 | 5.89 | -22.05 | .00 | 5.17 | 4.50 | 5.500 | .000 | .00 | 1 | .0 |
| 51.136 | .0200 | | | | | .0140 | .71 | 4.33 | 1.62 | 3.80 | .013 | .00 | .00 | PIPE | |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 12706.890 | -31.247 | 4.560 | -26.687 | 391.00 | 18.56 | 5.35 | -21.34 | .00 | 5.17 | 4.14 | 5.500 | .000 | .00 | 1 | .0 |
| 30.598 | .0200 | | | | | .0128 | .39 | 4.56 | 1.45 | 3.80 | .013 | .00 | .00 | PIPE | |
| 12737.490 | -30.635 | 4.825 | -25.810 | 391.00 | 17.70 | 4.86 | -20.95 | .00 | 5.17 | 3.61 | 5.500 | .000 | .00 | 1 | .0 |
| 12.510 | .0200 | | | | | .0120 | .15 | 4.83 | 1.26 | 3.80 | .013 | .00 | .00 | PIPE | |
| 12750.000 | -30.385 | 5.168 | -25.217 | 391.00 | 16.87 | 4.42 | -20.80 | .00 | 5.17 | 2.62 | 5.500 | .000 | .00 | 1 | .0 |

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FILE: B01-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 7-30-2013 Time:11:57:42

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 9.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 2 | 0 | .000 | 9.000 | 10.000 | | | .00 | | | | | | | | | | |
| CD | 3 | 3 | 0 | .000 | 5.000 | 10.000 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 4 | 4 | 1 | | 4.000 | | | | | | | | | | | | | | |
| CD | 5 | 1 | 0 | .000 | 9.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE B01-01

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1029.000 | -128.787 | 1 | -121.862 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1201.840 | -128.527 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1394.010 | -128.239 | 1 | .015 | 200.191 | -55.000 | .000 | 0 |

ELEMENT NO 4 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2300.000 | -126.884 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 5 IS A JUNCTION * * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2320.000 | -126.354 | 1 | 4 | 0 | .015 | 248.000 | .000 | -125.354 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 6 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3442.050 | -124.667 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 7 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3568.810 | -124.477 | 1 | .015 | 165.252 | 43.950 | .000 | 0 |

ELEMENT NO 8 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3590.000 | -124.445 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 9 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 3610.000 | -124.415 | 2 | .015 | .000 | .000 |

ELEMENT NO 10 IS A WALL EXIT *

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 3610.000 | -124.415 | 3 |

ELEMENT NO 11 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3710.000 | -124.165 | 3 | .015 | .000 | .000 | .000 | 0 |

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 12 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 3710.000 | -124.165 | 2 | .500 |

ELEMENT NO 13 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 3730.000 | -124.135 | 5 | .015 | .000 | .000 |

ELEMENT NO 14 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 4500.000 | -122.980 | 5 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 15 IS A SYSTEM HEADWORKS * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 4500.000 | -122.980 | 5 | .000 |

CVWD
MDP
LINE B01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 1029.000 | -128.787 | 6.925 | -121.862 | 733.00 | 6.46 | .65 | -121.21 | .00 | 5.17 | 26.78 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 172.840 | .0015 | | | | | .0008 | .14 | 6.93 | .55 | 5.90 | .015 | .00 | 1.50 | TRAP |
| 1201.840 | -128.527 | 6.745 | -121.782 | 733.00 | 6.74 | .71 | -121.08 | .11 | 5.17 | 26.23 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 192.170 | .0015 | | | | | .0009 | .17 | 6.85 | .58 | 5.91 | .015 | .00 | 1.50 | TRAP |
| 1394.010 | -128.239 | 6.564 | -121.675 | 733.00 | 7.05 | .77 | -120.90 | .00 | 5.17 | 25.69 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 235.771 | .0015 | | | | | .0010 | .24 | 6.56 | .62 | 5.91 | .015 | .00 | 1.50 | TRAP |
| 1629.781 | -127.886 | 6.374 | -121.513 | 733.00 | 7.39 | .85 | -120.66 | .00 | 5.17 | 25.12 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 294.421 | .0015 | | | | | .0012 | .34 | 6.37 | .66 | 5.91 | .015 | .00 | 1.50 | TRAP |
| 1924.202 | -127.446 | 6.188 | -121.258 | 733.00 | 7.75 | .93 | -120.33 | .00 | 5.17 | 24.56 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 375.798 | .0015 | | | | | .0013 | .49 | 6.19 | .70 | 5.91 | .015 | .00 | 1.50 | TRAP |
| 2300.000 | -126.884 | 6.035 | -120.849 | 733.00 | 8.07 | 1.01 | -119.84 | .00 | 5.17 | 24.10 | 9.000 | 6.000 | 1.50 | 0 .0 |
| JUNCT STR | .0265 | | | | | .0010 | .02 | 6.03 | .73 | | .015 | .00 | 1.50 | TRAP |
| 2320.000 | -126.354 | 6.110 | -120.244 | 485.00 | 5.23 | .43 | -119.82 | .00 | 4.18 | 24.33 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 152.195 | .0015 | | | | | .0006 | .09 | 6.11 | .47 | 4.85 | .015 | .00 | 1.50 | TRAP |
| 2472.195 | -126.125 | 5.931 | -120.194 | 485.00 | 5.49 | .47 | -119.73 | .00 | 4.18 | 23.79 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 156.879 | .0015 | | | | | .0007 | .11 | 5.93 | .50 | 4.85 | .015 | .00 | 1.50 | TRAP |
| 2629.074 | -125.889 | 5.756 | -120.133 | 485.00 | 5.76 | .51 | -119.62 | .00 | 4.18 | 23.27 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 164.717 | .0015 | | | | | .0008 | .13 | 5.76 | .53 | 4.85 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE B01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2793.791 | -125.642 | 5.586 | -120.056 | 485.00 | 6.04 | .57 | -119.49 | .00 | 4.18 | 22.76 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| 177.950 | .0015 | | | | | .0009 | .16 | 5.59 | .57 | 4.85 | .015 | .00 | 1.50 | TRAP | |
| 2971.741 | -125.374 | 5.420 | -119.954 | 485.00 | 6.33 | .62 | -119.33 | .00 | 4.18 | 22.26 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| 201.719 | .0015 | | | | | .0010 | .20 | 5.42 | .60 | 4.85 | .015 | .00 | 1.50 | TRAP | |
| 3173.460 | -125.071 | 5.258 | -119.813 | 485.00 | 6.64 | .69 | -119.13 | .00 | 4.18 | 21.77 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| 250.924 | .0015 | | | | | .0011 | .29 | 5.26 | .64 | 4.85 | .015 | .00 | 1.50 | TRAP | |
| 3424.384 | -124.694 | 5.100 | -119.593 | 485.00 | 6.97 | .75 | -118.84 | .00 | 4.18 | 21.30 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| 17.666 | .0015 | | | | | .0012 | .02 | 5.10 | .68 | 4.85 | .015 | .00 | 1.50 | TRAP | |
| 3442.050 | -124.667 | 5.091 | -119.576 | 485.00 | 6.99 | .76 | -118.82 | .11 | 4.18 | 21.27 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| 115.860 | .0015 | | | | | .0013 | .15 | 5.20 | .68 | 4.86 | .015 | .00 | 1.50 | TRAP | |
| 3557.910 | -124.493 | 5.034 | -119.459 | 485.00 | 7.11 | .78 | -118.67 | .12 | 4.18 | 21.10 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | | |
| 3557.910 | -124.493 | 3.418 | -121.075 | 485.00 | 12.75 | 2.52 | -118.55 | .29 | 4.18 | 16.26 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| 10.900 | .0015 | | | | | .0064 | .07 | 3.70 | 1.47 | 4.86 | .015 | .00 | 1.50 | TRAP | |
| 3568.810 | -124.477 | 3.376 | -121.101 | 485.00 | 12.99 | 2.62 | -118.48 | .00 | 4.18 | 16.13 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| 21.190 | .0015 | | | | | .0069 | .15 | 3.38 | 1.50 | 4.85 | .015 | .00 | 1.50 | TRAP | |
| 3590.000 | -124.445 | 3.292 | -121.153 | 485.00 | 13.47 | 2.82 | -118.34 | .00 | 4.18 | 15.88 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| TRANS STR | .0015 | | | | | .0059 | .12 | 3.29 | 1.58 | | .015 | .00 | 1.50 | TRAP | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 7-30-2013 Time:11:57:52

CVWD
MDP
LINE B01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch | |
| 3610.000 | -124.415 | 4.180 | -120.235 | 485.00 | 11.60 | 2.09 | -118.14 | .00 | 4.18 | 10.00 | 9.000 | 10.000 | .00 | 0 | .0 |
| WALL EXIT | | | | | | | | | | | | | | | |
| 3610.000 | -124.415 | 4.180 | -120.235 | 485.00 | 11.60 | 2.09 | -118.14 | .00 | 4.18 | 10.00 | 5.000 | 10.000 | .00 | 0 | .0 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.759 | .0025 | | | | | .0040 | .03 | 4.18 | 1.00 | 5.00 | .015 | .00 | .00 | BOX | |
| 3617.759 | -124.396 | 4.384 | -120.012 | 485.00 | 11.06 | 1.90 | -118.11 | .00 | 4.18 | 10.00 | 5.000 | 10.000 | .00 | 0 | .0 |
| 32.188 | .0025 | | | | | .0035 | .11 | 4.38 | .93 | 5.00 | .015 | .00 | .00 | BOX | |
| 3649.946 | -124.315 | 4.598 | -119.717 | 485.00 | 10.55 | 1.73 | -117.99 | .00 | 4.18 | 10.00 | 5.000 | 10.000 | .00 | 0 | .0 |
| 60.054 | .0025 | | | | | .0032 | .19 | 4.60 | .87 | 5.00 | .015 | .00 | .00 | BOX | |

---------- WARNING - Flow depth near top of box conduit ----------

WALL ENTRANCE

---------- WARNING - Flow depth near top of box conduit ----------

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3710.000 | -124.165 | 4.778 | -119.387 | 485.00 | 10.15 | 1.60 | -117.79 | .00 | 4.18 | 10.00 | 9.000 | 10.000 | .00 | 0 | .0 |
| TRANS STR | .0015 | | | | | .0019 | .04 | 4.78 | .82 | | .015 | .00 | .00 | RECTANG | |
| 3730.000 | -124.135 | 6.068 | -118.067 | 485.00 | 5.29 | .43 | -117.63 | .00 | 4.18 | 24.20 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| 153.689 | .0015 | | | | | .0006 | .10 | 6.07 | .48 | 4.86 | .015 | .00 | 1.50 | TRAP | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 7-30-2013 Time:11:57:52

CVWD
MDP
LINE B01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 3883.689 | -123.904 | 5.890 | -118.015 | 485.00 | 5.55 | .48 | -117.54 | .00 | 4.18 | 23.67 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| 159.071 | .0015 | | | | | .0007 | .11 | 5.89 | .51 | 4.86 | .015 | .00 | 1.50 | TRAP | |
| 4042.760 | -123.666 | 5.716 | -117.950 | 485.00 | 5.82 | .53 | -117.42 | .00 | 4.18 | 23.15 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| 168.046 | .0015 | | | | | .0008 | .14 | 5.72 | .54 | 4.86 | .015 | .00 | 1.50 | TRAP | |
| 4210.806 | -123.414 | 5.547 | -117.867 | 485.00 | 6.11 | .58 | -117.29 | .00 | 4.18 | 22.64 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| 183.351 | .0015 | | | | | .0009 | .17 | 5.55 | .57 | 4.86 | .015 | .00 | 1.50 | TRAP | |
| 4394.156 | -123.139 | 5.382 | -117.757 | 485.00 | 6.40 | .64 | -117.12 | .00 | 4.18 | 22.15 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| 105.844 | .0015 | | | | | .0010 | .11 | 5.38 | .61 | 4.86 | .015 | .00 | 1.50 | TRAP | |
| 4500.000 | -122.980 | 5.298 | -117.682 | 485.00 | 6.56 | .67 | -117.01 | .00 | 4.18 | 21.89 | 9.000 | 6.000 | 1.50 | 0 | .0 |

```
                                                                    B01-02
T1 CVWD                                                                                                 0
T2 MDP
T3 LINE B01-02
SO   1005.660-092.475  1      .013                -082.210
TS   1070.000-092.192  1      .013
R    1150.000-091.840  1      .013                                    45.830    .000 0
R    3545.000-081.302  1      .013                                              .000 0
JX   3560.000-079.668  2  3   .013  138.000         -078.668         45.0
R    4600.000-066.000  2      .013
WE   4600.000-066.000  4      .500
SH   4600.000-066.000  4
CD   1  4   1           7.500
CD   2  4   1           6.000
CD   3  4   1           3.000
CD   4  2   0    .000   7.000   50.000  .000  .000   .00
Q           335.000   .0
```

FILE: B01-02.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 7-30-2013 Time: 9:31:26

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING 

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 4 | 1 | | 7.500 | | | | | | | | | | | | | | |
| CD | 2 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 3 | 4 | 1 | | 3.000 | | | | | | | | | | | | | | |
| CD | 4 | 2 | 0 | .000 | 7.000 | 50.000 | | | .00 | | | | | | | | | | |

W S P G W 

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE B01-02

W S P G W 

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1005.660 | -92.475 | 1 | -82.210 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 1070.000 | -92.192 | 1 | .013 | .000 | .000 |

ELEMENT NO 3 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1150.000 | -91.840 | 1 | .013 | 100.014 | 45.830 | .000 | 0 |

ELEMENT NO 4 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3545.000 | -81.302 | 1 | .013 | .000 | .000 | .000 | 0 |

ELEMENT NO 5 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3560.000 | -79.668 | 2 | 3 | 0 | .013 | 138.000 | .000 | -78.668 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 6 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 4600.000 | -66.000 | 2 | .013 | .000 | .000 | .000 | 0 |

ELEMENT NO 7 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 4600.000 | -66.000 | 4 | .500 |

ELEMENT NO 8 IS A SYSTEM HEADWORKS * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 4600.000 | -66.000 | 4 | .000 |

CVWD
MDP
LINE B01-02

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1005.660 | -92.475 | 10.265 | -82.210 | 473.00 | 10.71 | 1.78 | -80.43 | .00 | 5.63 | .00 | 7.500 | .000 | .00 | 1 .0 |
| TRANS STR | .0044 | | | | | .0038 | .24 | 10.26 | .00 | | .013 | .00 | .00 | PIPE |
| 1070.000 | -92.192 | 10.226 | -81.966 | 473.00 | 10.71 | 1.78 | -80.19 | .00 | 5.63 | .00 | 7.500 | .000 | .00 | 1 .0 |
| 80.000 | .0044 | | | | | .0038 | .30 | .00 | .00 | 5.72 | .013 | .00 | .00 | PIPE |
| 1150.000 | -91.840 | 10.432 | -81.408 | 473.00 | 10.71 | 1.78 | -79.63 | .00 | 5.63 | .00 | 7.500 | .000 | .00 | 1 .0 |
| 2395.000 | .0044 | | | | | .0038 | 9.09 | 10.43 | .00 | 5.72 | .013 | .00 | .00 | PIPE |
| 3545.000 | -81.302 | 8.981 | -72.321 | 473.00 | 10.71 | 1.78 | -70.54 | .00 | 5.63 | .00 | 7.500 | .000 | .00 | 1 .0 |
| JUNCT STR | .1089 | | | | | .0050 | .08 | 8.98 | .00 | | .013 | .00 | .00 | PIPE |
| 3560.000 | -79.668 | 7.023 | -72.645 | 335.00 | 11.85 | 2.18 | -70.47 | .00 | 4.97 | .00 | 6.000 | .000 | .00 | 1 .0 |
| 80.184 | .0131 | | | | | .0063 | .50 | 7.02 | .00 | 3.66 | .013 | .00 | .00 | PIPE |
| 3640.184 | -78.614 | 6.471 | -72.144 | 335.00 | 11.85 | 2.18 | -69.96 | .00 | 4.97 | .00 | 6.000 | .000 | .00 | 1 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |
| 3640.184 | -78.614 | 3.664 | -74.951 | 335.00 | 18.52 | 5.33 | -69.62 | .00 | 4.97 | 5.85 | 6.000 | .000 | .00 | 1 .0 |
| 202.418 | .0131 | | | | | .0131 | 2.66 | 3.66 | 1.86 | 3.66 | .013 | .00 | .00 | PIPE |
| 3842.603 | -75.954 | 3.664 | -72.290 | 335.00 | 18.52 | 5.33 | -66.96 | .00 | 4.97 | 5.85 | 6.000 | .000 | .00 | 1 .0 |
| 447.377 | .0131 | | | | | .0125 | 5.60 | 3.66 | 1.86 | 3.66 | .013 | .00 | .00 | PIPE |
| 4289.980 | -70.074 | 3.790 | -66.284 | 335.00 | 17.79 | 4.92 | -61.37 | .00 | 4.97 | 5.79 | 6.000 | .000 | .00 | 1 .0 |
| 148.165 | .0131 | | | | | .0112 | 1.66 | 3.79 | 1.74 | 3.66 | .013 | .00 | .00 | PIPE |



CVWD
MDP
LINE B01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4438.145 | -68.127 | 3.950 | -64.177 | 335.00 | 16.97 | 4.47 | -59.71 | .00 | 4.97 | 5.69 | 6.000 | .000 | .00 | 1 | .0 |
| 73.639 | .0131 | | | | | .0100 | .73 | 3.95 | 1.61 | 3.66 | .013 | .00 | .00 | PIPE | |
| 4511.783 | -67.159 | 4.122 | -63.037 | 335.00 | 16.18 | 4.06 | -58.97 | .00 | 4.97 | 5.56 | 6.000 | .000 | .00 | 1 | .0 |
| 43.456 | .0131 | | | | | .0089 | .39 | 4.12 | 1.48 | 3.66 | .013 | .00 | .00 | PIPE | |
| 4555.239 | -66.588 | 4.306 | -62.282 | 335.00 | 15.42 | 3.69 | -58.59 | .00 | 4.97 | 5.40 | 6.000 | .000 | .00 | 1 | .0 |
| 26.084 | .0131 | | | | | .0079 | .21 | 4.31 | 1.36 | 3.66 | .013 | .00 | .00 | PIPE | |
| 4581.323 | -66.245 | 4.506 | -61.739 | 335.00 | 14.71 | 3.36 | -58.38 | .00 | 4.97 | 5.19 | 6.000 | .000 | .00 | 1 | .0 |
| 14.179 | .0131 | | | | | .0071 | .10 | 4.51 | 1.24 | 3.66 | .013 | .00 | .00 | PIPE | |
| 4595.502 | -66.059 | 4.726 | -61.333 | 335.00 | 14.02 | 3.05 | -58.28 | .00 | 4.97 | 4.91 | 6.000 | .000 | .00 | 1 | .0 |
| 4.498 | .0131 | | | | | .0064 | .03 | 4.73 | 1.12 | 3.66 | .013 | .00 | .00 | PIPE | |
| 4600.000 | -66.000 | 4.975 | -61.025 | 335.00 | 13.37 | 2.77 | -58.25 | .00 | 4.97 | 4.52 | 6.000 | .000 | .00 | 1 | .0 |
| WALL | ENTRANCE | | | | | | | | | | | | | | |
| 4600.000 | -66.000 | 9.927 | -56.073 | 335.00 | .67 | .01 | -56.07 | .00 | 1.12 | 50.00 | 7.000 | 50.000 | .00 | 0 | .0 |

```
T1 CVWD                                                                                                  0
T2 MDP
T3 LINE C01
SO   1288.030-150.332  1      .015                -144.910
R    1497.450-150.122  1      .015
R    1647.420-149.972  1      .015                                                                .000 0
R    2119.000-149.500  1      .015
TS   2149.000-149.471  2      .015
WX   2149.000-149.471  3
R    2370.000-148.918  3      .015                                                                .000 0
WE   2370.000-148.918  2      .500
TS   2400.000-148.888  1      .015
R    2570.000-148.718  1      .015
TS   2600.000-148.688  2      .015
WX   2600.000-148.688  3
R    2640.000-148.588  3      .015
WE   2640.000-148.588  2      .500
TS   2670.000-148.558  1      .015
R    3170.000-148.069  1      .015
JX   3200.000-148.040  5 10   .015  478.000          -147.000          45.0
TS   3235.000-148.006  4      .015
WX   3235.000-148.006  6
R    3435.000-147.506  6      .015
WE   3435.000-147.506  4      .500
TS   3470.000-147.471  5      .015
R    4970.000-146.307  5      .015
JX   5000.000-146.278  7 10   .015  426.000          -145.200          45.0
R    5500.000-145.788  7      .015
TS   5530.000-143.500  8      .015
R    6016.880-140.092  8      .015
R    6331.760-137.888  8      .015
R    7189.850-131.881  8      .015
R    7347.550-130.777  8      .015
TS   7365.000-130.655  9      .015
WX   7365.000-130.655 12
R    7464.910-129.341 12      .015
WE   7464.910-129.341  9      .500
TS   7500.000-128.879  8      .015
R    7620.600-127.301  8      .015
R    7660.000-126.775  8      .015
JX   7690.000-126.000 13 19   .015  646.000          -127.880          30.0
R   10000.000-110.000 13      .015
JX  10015.000-109.908 20 11   .015  231.000          -109.000          30.0
R   11300.000-102.000 20      .015
R   12535.000-089.758 20      .015
JX  12555.000-089.560 21 11   .015  422.000          -089.000          30.0
WX  12555.000-089.560 22
R   12595.000-089.165 22      .015
WE  12595.000-089.165 21      .500
TS  12615.000-087.966 23      .015
R   13000.000-085.150 23      .015
SH  13000.000-085.150 23      .015
CD   1  1   0    .000  10.500   38.000 1.500 1.500   .00
CD   2  2   0    .000  10.500   43.340  .000  .000   .00
CD   3  3   2    .670   7.000   43.340  .000  .000   .00
CD  10  4   1           7.000
CD  11  4   1           5.000
CD   4  2   0    .000  10.000   37.340  .000  .000   .00
CD   5  1   0    .000  10.000   30.000 1.500 1.500   .00
CD   6  3   2    .670   7.000   37.340  .000  .000   .00
CD   7  1   0    .000  10.000   26.000 1.500 1.500   .00
```

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CD   8  1   0    .000   8.000   24.000 1.500 1.500   .00
CD   9  2   0    .000   8.000   31.340  .000  .000   .00
CD  12  3   2    .670   5.000   31.340  .000  .000   .00
CD  13  1   0    .000   8.000   13.000 1.500 1.500   .00
CD  14  4   1           8.000
CD  15  2   0    .000  20.000   50.000  .000  .000   .00
CD  16  4   1           5.000
CD  17  4   1           7.500
CD  18  4   1           6.000
CD  19  1   0           4.000    6.000 1.500 1.500   .00
CD  20  1   0           8.000    8.000 1.500 1.500   .00
CD  21  2   0    .000   8.000   10.000  .000  .000   .00
CD  22  3   0    .000   5.000   10.000  .000  .000   .00
CD  23  1   0    .000   8.000    6.000 1.500 1.500   .00
Q           569.000   .0
```

FILE: C01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 8- 2-2013 Time: 4:11:35

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 10.500 | 38.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 2 | 0 | .000 | 10.500 | 43.340 | | | .00 | | | | | | | | | | |
| CD | 3 | 3 | 2 | .670 | 7.000 | 43.340 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 10 | 4 | 1 | | 7.000 | | | | | | | | | | | | | | |
| CD | 11 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |
| CD | 4 | 2 | 0 | .000 | 10.000 | 37.340 | | | .00 | | | | | | | | | | |
| CD | 5 | 1 | 0 | .000 | 10.000 | 30.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 6 | 3 | 2 | .670 | 7.000 | 37.340 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 7 | 1 | 0 | .000 | 10.000 | 26.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 8 | 1 | 0 | .000 | 8.000 | 24.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 9 | 2 | 0 | .000 | 8.000 | 31.340 | | | .00 | | | | | | | | | | |
| CD | 12 | 3 | 2 | .670 | 5.000 | 31.340 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 13 | 1 | 0 | .000 | 8.000 | 13.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 14 | 4 | 1 | | 8.000 | | | | | | | | | | | | | | |
| CD | 15 | 2 | 0 | .000 | 20.000 | 50.000 | | | .00 | | | | | | | | | | |
| CD | 16 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |
| CD | 17 | 4 | 1 | | 7.500 | | | | | | | | | | | | | | |
| CD | 18 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 19 | 1 | 0 | .000 | 4.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 20 | 1 | 0 | .000 | 8.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 21 | 2 | 0 | .000 | 8.000 | 10.000 | | | .00 | | | | | | | | | | |
| CD | 22 | 3 | 0 | .000 | 5.000 | 10.000 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 23 | 1 | 0 | .000 | 8.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE C01

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1288.030 | -150.332 | 1 | -144.910 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1497.450 | -150.122 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1647.420 | -149.972 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 4 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2119.000 | -149.500 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 5 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 2149.000 | -149.471 | 2 | .015 | .000 | .000 |

ELEMENT NO 6 IS A WALL EXIT *

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 2149.000 | -149.471 | 3 |

```
ELEMENT NO   7 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           2370.000 -148.918    3              .015                           .000     .000      .000     0
ELEMENT NO   8 IS A  WALL  ENTRANCE                            *
                U/S DATA   STATION    INVERT  SECT              FP
                           2370.000 -148.918    2              .500
ELEMENT NO   9 IS A TRANSITION           *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                           2400.000 -148.888    1              .015                           .000     .000
ELEMENT NO  10 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           2570.000 -148.718    1              .015                           .000     .000      .000     0
ELEMENT NO  11 IS A TRANSITION           *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                           2600.000 -148.688    2              .015                           .000     .000
ELEMENT NO  12 IS A  WALL  EXIT                                 *
                U/S DATA   STATION    INVERT  SECT
                           2600.000 -148.688    3
ELEMENT NO  13 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           2640.000 -148.588    3              .015                           .000     .000      .000     0
                                                  W S P G W                                                      PAGE NO   3
                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  14 IS A  WALL  ENTRANCE                             *
                U/S DATA   STATION    INVERT  SECT              FP
                           2640.000 -148.588    2              .500
ELEMENT NO  15 IS A TRANSITION           *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                           2670.000 -148.558    1              .015                           .000     .000
ELEMENT NO  16 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           3170.000 -148.069    1              .015                           .000     .000      .000     0
ELEMENT NO  17 IS A JUNCTION             *         *     *     *           *                  *                  *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                           3200.000 -148.040    5    10     0   .015   478.000      .000  -147.000      .000  45.000     .000
                                                                                                  RADIUS    ANGLE
                                                                                                   .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
ELEMENT NO  18 IS A TRANSITION           *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                           3235.000 -148.006    4              .015                           .000     .000
ELEMENT NO  19 IS A  WALL  EXIT                                 *
                U/S DATA   STATION    INVERT  SECT
                           3235.000 -148.006    6
ELEMENT NO  20 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           3435.000 -147.506    6              .015                           .000     .000      .000     0
ELEMENT NO  21 IS A  WALL  ENTRANCE                             *
                U/S DATA   STATION    INVERT  SECT              FP
                           3435.000 -147.506    4              .500
ELEMENT NO  22 IS A TRANSITION           *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                           3470.000 -147.471    5              .015                           .000     .000
ELEMENT NO  23 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           4970.000 -146.307    5              .015                           .000     .000      .000     0
ELEMENT NO  24 IS A JUNCTION             *         *     *     *           *                  *                  *
```

U/S DATA STATION INVERT SECT LAT-1 LAT-2 N Q3 Q4 INVERT-3 INVERT-4 PHI 3 PHI 4
5000.000 -146.278 7 10 0 .015 426.000 .000 -145.200 .000 45.000 .000
RADIUS ANGLE
.000 .000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING



WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 25 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
5500.000 -145.788 7 .015 .000 .000 .000 0

ELEMENT NO 26 IS A TRANSITION
U/S DATA STATION INVERT SECT N RADIUS ANGLE
5530.000 -143.500 8 .015 .000 .000

ELEMENT NO 27 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
6016.880 -140.092 8 .015 .000 .000 .000 0

ELEMENT NO 28 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
6331.760 -137.888 8 .015 .000 .000 .000 0

ELEMENT NO 29 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
7189.850 -131.881 8 .015 .000 .000 .000 0

ELEMENT NO 30 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
7347.550 -130.777 8 .015 .000 .000 .000 0

ELEMENT NO 31 IS A TRANSITION
U/S DATA STATION INVERT SECT N RADIUS ANGLE
7365.000 -130.655 9 .015 .000 .000

ELEMENT NO 32 IS A WALL EXIT
U/S DATA STATION INVERT SECT
7365.000 -130.655 12

ELEMENT NO 33 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
7464.910 -129.341 12 .015 .000 .000 .000 0

ELEMENT NO 34 IS A WALL ENTRANCE
U/S DATA STATION INVERT SECT FP
7464.910 -129.341 9 .500

ELEMENT NO 35 IS A TRANSITION
U/S DATA STATION INVERT SECT N RADIUS ANGLE
7500.000 -128.879 8 .015 .000 .000

ELEMENT NO 36 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
7620.600 -127.301 8 .015 .000 .000 .000 0

ELEMENT NO 37 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
7660.000 -126.775 8 .015 .000 .000 .000 0

ELEMENT NO 38 IS A JUNCTION
U/S DATA STATION INVERT SECT LAT-1 LAT-2 N Q3 Q4 INVERT-3 INVERT-4 PHI 3 PHI 4
7690.000 -126.000 13 19 0 .015 646.000 .000 -127.880 .000 30.000 .000
RADIUS ANGLE
.000 .000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING



WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 39 IS A REACH
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
10000.000 -110.000 13 .015 .000 .000 .000 0

C01

ELEMENT NO 40 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10015.000 | -109.908 | 20 | 11 | 0 | .015 | 231.000 | .000 | -109.000 | .000 | 30.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 41 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 11300.000 | -102.000 | 20 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 42 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 12535.000 | -89.758 | 20 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 43 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12555.000 | -89.560 | 21 | 11 | 0 | .015 | 422.000 | .000 | -89.000 | .000 | 30.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 44 IS A WALL EXIT *

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 12555.000 | -89.560 | 22 |

ELEMENT NO 45 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 12595.000 | -89.165 | 22 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 46 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 12595.000 | -89.165 | 21 | .500 |

ELEMENT NO 47 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 12615.000 | -87.966 | 23 | .015 | .000 | .000 |



ELEMENT NO 48 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 13000.000 | -85.150 | 23 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 49 IS A SYSTEM HEADWORKS * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 13000.000 | -85.150 | 23 | .000 |

CVWD
MDP
LINE C01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1288.030 | -150.332 | 5.422 | -144.910 | 2772.00 | 11.08 | 1.91 | -143.00 | .00 | 5.11 | 54.27 | 10.500 | 38.000 | 1.50 | 0 .0 |
| 77.764 | .0010 | | | | | .0016 | .13 | 5.42 | .91 | 6.38 | .015 | .00 | 1.50 | TRAP |
| 1365.794 | -150.254 | 5.646 | -144.608 | 2772.00 | 10.57 | 1.73 | -142.87 | .00 | 5.11 | 54.94 | 10.500 | 38.000 | 1.50 | 0 .0 |
| 131.656 | .0010 | | | | | .0015 | .19 | 5.65 | .85 | 6.38 | .015 | .00 | 1.50 | TRAP |
| 1497.450 | -150.122 | 5.835 | -144.287 | 2772.00 | 10.16 | 1.60 | -142.68 | .00 | 5.11 | 55.50 | 10.500 | 38.000 | 1.50 | 0 .0 |
| 149.970 | .0010 | | | | | .0013 | .20 | 5.83 | .81 | 6.38 | .015 | .00 | 1.50 | TRAP |
| 1647.420 | -149.972 | 5.964 | -144.008 | 2772.00 | 9.90 | 1.52 | -142.49 | .00 | 5.11 | 55.89 | 10.500 | 38.000 | 1.50 | 0 .0 |
| 471.580 | .0010 | | | | | .0012 | .56 | 5.96 | .78 | 6.38 | .015 | .00 | 1.50 | TRAP |
| 2119.000 | -149.500 | 6.178 | -143.322 | 2772.00 | 9.49 | 1.40 | -141.92 | .00 | 5.11 | 56.53 | 10.500 | 38.000 | 1.50 | 0 .0 |
| TRANS STR | .0010 | | | | | .0014 | .04 | 6.18 | .74 | | .015 | .00 | 1.50 | TRAP |
| 2149.000 | -149.471 | 5.798 | -143.673 | 2772.00 | 11.03 | 1.89 | -141.78 | .00 | 5.03 | 43.34 | 10.500 | 43.340 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 2149.000 | -149.471 | 5.798 | -143.673 | 2772.00 | 11.38 | 2.01 | -141.66 | .00 | 5.13 | 43.34 | 7.000 | 43.340 | .00 | 2 .7 |
| 221.000 | .0025 | | | | | .0026 | .58 | 5.80 | .85 | 6.07 | .015 | .00 | .00 | BOX |
| 2370.000 | -148.918 | 5.953 | -142.965 | 2772.00 | 11.09 | 1.91 | -141.06 | .00 | 5.13 | 43.34 | 7.000 | 43.340 | .00 | 2 .7 |
| WALL ENTRANCE | | | | | | | | | | | | | | |
| 2370.000 | -148.918 | 6.434 | -142.484 | 2772.00 | 9.94 | 1.53 | -140.95 | .00 | 5.03 | 43.34 | 10.500 | 43.340 | .00 | 0 .0 |
| TRANS STR | .0010 | | | | | .0010 | .03 | 6.43 | .69 | | .015 | .00 | .00 | RECTANG |



CVWD
MDP
LINE C01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 2400.000 | -148.888 | 6.971 | -141.917 | 2772.00 | 8.21 | 1.05 | -140.87 | .00 | 5.11 | 58.91 | 10.500 | 38.000 | 1.50 | 0 .0 |
| 170.000 | .0010 | | | | | .0007 | .13 | 6.97 | .60 | 6.38 | .015 | .00 | 1.50 | TRAP |
| 2570.000 | -148.718 | 6.903 | -141.815 | 2772.00 | 8.30 | 1.07 | -140.74 | .00 | 5.11 | 58.71 | 10.500 | 38.000 | 1.50 | 0 .0 |
| TRANS STR | .0010 | | | | | .0009 | .03 | 6.90 | .61 | | .015 | .00 | 1.50 | TRAP |
| 2600.000 | -148.688 | 6.586 | -142.102 | 2772.00 | 9.71 | 1.46 | -140.64 | .00 | 5.03 | 43.34 | 10.500 | 43.340 | .00 | 0 .0 |
| WALL | EXIT | | | | | | | | | | | | | |
| 2600.000 | -148.688 | 6.586 | -142.102 | 2772.00 | 10.02 | 1.56 | -140.54 | .00 | 5.13 | 43.34 | 7.000 | 43.340 | .00 | 2 .7 |
| 40.000 | .0025 | | | | | .0020 | .08 | 6.59 | .70 | 6.07 | .015 | .00 | .00 | BOX |
| | | ---------- WARNING - Flow depth near top of box conduit ---------- | | | | | | | | | | | | |
| 2640.000 | -148.588 | 6.550 | -142.038 | 2772.00 | 10.08 | 1.58 | -140.46 | .00 | 5.13 | 43.34 | 7.000 | 43.340 | .00 | 2 .7 |
| WALL | ENTRANCE | | | | | | | | | | | | | |
| | | ---------- WARNING - Flow depth near top of box conduit ---------- | | | | | | | | | | | | |
| 2640.000 | -148.588 | 6.874 | -141.714 | 2772.00 | 9.30 | 1.34 | -140.37 | .00 | 5.03 | 43.34 | 10.500 | 43.340 | .00 | 0 .0 |
| TRANS STR | .0010 | | | | | .0008 | .02 | 6.87 | .63 | | .015 | .00 | .00 | RECTANG |
| 2670.000 | -148.558 | 7.329 | -141.229 | 2772.00 | 7.72 | .93 | -140.30 | .00 | 5.11 | 59.99 | 10.500 | 38.000 | 1.50 | 0 .0 |
| 500.000 | .0010 | | | | | .0007 | .33 | 7.33 | .56 | 6.42 | .015 | .00 | 1.50 | TRAP |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 2-2013 Time: 4:11:43

CVWD
MDP
LINE C01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 3170.000 | -148.069 | 7.088 | -140.981 | 2772.00 | 8.04 | 1.00 | -139.98 | .00 | 5.11 | 59.26 | 10.500 | 38.000 | 1.50 | 0 .0 |
| JUNCT STR | .0010 | | | | | .0007 | .02 | 7.09 | .59 | | .015 | .00 | 1.50 | TRAP |
| 3200.000 | -148.040 | 7.105 | -140.935 | 2294.00 | 7.94 | .98 | -139.96 | .00 | 5.17 | 51.32 | 10.000 | 30.000 | 1.50 | 0 .0 |
| TRANS STR | .0010 | | | | | .0008 | .03 | 7.11 | .59 | | .015 | .00 | 1.50 | TRAP |
| 3235.000 | -148.006 | 6.907 | -141.099 | 2294.00 | 8.89 | 1.23 | -139.87 | .00 | 4.89 | 37.34 | 10.000 | 37.340 | .00 | 0 .0 |
| WALL | EXIT | | | | | | | | | | | | | |
| 3235.000 | -148.006 | 6.907 | -141.099 | 2294.00 | 9.23 | 1.32 | -139.78 | .00 | 5.02 | 37.34 | 7.000 | 37.340 | .00 | 2 .7 |
| 200.000 | .0025 | | | | | .0018 | .37 | 6.91 | .63 | 6.14 | .015 | .00 | .00 | BOX |
| | | ---------- WARNING - Flow depth near top of box conduit ---------- | | | | | | | | | | | | |
| 3435.000 | -147.506 | 6.709 | -140.797 | 2294.00 | 9.50 | 1.40 | -139.40 | .00 | 5.02 | 37.34 | 7.000 | 37.340 | .00 | 2 .7 |

WALL ENTRANCE

WARNING - Flow depth near top of box conduit

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3435.000 | -147.506 | 7.026 | -140.480 | 2294.00 | 8.74 | 1.19 | -139.29 | .00 | 4.89 | 37.34 | 10.000 | 37.340 | .00 | 0 .0 |
| TRANS STR | .0010 | | | | | .0008 | .03 | 7.03 | .58 | | .015 | .00 | .00 | RECTANG |
| 3470.000 | -147.471 | 7.333 | -140.138 | 2294.00 | 7.63 | .90 | -139.23 | .00 | 5.17 | 52.00 | 10.000 | 30.000 | 1.50 | 0 .0 |
| 1500.000 | .0008 | | | | | .0007 | 1.01 | 7.33 | .56 | 6.94 | .015 | .00 | 1.50 | TRAP |





| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 4970.000 | -146.307 | 7.108 | -139.199 | 2294.00 | 7.94 | .98 | -138.22 | .00 | 5.17 | 51.32 | 10.000 | 30.000 | 1.50 | 0 .0 |
| JUNCT STR | .0010 | | | | | .0006 | .02 | 7.11 | .59 | | .015 | .00 | 1.50 | TRAP |
| 5000.000 | -146.278 | 7.278 | -139.000 | 1868.00 | 6.95 | .75 | -138.25 | .00 | 4.92 | 47.83 | 10.000 | 26.000 | 1.50 | 0 .0 |
| 392.122 | .0010 | | | | | .0006 | .23 | 7.28 | .52 | 6.22 | .015 | .00 | 1.50 | TRAP |
| 5392.122 | -145.894 | 7.067 | -138.827 | 1868.00 | 7.22 | .81 | -138.02 | .00 | 4.92 | 47.20 | 10.000 | 26.000 | 1.50 | 0 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |
| 5392.122 | -145.894 | 3.213 | -142.680 | 1868.00 | 18.86 | 5.52 | -137.16 | .00 | 4.92 | 35.64 | 10.000 | 26.000 | 1.50 | 0 .0 |
| 23.188 | .0010 | | | | | .0103 | .24 | 3.21 | 1.99 | 6.22 | .015 | .00 | 1.50 | TRAP |
| 5415.310 | -145.871 | 3.146 | -142.725 | 1868.00 | 19.33 | 5.80 | -136.92 | .00 | 4.92 | 35.44 | 10.000 | 26.000 | 1.50 | 0 .0 |
| 42.878 | .0010 | | | | | .0115 | .49 | 3.15 | 2.06 | 6.22 | .015 | .00 | 1.50 | TRAP |
| 5458.188 | -145.829 | 3.018 | -142.811 | 1868.00 | 20.28 | 6.38 | -136.43 | .00 | 4.92 | 35.05 | 10.000 | 26.000 | 1.50 | 0 .0 |
| 41.813 | .0010 | | | | | .0133 | .56 | 3.02 | 2.20 | 6.22 | .015 | .00 | 1.50 | TRAP |
| 5500.000 | -145.788 | 2.895 | -142.893 | 1868.00 | 21.26 | 7.02 | -135.87 | .00 | 4.92 | 34.69 | 10.000 | 26.000 | 1.50 | 0 .0 |
| TRANS STR | .0763 | | | | | .0106 | .32 | 2.90 | 2.35 | | .015 | .00 | 1.50 | TRAP |
| 5530.000 | -143.500 | 3.716 | -139.784 | 1868.00 | 17.00 | 4.49 | -135.30 | .00 | 5.12 | 35.15 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 486.880 | .0070 | | | | | .0070 | 3.40 | 3.72 | 1.69 | 3.72 | .015 | .00 | 1.50 | TRAP |
| 6016.880 | -140.092 | 3.717 | -136.375 | 1868.00 | 16.99 | 4.48 | -131.89 | .00 | 5.12 | 35.15 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 314.880 | .0070 | | | | | .0070 | 2.20 | 3.72 | 1.69 | 3.72 | .015 | .00 | 1.50 | TRAP |

CVWD
MDP
LINE C01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6331.760 | -137.888 | 3.721 | -134.167 | 1868.00 | 16.97 | 4.47 | -129.70 | .00 | 5.12 | 35.16 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 472.260 | .0070 | | | | | .0068 | 3.19 | 3.72 | 1.69 | 3.72 | .015 | .00 | 1.50 | TRAP |
| 6804.020 | -134.582 | 3.787 | -130.795 | 1868.00 | 16.62 | 4.29 | -126.51 | .00 | 5.12 | 35.36 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 269.185 | .0070 | | | | | .0061 | 1.65 | 3.79 | 1.64 | 3.72 | .015 | .00 | 1.50 | TRAP |
| 7073.205 | -132.698 | 3.941 | -128.757 | 1868.00 | 15.85 | 3.90 | -124.86 | .00 | 5.12 | 35.82 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 116.646 | .0070 | | | | | .0053 | .62 | 3.94 | 1.54 | 3.72 | .015 | .00 | 1.50 | TRAP |
| 7189.851 | -131.881 | 4.100 | -127.781 | 1868.00 | 15.11 | 3.55 | -124.24 | .00 | 5.12 | 36.30 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 49.693 | .0070 | | | | | .0047 | .24 | 4.10 | 1.44 | 3.72 | .015 | .00 | 1.50 | TRAP |
| 7239.544 | -131.533 | 4.213 | -127.320 | 1868.00 | 14.62 | 3.32 | -124.00 | .00 | 5.12 | 36.64 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 47.702 | .0070 | | | | | .0042 | .20 | 4.21 | 1.38 | 3.72 | .015 | .00 | 1.50 | TRAP |
| 7287.246 | -131.199 | 4.382 | -126.817 | 1868.00 | 13.94 | 3.02 | -123.80 | .00 | 5.12 | 37.15 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 29.917 | .0070 | | | | | .0037 | .11 | 4.38 | 1.29 | 3.72 | .015 | .00 | 1.50 | TRAP |
| 7317.164 | -130.990 | 4.557 | -126.432 | 1868.00 | 13.29 | 2.74 | -123.69 | .00 | 5.12 | 37.67 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 18.068 | .0070 | | | | | .0032 | .06 | 4.56 | 1.21 | 3.72 | .015 | .00 | 1.50 | TRAP |
| 7335.231 | -130.863 | 4.738 | -126.125 | 1868.00 | 12.67 | 2.49 | -123.63 | .00 | 5.12 | 38.21 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 9.471 | .0070 | | | | | .0028 | .03 | 4.74 | 1.14 | 3.72 | .015 | .00 | 1.50 | TRAP |
| 7344.702 | -130.797 | 4.925 | -125.872 | 1868.00 | 12.08 | 2.27 | -123.60 | .00 | 5.12 | 38.77 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 2.848 | .0070 | | | | | .0024 | .01 | 4.92 | 1.07 | 3.72 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE C01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 7347.550 | -130.777 | 5.119 | -125.658 | 1868.00 | 11.52 | 2.06 | -123.60 | .00 | 5.12 | 39.36 | 8.000 | 24.000 | 1.50 | 0 .0 |
| TRANS STR | .0070 | | | | | | | 5.12 | 1.00 | | .015 | .00 | 1.50 | TRAP |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7365.000 | -130.655 | 3.312 | -127.343 | 1868.00 | 18.00 | 5.03 | -122.31 | .00 | 4.80 | 31.34 | 8.000 | 31.340 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 7365.000 | -130.655 | 3.490 | -127.165 | 1868.00 | 17.84 | 4.94 | -122.22 | .00 | 4.94 | 31.34 | 5.000 | 31.340 | .00 | 2 .7 |
| 99.910 | .0132 | | | | .0121 | 1.21 | 3.49 | 1.72 | 3.42 | .015 | .00 | .00 | BOX | |
| 7464.910 | -129.341 | 3.548 | -125.793 | 1868.00 | 17.55 | 4.78 | -121.01 | .00 | 4.94 | 31.34 | 5.000 | 31.340 | .00 | 2 .7 |
| WALL ENTRANCE | | | | | | | | | | | | | | |
| 7464.910 | -129.341 | 3.120 | -126.221 | 1868.00 | 19.10 | 5.67 | -120.55 | .00 | 4.80 | 31.34 | 8.000 | 31.340 | .00 | 0 .0 |
| TRANS STR | .0132 | | | | .0096 | .34 | 3.12 | 1.91 | | .015 | .00 | .00 | RECTANG | |
| 7500.000 | -128.879 | 3.484 | -125.395 | 1868.00 | 18.35 | 5.23 | -120.17 | .00 | 5.12 | 34.45 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 10.846 | .0131 | | | | .0087 | .09 | 3.48 | 1.88 | 3.10 | .015 | .00 | 1.50 | TRAP | |
| 7510.845 | -128.737 | 3.503 | -125.234 | 1868.00 | 18.23 | 5.16 | -120.07 | .00 | 5.12 | 34.51 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 64.316 | .0131 | | | | .0080 | .52 | 3.50 | 1.86 | 3.10 | .015 | .00 | 1.50 | TRAP | |
| 7575.161 | -127.896 | 3.647 | -124.249 | 1868.00 | 17.38 | 4.69 | -119.56 | .00 | 5.12 | 34.94 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 45.439 | .0131 | | | | .0070 | .32 | 3.65 | 1.75 | 3.10 | .015 | .00 | 1.50 | TRAP | |
| 7620.600 | -127.301 | 3.796 | -123.505 | 1868.00 | 16.57 | 4.26 | -119.24 | .00 | 5.12 | 35.39 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 9.828 | .0134 | | | | .0064 | .06 | 3.80 | 1.64 | 3.08 | .015 | .00 | 1.50 | TRAP | |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 7630.428 | -127.170 | 3.837 | -123.332 | 1868.00 | 16.36 | 4.16 | -119.18 | .00 | 5.12 | 35.51 | 8.000 | 24.000 | 1.50 | 0 .0 |
| 29.572 | .0134 | | | | .0058 | .17 | 3.84 | 1.61 | 3.08 | .015 | .00 | 1.50 | TRAP | |
| 7660.000 | -126.775 | 3.993 | -122.782 | 1868.00 | 15.60 | 3.78 | -119.00 | .00 | 5.12 | 35.98 | 8.000 | 24.000 | 1.50 | 0 .0 |
| JUNCT STR | .0258 | | | | .0062 | .19 | 3.99 | 1.51 | | .015 | .00 | 1.50 | TRAP | |
| 7690.000 | -126.000 | 3.975 | -122.025 | 1222.00 | 16.21 | 4.08 | -117.94 | .00 | 5.27 | 24.92 | 8.000 | 13.000 | 1.50 | 0 .0 |
| 1785.410 | .0069 | | | | .0069 | 12.37 | 3.97 | 1.64 | 3.97 | .015 | .00 | 1.50 | TRAP | |
| 9475.410 | -113.634 | 3.975 | -109.659 | 1222.00 | 16.21 | 4.08 | -105.58 | .00 | 5.27 | 24.92 | 8.000 | 13.000 | 1.50 | 0 .0 |
| 524.590 | .0069 | | | | .0067 | 3.50 | 3.97 | 1.64 | 3.97 | .015 | .00 | 1.50 | TRAP | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10000.000 | -110.000 | 4.059 | -105.941 | 1222.00 | 15.77 | 3.86 | -102.08 | .00 | 5.27 | 25.18 | 8.000 | 13.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0061 | | | | | .0063 | .09 | 4.06 | 1.58 | | .015 | .00 | 1.50 | TRAP | |
| 10015.000 | -109.908 | 4.457 | -105.451 | 991.00 | 15.14 | 3.56 | -101.89 | .00 | 5.57 | 21.37 | 8.000 | 8.000 | 1.50 | 0 | .0 |
| 317.677 | .0062 | | | | | .0062 | 1.96 | 4.46 | 1.52 | 4.46 | .015 | .00 | 1.50 | TRAP | |
| 10332.680 | -107.953 | 4.457 | -103.496 | 991.00 | 15.14 | 3.56 | -99.94 | .00 | 5.57 | 21.37 | 8.000 | 8.000 | 1.50 | 0 | .0 |
| 492.683 | .0062 | | | | | .0064 | 3.17 | 4.46 | 1.52 | 4.46 | .015 | .00 | 1.50 | TRAP | |
| 10825.360 | -104.921 | 4.361 | -100.560 | 991.00 | 15.63 | 3.79 | -96.77 | .00 | 5.57 | 21.08 | 8.000 | 8.000 | 1.50 | 0 | .0 |
| 232.902 | .0062 | | | | | .0072 | 1.67 | 4.36 | 1.59 | 4.46 | .015 | .00 | 1.50 | TRAP | |
| 11058.260 | -103.488 | 4.219 | -99.269 | 991.00 | 16.39 | 4.17 | -95.10 | .00 | 5.57 | 20.66 | 8.000 | 8.000 | 1.50 | 0 | .0 |
| 138.626 | .0062 | | | | | .0082 | 1.13 | 4.22 | 1.69 | 4.46 | .015 | .00 | 1.50 | TRAP | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 2-2013 Time: 4:11:43

CVWD
MDP
LINE C01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 11196.890 | -102.635 | 4.082 | -98.553 | 991.00 | 17.19 | 4.59 | -93.96 | .00 | 5.57 | 20.24 | 8.000 | 8.000 | 1.50 | 0 | .0 |
| 103.113 | .0062 | | | | | .0093 | .96 | 4.08 | 1.80 | 4.46 | .015 | .00 | 1.50 | TRAP | |
| 11300.000 | -102.000 | 3.948 | -98.052 | 991.00 | 18.03 | 5.05 | -93.00 | .00 | 5.57 | 19.84 | 8.000 | 8.000 | 1.50 | 0 | .0 |
| 264.501 | .0099 | | | | | .0099 | 2.62 | 3.95 | 1.91 | 3.95 | .015 | .00 | 1.50 | TRAP | |
| 11564.500 | -99.378 | 3.948 | -95.430 | 991.00 | 18.03 | 5.05 | -90.38 | .00 | 5.57 | 19.84 | 8.000 | 8.000 | 1.50 | 0 | .0 |
| 538.144 | .0099 | | | | | .0094 | 5.07 | 3.95 | 1.91 | 3.95 | .015 | .00 | 1.50 | TRAP | |
| 12102.640 | -94.044 | 4.055 | -89.989 | 991.00 | 17.35 | 4.68 | -85.31 | .00 | 5.57 | 20.17 | 8.000 | 8.000 | 1.50 | 0 | .0 |
| 188.355 | .0099 | | | | | .0084 | 1.58 | 4.06 | 1.82 | 3.95 | .015 | .00 | 1.50 | TRAP | |
| 12291.000 | -92.177 | 4.192 | -87.985 | 991.00 | 16.55 | 4.25 | -83.73 | .00 | 5.57 | 20.58 | 8.000 | 8.000 | 1.50 | 0 | .0 |
| 96.313 | .0099 | | | | | .0074 | .71 | 4.19 | 1.71 | 3.95 | .015 | .00 | 1.50 | TRAP | |
| 12387.310 | -91.222 | 4.333 | -86.889 | 991.00 | 15.78 | 3.86 | -83.02 | .00 | 5.57 | 21.00 | 8.000 | 8.000 | 1.50 | 0 | .0 |
| 59.967 | .0099 | | | | | .0065 | .39 | 4.33 | 1.61 | 3.95 | .015 | .00 | 1.50 | TRAP | |
| 12447.280 | -90.628 | 4.477 | -86.150 | 991.00 | 15.04 | 3.51 | -82.64 | .00 | 5.57 | 21.43 | 8.000 | 8.000 | 1.50 | 0 | .0 |
| 40.353 | .0099 | | | | | .0057 | .23 | 4.48 | 1.51 | 3.95 | .015 | .00 | 1.50 | TRAP | |
| 12487.630 | -90.228 | 4.626 | -85.602 | 991.00 | 14.34 | 3.19 | -82.41 | .00 | 5.57 | 21.88 | 8.000 | 8.000 | 1.50 | 0 | .0 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27.979 | .0099 | | | | .0050 | .14 | 4.63 | 1.42 | 3.95 | .015 | .00 | 1.50 | TRAP | |
| 12515.610 | -89.950 | 4.778 | -85.172 | 991.00 | 13.67 | 2.90 | -82.27 | .00 | 5.57 | 22.33 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 19.391 | .0099 | | | | .0044 | .08 | 4.78 | 1.34 | 3.95 | .015 | .00 | 1.50 | TRAP | |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 12535.000 | -89.758 | 4.935 | -84.823 | 991.00 | 13.04 | 2.64 | -82.18 | .00 | 5.57 | 22.80 | 8.000 | 8.000 | 1.50 | 0 .0 |
| JUNCT STR | .0099 | | | | .0069 | .14 | 4.93 | 1.26 | | .015 | .00 | 1.50 | TRAP | |
| | | | | WARNING - Junction Analysis - Change in Channel Type | | | | | | | | | | |
| 12555.000 | -89.560 | 3.569 | -85.991 | 569.00 | 15.94 | 3.95 | -82.04 | .00 | 4.65 | 10.00 | 8.000 | 10.000 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 12555.000 | -89.560 | 3.568 | -85.992 | 569.00 | 15.95 | 3.95 | -82.04 | .00 | 4.65 | 10.00 | 5.000 | 10.000 | .00 | 0 .0 |
| 40.000 | .0099 | | | | .0097 | .39 | 3.57 | 1.49 | 3.55 | .015 | .00 | .00 | BOX | |
| 12595.000 | -89.165 | 3.573 | -85.591 | 569.00 | 15.92 | 3.94 | -81.65 | .00 | 4.65 | 10.00 | 8.000 | 10.000 | .00 | 0 .0 |
| TRANS STR | .0599 | | | | .0083 | .17 | 3.57 | 1.48 | | .015 | .00 | .00 | RECTANG | |
| 12615.000 | -87.966 | 3.607 | -84.359 | 569.00 | 13.83 | 2.97 | -81.39 | .00 | 4.54 | 16.82 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 94.020 | .0073 | | | | .0068 | .64 | 3.61 | 1.56 | 3.56 | .015 | .00 | 1.50 | TRAP | |
| 12709.020 | -87.278 | 3.639 | -83.640 | 569.00 | 13.65 | 2.89 | -80.75 | .00 | 4.54 | 16.92 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 142.719 | .0073 | | | | .0063 | .90 | 3.64 | 1.53 | 3.56 | .015 | .00 | 1.50 | TRAP | |
| 12851.740 | -86.234 | 3.758 | -82.477 | 569.00 | 13.01 | 2.63 | -79.85 | .00 | 4.54 | 17.27 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 65.890 | .0073 | | | | .0055 | .37 | 3.76 | 1.44 | 3.56 | .015 | .00 | 1.50 | TRAP | |
| 12917.630 | -85.752 | 3.880 | -81.873 | 569.00 | 12.41 | 2.39 | -79.48 | .00 | 4.54 | 17.64 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 37.557 | .0073 | | | | .0049 | .18 | 3.88 | 1.36 | 3.56 | .015 | .00 | 1.50 | TRAP | |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

C01

| L/Elem | Ch Slope | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12955.180 | -85.478 | 4.005 | -81.472 | 569.00 | 11.83 | 2.17 | -79.30 | .00 | 4.54 | 18.02 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 22.636 | .0073 | | | | .0043 | .10 | 4.01 | 1.28 | 3.56 | .015 | .00 | 1.50 | TRAP | |
| 12977.820 | -85.312 | 4.134 | -81.178 | 569.00 | 11.28 | 1.98 | -79.20 | .00 | 4.54 | 18.40 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 13.308 | .0073 | | | | .0038 | .05 | 4.13 | 1.20 | 3.56 | .015 | .00 | 1.50 | TRAP | |
| 12991.130 | -85.215 | 4.267 | -80.948 | 569.00 | 10.75 | 1.80 | -79.15 | .00 | 4.54 | 18.80 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 6.841 | .0073 | | | | .0033 | .02 | 4.27 | 1.13 | 3.56 | .015 | .00 | 1.50 | TRAP | |
| 12997.970 | -85.165 | 4.403 | -80.762 | 569.00 | 10.25 | 1.63 | -79.13 | .00 | 4.54 | 19.21 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 2.032 | .0073 | | | | .0029 | .01 | 4.40 | 1.06 | 3.56 | .015 | .00 | 1.50 | TRAP | |
| 13000.000 | -85.150 | 4.543 | -80.607 | 569.00 | 9.77 | 1.48 | -79.12 | .00 | 4.54 | 19.63 | 8.000 | 6.000 | 1.50 | 0 .0 |

```
                                                                    C01-01
T1 CVWD                                                                      0
T2 MDP
T3 LINE C01-01
SO   1029.740-126.620  1      .015               -122.025
R    1039.390-126.570  1      .015
R    1194.160-125.763  1      .015                                 -44.330    .000 0
R    2280.000-120.104  1      .015
JX   2300.000-120.000  2  4   .015  231.000         -119.000         45.0
WX   2300.000-120.000  5
R    3539.000-109.532  5      .013
R    3554.000-109.352  5      .013
R    3594.000-108.872  5      .013
R    3609.000-108.692  5      .013
WE   3609.000-108.692  2      .500
SH   3609.000-108.692  2      .015
CD   1  1   0    .000   7.000    6.000 1.500 1.500   .00
CD   2  2   0    .000   7.000    9.000  .000  .000   .00
CD   3  3   0    .000   6.000   10.000  .000  .000   .00
CD   4  4   1           4.000
CD   5  4   1           7.000
Q           473.000   .0
```

FILE: C01-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 7-31-2013 Time: 9:38:13

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 7.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 2 | 0 | .000 | 7.000 | 9.000 | | | .00 | | | | | | | | | | |
| CD | 3 | 3 | 0 | .000 | 6.000 | 10.000 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 4 | 4 | 1 | | 4.000 | | | | | | | | | | | | | | |
| CD | 5 | 4 | 1 | | 7.000 | | | | | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE C01-01

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1029.740 | -126.620 | 1 | -122.025 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1039.390 | -126.570 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1194.160 | -125.763 | 1 | .015 | 200.038 | -44.330 | .000 | 0 |

ELEMENT NO 4 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2280.000 | -120.104 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 5 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2300.000 | -120.000 | 2 | 4 | 0 | .015 | 231.000 | .000 | -119.000 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 6 IS A WALL EXIT *

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 2300.000 | -120.000 | 5 |

ELEMENT NO 7 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3539.000 | -109.532 | 5 | .013 | .000 | .000 | .000 | 0 |

ELEMENT NO 8 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3554.000 | -109.352 | 5 | .013 | .000 | .000 | .000 | 0 |

ELEMENT NO 9 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3594.000 | -108.872 | 5 | .013 | .000 | .000 | .000 | 0 |

ELEMENT NO 10 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3609.000 | -108.692 | 5 | .013 | .000 | .000 | .000 | 0 |

ELEMENT NO 11 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 3609.000 | -108.692 | 2 | .500 |

W S P G W PAGE NO 3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 12 IS A SYSTEM HEADWORKS * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|

3609.000 -108.692 2 .000

CVWD
MDP
LINE C01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 1029.740 | -126.620 | 4.302 | -122.318 | 704.00 | 13.14 | 2.68 | -119.64 | .00 | 5.06 | 18.91 | 7.000 | 6.000 | 1.50 | 0 .0 |
| 9.650 | .0052 | | | | | .0052 | .05 | 4.30 | 1.38 | 4.31 | .015 | .00 | 1.50 | TRAP |
| 1039.390 | -126.570 | 4.302 | -122.268 | 704.00 | 13.14 | 2.68 | -119.59 | .66 | 5.06 | 18.90 | 7.000 | 6.000 | 1.50 | 0 .0 |
| 154.770 | .0052 | | | | | .0052 | .81 | 4.96 | 1.38 | 4.30 | .015 | .00 | 1.50 | TRAP |
| 1194.160 | -125.763 | 4.302 | -121.461 | 704.00 | 13.14 | 2.68 | -118.78 | .00 | 5.06 | 18.91 | 7.000 | 6.000 | 1.50 | 0 .0 |
| 120.733 | .0052 | | | | | .0052 | .63 | 4.30 | 1.38 | 4.30 | .015 | .00 | 1.50 | TRAP |
| 1314.893 | -125.134 | 4.302 | -120.832 | 704.00 | 13.14 | 2.68 | -118.15 | .00 | 5.06 | 18.91 | 7.000 | 6.000 | 1.50 | 0 .0 |
| 365.164 | .0052 | | | | | .0053 | 1.94 | 4.30 | 1.38 | 4.30 | .015 | .00 | 1.50 | TRAP |
| 1680.057 | -123.231 | 4.260 | -118.971 | 704.00 | 13.34 | 2.76 | -116.21 | .00 | 5.06 | 18.78 | 7.000 | 6.000 | 1.50 | 0 .0 |
| 245.148 | .0052 | | | | | .0058 | 1.42 | 4.26 | 1.40 | 4.30 | .015 | .00 | 1.50 | TRAP |
| 1925.205 | -121.953 | 4.128 | -117.825 | 704.00 | 13.99 | 3.04 | -114.79 | .00 | 5.06 | 18.38 | 7.000 | 6.000 | 1.50 | 0 .0 |
| 126.453 | .0052 | | | | | .0066 | .83 | 4.13 | 1.49 | 4.30 | .015 | .00 | 1.50 | TRAP |
| 2051.657 | -121.294 | 3.999 | -117.295 | 704.00 | 14.67 | 3.34 | -113.95 | .00 | 5.06 | 18.00 | 7.000 | 6.000 | 1.50 | 0 .0 |
| 91.106 | .0052 | | | | | .0075 | .68 | 4.00 | 1.58 | 4.30 | .015 | .00 | 1.50 | TRAP |
| 2142.763 | -120.819 | 3.874 | -116.946 | 704.00 | 15.39 | 3.68 | -113.27 | .00 | 5.06 | 17.62 | 7.000 | 6.000 | 1.50 | 0 .0 |
| 73.830 | .0052 | | | | | .0085 | .63 | 3.87 | 1.68 | 4.30 | .015 | .00 | 1.50 | TRAP |
| 2216.593 | -120.434 | 3.751 | -116.683 | 704.00 | 16.14 | 4.04 | -112.64 | .00 | 5.06 | 17.25 | 7.000 | 6.000 | 1.50 | 0 .0 |
| 63.407 | .0052 | | | | | .0097 | .62 | 3.75 | 1.79 | 4.30 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE C01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 2280.000 | -120.104 | 3.633 | -116.471 | 704.00 | 16.93 | 4.45 | -112.02 | .00 | 5.06 | 16.90 | 7.000 | 6.000 | 1.50 | 0 .0 |
| JUNCT STR | .0052 | | | | | .0138 | .28 | 3.63 | 1.90 | | .015 | .00 | 1.50 | TRAP |
| | | | WARNING - Junction Analysis - Change in Channel Type | | | | | | | | | | | |
| 2300.000 | -120.000 | 2.806 | -117.194 | 473.00 | 18.73 | 5.45 | -111.75 | .00 | 4.41 | 9.00 | 7.000 | 9.000 | .00 | 0 .0 |
| WALL | EXIT | | | | | | | | | | | | | |
| 2300.000 | -120.000 | 4.760 | -115.240 | 473.00 | 16.97 | 4.47 | -110.77 | .00 | 5.70 | 6.53 | 7.000 | .000 | .00 | 1 .0 |
| 796.647 | .0084 | | | | | .0084 | 6.73 | 4.76 | 1.45 | 4.76 | .013 | .00 | .00 | PIPE |
| 3096.647 | -113.269 | 4.760 | -108.509 | 473.00 | 16.97 | 4.47 | -104.04 | .00 | 5.70 | 6.53 | 7.000 | .000 | .00 | 1 .0 |
| 442.353 | .0084 | | | | | .0082 | 3.63 | 4.76 | 1.45 | 4.76 | .013 | .00 | .00 | PIPE |
| 3539.000 | -109.532 | 4.865 | -104.667 | 473.00 | 16.57 | 4.26 | -100.40 | .00 | 5.70 | 6.45 | 7.000 | .000 | .00 | 1 .0 |
| 15.000 | .0120 | | | | | .0078 | .12 | 4.86 | 1.39 | 4.22 | .013 | .00 | .00 | PIPE |
| 3554.000 | -109.352 | 4.936 | -104.416 | 473.00 | 16.31 | 4.13 | -100.29 | .00 | 5.70 | 6.38 | 7.000 | .000 | .00 | 1 .0 |
| 14.470 | .0120 | | | | | .0075 | .11 | 4.94 | 1.35 | 4.22 | .013 | .00 | .00 | PIPE |
| 3568.470 | -109.178 | 5.021 | -104.157 | 473.00 | 16.01 | 3.98 | -100.18 | .00 | 5.70 | 6.30 | 7.000 | .000 | .00 | 1 .0 |
| 25.530 | .0120 | | | | | .0070 | .18 | 5.02 | 1.30 | 4.22 | .013 | .00 | .00 | PIPE |
| 3594.000 | -108.872 | 5.254 | -103.618 | 473.00 | 15.26 | 3.62 | -100.00 | .00 | 5.70 | 6.06 | 7.000 | .000 | .00 | 1 .0 |
| 9.783 | .0120 | | | | | .0064 | .06 | 5.25 | 1.19 | 4.22 | .013 | .00 | .00 | PIPE |





| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 3603.783 | -108.755 | 5.424 | -103.330 | 473.00 | 14.78 | 3.39 | -99.94 | .00 | 5.70 | 5.85 | 7.000 | .000 | .00 | 1 .0 |
| 5.217 | .0120 | | | | | .0058 | .03 | 5.42 | 1.11 | 4.22 | .013 | .00 | .00 | PIPE |
| 3609.000 | -108.692 | 5.701 | -102.991 | 473.00 | 14.09 | 3.08 | -99.91 | .00 | 5.70 | 5.44 | 7.000 | .000 | .00 | 1 .0 |
| WALL | ENTRANCE | | | | | | | | | | | | | |

C01-01

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3609.000 | -108.692 | 10.347 | -98.345 | 473.00 | 5.08 | .40 | -97.94 | .00 | 4.41 | 9.00 | 7.000 | 9.000 | .00 | 0 | .0 |

```
T1 CVWD                                                                    0
T2 MDP
T3 LINE C01-02
SO   1000.000-089.600  1      .013               -085.407
R    2205.000-068.308  1      .013
JX   2220.000-067.081  2  3   .013  199.000         -066.530        30.0
R    3350.000-051.000  2      .013
WE   3350.000-051.000  4      .500
TS   3365.000-050.774  5      .015
R    3400.000-050.245  5      .015
SH   3400.000-050.245  5
CD   1  4   1           6.000
CD   2  4   1           5.000
CD   3  4   1           3.000
CD   4  2   0    .000  10.000    6.000  .000  .000   .00
CD   5  1   0    .000   8.000    6.000 1.500 1.500   .00
Q           264.000   .0
```

FILE: C01-02.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 7-31-2013 Time:10:20:13

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 2 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |
| CD | 3 | 4 | 1 | | 3.000 | | | | | | | | | | | | | | |
| CD | 4 | 2 | 0 | .000 | 10.000 | 6.000 | | | .00 | | | | | | | | | | |
| CD | 5 | 1 | 0 | .000 | 8.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE C01-02

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1000.000 | -89.600 | 1 | -85.407 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2205.000 | -68.308 | 1 | .013 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2220.000 | -67.081 | 2 | 3 | 0 | .013 | 199.000 | .000 | -66.530 | .000 | 30.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 4 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3350.000 | -51.000 | 2 | .013 | .000 | .000 | .000 | 0 |

ELEMENT NO 5 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 3350.000 | -51.000 | 4 | .500 |

ELEMENT NO 6 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 3365.000 | -50.774 | 5 | .015 | .000 | .000 |

ELEMENT NO 7 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3400.000 | -50.245 | 5 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 8 IS A SYSTEM HEADWORKS * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 3400.000 | -50.245 | 5 | .000 |

CVWD
MDP
LINE C01-02

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000.000 | -89.600 | 4.144 | -85.456 | 463.00 | 22.23 | 7.67 | -77.78 | .00 | 5.57 | 5.55 | 6.000 | .000 | .00 | 1 .0 |
| 266.603 | .0177 | | | | | .0177 | 4.71 | 4.14 | 2.02 | 4.14 | .013 | .00 | .00 | PIPE |
| 1266.603 | -84.889 | 4.144 | -80.746 | 463.00 | 22.23 | 7.67 | -73.07 | .00 | 5.57 | 5.55 | 6.000 | .000 | .00 | 1 .0 |
| 541.125 | .0177 | | | | | .0170 | 9.17 | 4.14 | 2.02 | 4.14 | .013 | .00 | .00 | PIPE |
| 1807.728 | -75.328 | 4.279 | -71.049 | 463.00 | 21.46 | 7.15 | -63.90 | .00 | 5.57 | 5.43 | 6.000 | .000 | .00 | 1 .0 |
| 198.107 | .0177 | | | | | .0154 | 3.05 | 4.28 | 1.90 | 4.14 | .013 | .00 | .00 | PIPE |
| 2005.835 | -71.827 | 4.477 | -67.350 | 463.00 | 20.46 | 6.50 | -60.85 | .00 | 5.57 | 5.22 | 6.000 | .000 | .00 | 1 .0 |
| 96.913 | .0177 | | | | | .0138 | 1.34 | 4.48 | 1.73 | 4.14 | .013 | .00 | .00 | PIPE |
| 2102.748 | -70.115 | 4.694 | -65.421 | 463.00 | 19.51 | 5.91 | -59.51 | .00 | 5.57 | 4.95 | 6.000 | .000 | .00 | 1 .0 |
| 56.633 | .0177 | | | | | .0125 | .71 | 4.69 | 1.57 | 4.14 | .013 | .00 | .00 | PIPE |
| 2159.381 | -69.114 | 4.937 | -64.177 | 463.00 | 18.60 | 5.37 | -58.81 | .00 | 5.57 | 4.58 | 6.000 | .000 | .00 | 1 .0 |
| 32.991 | .0177 | | | | | .0114 | .38 | 4.94 | 1.41 | 4.14 | .013 | .00 | .00 | PIPE |
| 2192.372 | -68.531 | 5.218 | -63.313 | 463.00 | 17.73 | 4.88 | -58.43 | .00 | 5.57 | 4.04 | 6.000 | .000 | .00 | 1 .0 |
| 12.628 | .0177 | | | | | .0106 | .13 | 5.22 | 1.23 | 4.14 | .013 | .00 | .00 | PIPE |
| 2205.000 | -68.308 | 5.574 | -62.734 | 463.00 | 16.91 | 4.44 | -58.30 | .00 | 5.57 | 3.08 | 6.000 | .000 | .00 | 1 .0 |
| JUNCT STR | .0818 | | | | | | | 5.57 | 1.00 | | .013 | .00 | .00 | PIPE |
| 2220.000 | -67.081 | 3.540 | -63.541 | 264.00 | 17.76 | 4.90 | -58.64 | .00 | 4.50 | 4.55 | 5.000 | .000 | .00 | 1 .0 |
| 512.204 | .0142 | | | | | .0142 | 7.29 | 3.54 | 1.73 | 3.54 | .013 | .00 | .00 | PIPE |



CVWD
MDP
LINE C01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2732.204 | -59.792 | 3.540 | -56.252 | 264.00 | 17.76 | 4.90 | -51.35 | .00 | 4.50 | 4.55 | 5.000 | .000 | .00 | 1 .0 |
| 380.855 | .0142 | | | | | .0137 | 5.21 | 3.54 | 1.73 | 3.54 | .013 | .00 | .00 | PIPE |
| 3113.059 | -54.372 | 3.657 | -50.715 | 264.00 | 17.15 | 4.57 | -46.15 | .00 | 4.50 | 4.43 | 5.000 | .000 | .00 | 1 .0 |
| 134.723 | .0142 | | | | | .0124 | 1.68 | 3.66 | 1.62 | 3.54 | .013 | .00 | .00 | PIPE |
| 3247.782 | -52.455 | 3.831 | -48.624 | 264.00 | 16.35 | 4.15 | -44.47 | .00 | 4.50 | 4.23 | 5.000 | .000 | .00 | 1 .0 |
| 61.260 | .0142 | | | | | .0112 | .69 | 3.83 | 1.48 | 3.54 | .013 | .00 | .00 | PIPE |
| 3309.042 | -51.583 | 4.023 | -47.560 | 264.00 | 15.59 | 3.78 | -43.78 | .00 | 4.50 | 3.96 | 5.000 | .000 | .00 | 1 .0 |
| 30.824 | .0142 | | | | | .0102 | .31 | 4.02 | 1.33 | 3.54 | .013 | .00 | .00 | PIPE |
| 3339.866 | -51.144 | 4.241 | -46.903 | 264.00 | 14.87 | 3.43 | -43.47 | .00 | 4.50 | 3.59 | 5.000 | .000 | .00 | 1 .0 |
| 10.134 | .0142 | | | | | .0094 | .09 | 4.24 | 1.18 | 3.54 | .013 | .00 | .00 | PIPE |
| 3350.000 | -51.000 | 4.505 | -46.495 | 264.00 | 14.17 | 3.12 | -43.38 | .00 | 4.50 | 2.99 | 5.000 | .000 | .00 | 1 .0 |
| WALL | ENTRANCE | | | | | | | | | | | | | |
| 3350.000 | -51.000 | 9.809 | -41.191 | 264.00 | 4.49 | .31 | -40.88 | .00 | 3.92 | 6.00 | 10.000 | 6.000 | .00 | 0 .0 |
| TRANS STR | .0151 | | | | | .0003 | .01 | 9.81 | .25 | | .015 | .00 | .00 | RECTANG |
| 3365.000 | -50.774 | 9.904 | -40.870 | 264.00 | 1.28 | .03 | -40.84 | .00 | 3.03 | 35.71 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 17.872 | .0151 | | | | | .0000 | .00 | 9.90 | .09 | 1.98 | .015 | .00 | 1.50 | TRAP |
| 3382.872 | -50.504 | 9.632 | -40.872 | 264.00 | 1.34 | .03 | -40.84 | .00 | 3.03 | 34.90 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 17.128 | .0151 | | | | | .0000 | .00 | 9.63 | .10 | 1.98 | .015 | .00 | 1.50 | TRAP |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 7-31-2013 Time:10:20:23

CVWD
MDP
LINE C01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 3400.000 | -50.245 | 9.371 | -40.874 | 264.00 | 1.40 | .03 | -40.84 | .00 | 3.03 | 34.11 | 8.000 | 6.000 | 1.50 | 0 .0 |

```
                                                                                                                  D01
T1 CVWD                                                                                                                    0
T2 MDP
T3 LINE D01
SO   1160.220-206.540  1      .015                -190.600
R    1584.430-206.116  1      .015
R    1652.650-206.047  1      .015                                                  21.860    .000 0
R    1700.000-206.000  1      .015
R    4255.000-203.445  1      .015
JX   4270.000-203.430  2  3   .015  100.000         -202.43          45.0
R    6820.000-200.880  2      .015
JX   6850.000-200.850  4  3   .015  100.000         -199.85          45.0
WX   6850.000-200.850  5
R    6920.000-200.675  5      .015                                                         .000 0
WE   6920.000-200.675  4      .500
TS   6950.000-200.611  2      .015
R    9639.770-194.892  2      .015
R    10000.00-194.126  2      .015
JX   10030.00-194.062  6 17   .015  632.000         -194.062         45.0
R    10069.97-193.978  6      .015
R    11812.96-190.699  6      .015
R    11815.00-190.696  6      .015
JX   11830.00-190.672  7  3   .015  117.000         -189.672         45.0
R    12257.26-189.988  7      .015                                                  81.667
R    14130.00-186.920  7      .015
JX   14145.00-186.894  8 18   .015  196.000         -185.894         45.0
R    14363.53-186.520  8      .015                                                  90.314
R    14524.19-186.244  8      .015
R    14540.00-186.217  8      .015
TS   14570.00-186.142  9      .015
WX   14570.00-186.142 10
R    14620.00-186.017 10      .015
WE   14620.00-186.017  9      .500
TS   14650.00-185.942  8      .015
R    14659.44-185.926  8      .015
R    14842.60-185.619  8      .015                                                  89.793
R    16985.00-182.025  8      .015
TS   17015.00-181.950  9      .015
WX   17015.00-181.950 10
R    17085.00-181.775 10      .015
WE   17085.00-181.775  9      .500
TS   17115.00-181.700  8      .015
R    17133.66-181.647  8      .015
R    17299.42-181.180  8      .015                                                  90.703
R    17300.00-181.178  8      .015
JX   17315.00-181.136 11 17   .015  425.000         -180.307         45.0
R    19645.00-174.567 11      .015
JX   19660.00-174.525 12  3   .015   92.000         -175.147         45.0
R    22280.00-167.138 12      .015
TS   22310.00-167.054 13      .015
WX   22310.00-167.054 14
R    22360.00-166.913 14      .015
WE   22360.00-166.913 13      .500
JX   22390.00-166.828 15  3   .015   91.000         -167.005         45.0
R    22400.00-166.800 15      .015
SH   22400.00-166.800 15      .015
CD   1  1   0    .000  10.000   35.000 1.500 1.500   .00
CD   2  1   0    .000  10.000   33.000 1.500 1.500   .00
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CD   3  4   1           3.000
CD   4  2   0    .000  10.000   43.340  .000  .000   .00
CD   5  3   2    .670   7.000   43.340  .000  .000   .00
CD   6  1   0    .000  10.000   22.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   20.000 1.500 1.500   .00
CD   8  1   0    .000  10.000   15.000 1.500 1.500   .00
CD   9  2   0    .000  10.000   20.670  .000  .000   .00
CD  10  3   1    .670   6.000   20.670  .000  .000   .00
CD  11  1   0    .000  12.000   10.000 1.500 1.500   .00
CD  12  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  13  2   0    .000  10.000   14.670  .000  .000   .00
CD  14  3   1    .670   6.000   14.670  .000  .000   .00
CD  15  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  16  4   1           5.000
CD  17  4   1           8.000
CD  18  4   1           4.000
CD  19  1   0           4.000   10.000 1.500 1.500   .00
CD  20  1   0           8.000   10.000 1.500 1.500   .00
CD  21  2   0    .000   8.000   12.670  .000  .000   .00
CD  22  3   1    .670   6.000   12.670  .000  .000   .00
CD  23  1   0    .000   8.000    6.000 1.500 1.500   .00
Q           519.000   .0
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FILE: d01.WSW W S P G W - EDIT LISTING - Version 14.06 Date:11-18-2013 Time: 8:44: 3

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 10.000 | 35.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 1 | 0 | .000 | 10.000 | 33.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 3 | 4 | 1 | | 3.000 | | | | | | | | | | | | | | |
| CD | 4 | 2 | 0 | .000 | 10.000 | 43.340 | | | .00 | | | | | | | | | | |
| CD | 5 | 3 | 2 | .670 | 7.000 | 43.340 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 6 | 1 | 0 | .000 | 10.000 | 22.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 7 | 1 | 0 | .000 | 10.000 | 20.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 8 | 1 | 0 | .000 | 10.000 | 15.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 9 | 2 | 0 | .000 | 10.000 | 20.670 | | | .00 | | | | | | | | | | |
| CD | 10 | 3 | 1 | .670 | 6.000 | 20.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 11 | 1 | 0 | .000 | 12.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 12 | 1 | 0 | .000 | 10.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 13 | 2 | 0 | .000 | 10.000 | 14.670 | | | .00 | | | | | | | | | | |
| CD | 14 | 3 | 1 | .670 | 6.000 | 14.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 15 | 1 | 0 | .000 | 10.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 16 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |
| CD | 17 | 4 | 1 | | 8.000 | | | | | | | | | | | | | | |
| CD | 18 | 4 | 1 | | 4.000 | | | | | | | | | | | | | | |
| CD | 19 | 1 | 0 | .000 | 4.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 20 | 1 | 0 | .000 | 8.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 21 | 2 | 0 | .000 | 8.000 | 12.670 | | | .00 | | | | | | | | | | |
| CD | 22 | 3 | 1 | .670 | 6.000 | 12.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 23 | 1 | 0 | .000 | 8.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE D01

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1160.220 | -206.540 | 1 | -190.600 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1584.430 | -206.116 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1652.650 | -206.047 | 1 | .015 | 178.807 | 21.860 | .000 | 0 |

ELEMENT NO 4 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1700.000 | -206.000 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 5 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 4255.000 | -203.445 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 6 IS A JUNCTION * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4270.000 | -203.430 | 2 | 3 | 0 | .015 | 100.000 | .000 | -202.430 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 7 IS A REACH * * *

```
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               6820.000 -200.880    2              .015                           .000     .000       .000      0
 ELEMENT NO   8 IS A JUNCTION          *         *     *     *              *                        *                    *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                               6850.000 -200.850    4     3     0   .015   100.000      .000  -199.850       .000  45.000      .000
                                                                                              RADIUS    ANGLE
                                                                                                .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO   9 IS A  WALL  EXIT                    *
                    U/S DATA   STATION    INVERT  SECT
                               6850.000 -200.850    5
                                                  W S P G W                                                          PAGE NO   3
                                WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  10 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               6920.000 -200.675    5              .015                           .000     .000       .000      0
 ELEMENT NO  11 IS A  WALL  ENTRANCE                 *
                    U/S DATA   STATION    INVERT  SECT             FP
                               6920.000 -200.675    4              .500
 ELEMENT NO  12 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               6950.000 -200.611    2              .015                           .000     .000
 ELEMENT NO  13 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               9639.770 -194.892    2              .015                           .000     .000       .000      0
 ELEMENT NO  14 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              10000.000 -194.126    2              .015                           .000     .000       .000      0
 ELEMENT NO  15 IS A JUNCTION          *         *     *     *              *                        *                    *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                              10030.000 -194.062    6    17     0   .015   632.000      .000  -194.062       .000  45.000      .000
                                                                                              RADIUS    ANGLE
                                                                                                .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  16 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              10069.970 -193.978    6              .015                           .000     .000       .000      0
 ELEMENT NO  17 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              11812.960 -190.699    6              .015                           .000     .000       .000      0
 ELEMENT NO  18 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              11815.000 -190.696    6              .015                           .000     .000       .000      0
 ELEMENT NO  19 IS A JUNCTION          *         *     *     *              *                        *                    *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                              11830.000 -190.672    7     3     0   .015   117.000      .000  -189.672       .000  45.000      .000
                                                                                              RADIUS    ANGLE
                                                                                                .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
                                                  W S P G W                                                          PAGE NO   4
                                WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  20 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              12257.260 -189.988    7              .015                        299.756   81.667       .000      0
 ELEMENT NO  21 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              14130.000 -186.920    7              .015                           .000     .000       .000      0
 ELEMENT NO  22 IS A JUNCTION          *         *     *     *              *                        *                    *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                              14145.000 -186.894    8    18     0   .015   196.000      .000  -185.894       .000  45.000      .000
                                                                                              RADIUS    ANGLE
```

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                                                                                                                .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  23 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           14363.530 -186.520    8              .015                         138.637   90.314      .000     0
 ELEMENT NO  24 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           14524.190 -186.244    8              .015                            .000     .000      .000     0
 ELEMENT NO  25 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           14540.000 -186.217    8              .015                            .000     .000      .000     0
 ELEMENT NO  26 IS A TRANSITION               *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                           14570.000 -186.142    9              .015                            .000     .000
 ELEMENT NO  27 IS A  WALL  EXIT                                  *
                    U/S DATA   STATION    INVERT  SECT
                           14570.000 -186.142   10
 ELEMENT NO  28 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           14620.000 -186.017   10              .015                            .000     .000      .000     0
 ELEMENT NO  29 IS A  WALL  ENTRANCE                              *
                    U/S DATA   STATION    INVERT  SECT             FP
                           14620.000 -186.017    9              .500
 ELEMENT NO  30 IS A TRANSITION               *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                           14650.000 -185.942    8              .015                            .000     .000
                                                      W S P G W                                                    PAGE NO   5
                                WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  31 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           14659.440 -185.926    8              .015                            .000     .000      .000     0
 ELEMENT NO  32 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           14842.600 -185.619    8              .015                         116.872   89.793      .000     0
 ELEMENT NO  33 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           16985.000 -182.025    8              .015                            .000     .000      .000     0
 ELEMENT NO  34 IS A TRANSITION               *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                           17015.000 -181.950    9              .015                            .000     .000
 ELEMENT NO  35 IS A  WALL  EXIT                                  *
                    U/S DATA   STATION    INVERT  SECT
                           17015.000 -181.950   10
 ELEMENT NO  36 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           17085.000 -181.775   10              .015                            .000     .000      .000     0
 ELEMENT NO  37 IS A  WALL  ENTRANCE                              *
                    U/S DATA   STATION    INVERT  SECT             FP
                           17085.000 -181.775    9              .500
 ELEMENT NO  38 IS A TRANSITION               *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                           17115.000 -181.700    8              .015                            .000     .000
 ELEMENT NO  39 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           17133.660 -181.647    8              .015                            .000     .000      .000     0
 ELEMENT NO  40 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           17299.420 -181.180    8              .015                         104.708   90.703      .000     0
 ELEMENT NO  41 IS A REACH                    *          *      *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           17300.000 -181.178    8              .015                            .000     .000      .000     0
```

```
 ELEMENT NO  42 IS A JUNCTION          *         *     *     *                *                *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                           17315.000 -181.136   11    17     0   .015   425.000      .000  -180.307      .000  45.000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
                                                W S P G W                                                      PAGE NO   6
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  43 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                           19645.000 -174.567   11               .015                           .000     .000      .000     0
 ELEMENT NO  44 IS A JUNCTION          *         *     *     *                *                *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                           19660.000 -174.525   12     3     0   .015    92.000      .000  -175.147      .000  45.000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  45 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                           22280.000 -167.138   12               .015                           .000     .000      .000     0
 ELEMENT NO  46 IS A TRANSITION        *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS   ANGLE
                           22310.000 -167.054   13               .015                           .000     .000
 ELEMENT NO  47 IS A  WALL  EXIT                  *
                  U/S DATA   STATION    INVERT  SECT
                           22310.000 -167.054   14
 ELEMENT NO  48 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                           22360.000 -166.913   14               .015                           .000     .000      .000     0
 ELEMENT NO  49 IS A  WALL  ENTRANCE              *
                  U/S DATA   STATION    INVERT  SECT              FP
                           22360.000 -166.913   13               .500
 ELEMENT NO  50 IS A JUNCTION          *         *     *     *                *                *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                           22390.000 -166.828   15     3     0   .015    91.000      .000  -167.005      .000  45.000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  51 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                           22400.000 -166.800   15               .015                           .000     .000      .000     0
 ELEMENT NO  52 IS A SYSTEM HEADWORKS             *                          *
                  U/S DATA   STATION    INVERT  SECT                                    W S ELEV
                           22400.000 -166.800   15                                        .000
                                                W S P G W                                                      PAGE NO   7
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
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CVWD
MDP
LINE D01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 1160.220 | -206.540 | 15.940 | -190.600 | 2272.00 | 2.42 | .09 | -190.51 | .00 | 4.73 | 82.82 | 10.000 | 35.000 | 1.50 | 0 .0 |
| 424.210 | .0010 | | | | | .0000 | .01 | 15.94 | .13 | 5.95 | .015 | .00 | 1.50 | TRAP |
| 1584.430 | -206.116 | 15.521 | -190.595 | 2272.00 | 2.51 | .10 | -190.50 | .05 | 4.73 | 81.56 | 10.000 | 35.000 | 1.50 | 0 .0 |
| 68.220 | .0010 | | | | | .0000 | .00 | 15.57 | .13 | 5.93 | .015 | .00 | 1.50 | TRAP |
| 1652.650 | -206.047 | 15.453 | -190.594 | 2272.00 | 2.53 | .10 | -190.49 | .00 | 4.73 | 81.36 | 10.000 | 35.000 | 1.50 | 0 .0 |
| 47.350 | .0010 | | | | | .0000 | .00 | 15.45 | .13 | 5.96 | .015 | .00 | 1.50 | TRAP |
| 1700.000 | -206.000 | 15.408 | -190.592 | 2272.00 | 2.54 | .10 | -190.49 | .00 | 4.73 | 81.22 | 10.000 | 35.000 | 1.50 | 0 .0 |
| 525.340 | .0010 | | | | | .0000 | .02 | 15.41 | .13 | 5.95 | .015 | .00 | 1.50 | TRAP |
| 2225.340 | -205.475 | 14.890 | -190.585 | 2272.00 | 2.66 | .11 | -190.48 | .00 | 4.73 | 79.67 | 10.000 | 35.000 | 1.50 | 0 .0 |
| 511.747 | .0010 | | | | | .0000 | .02 | 14.89 | .14 | 5.95 | .015 | .00 | 1.50 | TRAP |
| 2737.087 | -204.963 | 14.386 | -190.577 | 2272.00 | 2.79 | .12 | -190.46 | .00 | 4.73 | 78.16 | 10.000 | 35.000 | 1.50 | 0 .0 |
| 498.595 | .0010 | | | | | .0000 | .02 | 14.39 | .15 | 5.95 | .015 | .00 | 1.50 | TRAP |
| 3235.682 | -204.464 | 13.897 | -190.567 | 2272.00 | 2.93 | .13 | -190.43 | .00 | 4.73 | 76.69 | 10.000 | 35.000 | 1.50 | 0 .0 |
| 485.893 | .0010 | | | | | .0000 | .02 | 13.90 | .16 | 5.95 | .015 | .00 | 1.50 | TRAP |
| 3721.575 | -203.978 | 13.422 | -190.557 | 2272.00 | 3.07 | .15 | -190.41 | .00 | 4.73 | 75.26 | 10.000 | 35.000 | 1.50 | 0 .0 |
| 473.660 | .0010 | | | | | .0001 | .03 | 13.42 | .17 | 5.95 | .015 | .00 | 1.50 | TRAP |
| 4195.234 | -203.505 | 12.960 | -190.545 | 2272.00 | 3.22 | .16 | -190.38 | .00 | 4.73 | 73.88 | 10.000 | 35.000 | 1.50 | 0 .0 |
| 59.766 | .0010 | | | | | .0001 | .00 | 12.96 | .18 | 5.95 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE D01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 4255.000 | -203.445 | 12.902 | -190.543 | 2272.00 | 3.24 | .16 | -190.38 | .00 | 4.73 | 73.71 | 10.000 | 35.000 | 1.50 | 0 .0 |
| JUNCT STR | .0010 | | | | | .0001 | .00 | 12.90 | .19 | | .015 | .00 | 1.50 | TRAP |
| 4270.000 | -203.430 | 12.858 | -190.572 | 2172.00 | 3.23 | .16 | -190.41 | .00 | 4.75 | 71.58 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 455.012 | .0010 | | | | | .0001 | .03 | 12.86 | .19 | 5.98 | .015 | .00 | 1.50 | TRAP |
| 4725.012 | -202.975 | 12.417 | -190.558 | 2172.00 | 3.39 | .18 | -190.38 | .00 | 4.75 | 70.25 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 444.159 | .0010 | | | | | .0001 | .03 | 12.42 | .20 | 5.98 | .015 | .00 | 1.50 | TRAP |
| 5169.171 | -202.531 | 11.989 | -190.542 | 2172.00 | 3.55 | .20 | -190.35 | .00 | 4.75 | 68.97 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 433.847 | .0010 | | | | | .0001 | .04 | 11.99 | .21 | 5.98 | .015 | .00 | 1.50 | TRAP |
| 5603.018 | -202.097 | 11.572 | -190.525 | 2172.00 | 3.73 | .22 | -190.31 | .00 | 4.75 | 67.72 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 424.112 | .0010 | | | | | .0001 | .04 | 11.57 | .22 | 5.98 | .015 | .00 | 1.50 | TRAP |
| 6027.130 | -201.673 | 11.168 | -190.505 | 2172.00 | 3.91 | .24 | -190.27 | .00 | 4.75 | 66.50 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 415.016 | .0010 | | | | | .0001 | .05 | 11.17 | .24 | 5.98 | .015 | .00 | 1.50 | TRAP |
| 6442.146 | -201.258 | 10.776 | -190.482 | 2172.00 | 4.10 | .26 | -190.22 | .00 | 4.75 | 65.33 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 377.855 | .0010 | | | | | .0001 | .05 | 10.78 | .25 | 5.98 | .015 | .00 | 1.50 | TRAP |
| 6820.000 | -200.880 | 10.422 | -190.458 | 2172.00 | 4.29 | .29 | -190.17 | .00 | 4.75 | 64.27 | 10.000 | 33.000 | 1.50 | 0 .0 |
| JUNCT STR | .0010 | | | | | .0001 | .00 | 10.42 | .27 | | .015 | .00 | 1.50 | TRAP |

---------- WARNING - Junction Analysis - Change in Channel Type ----------



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11-18-2013 Time: 8:44:17

CVWD
MDP
LINE D01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6850.000 | -200.850 | 10.312 | -190.538 | 2072.00 | 4.64 | .33 | -190.20 | .00 | 4.14 | 43.34 | 10.000 | 43.340 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 6850.000 | -200.850 | 10.312 | -190.538 | 2072.00 | 7.05 | .77 | -189.77 | .00 | 4.23 | 43.34 | 7.000 | 43.340 | .00 | 2 .7 |
| 70.000 | .0025 | | | | | .0016 | .11 | 10.31 | .48 | 4.91 | .015 | .00 | .00 | BOX |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6920.000 | -200.675 | 10.252 | -190.423 | 2072.00 | 7.05 | .77 | -189.65 | .00 | 4.23 | 43.34 | 7.000 | 43.340 | .00 | 2 | .7 |
| WALL | ENTRANCE | | | | | | | | | | | | | | |
| 6920.000 | -200.675 | 10.967 | -189.708 | 2072.00 | 4.36 | .30 | -189.41 | .00 | 4.14 | 43.34 | 10.000 | 43.340 | .00 | 0 | .0 |
| TRANS STR | .0021 | | | | | .0001 | .00 | 10.97 | .23 | | .015 | .00 | .00 | RECTANG | |
| 6950.000 | -200.611 | 10.990 | -189.621 | 2072.00 | 3.81 | .23 | -189.40 | .00 | 4.61 | 65.97 | 10.000 | 33.000 | 1.50 | 0 | .0 |
| 180.629 | .0021 | | | | | .0001 | .02 | 10.99 | .23 | 4.69 | .015 | .00 | 1.50 | TRAP | |
| 7130.629 | -200.227 | 10.603 | -189.624 | 2072.00 | 4.00 | .25 | -189.38 | .00 | 4.61 | 64.81 | 10.000 | 33.000 | 1.50 | 0 | .0 |
| 175.179 | .0021 | | | | | .0001 | .02 | 10.60 | .25 | 4.69 | .015 | .00 | 1.50 | TRAP | |
| 7305.808 | -199.854 | 10.228 | -189.627 | 2072.00 | 4.19 | .27 | -189.35 | .00 | 4.61 | 63.68 | 10.000 | 33.000 | 1.50 | 0 | .0 |
| 169.853 | .0021 | | | | | .0001 | .02 | 10.23 | .27 | 4.69 | .015 | .00 | 1.50 | TRAP | |
| 7475.660 | -199.493 | 9.863 | -189.630 | 2072.00 | 4.40 | .30 | -189.33 | .00 | 4.61 | 62.59 | 10.000 | 33.000 | 1.50 | 0 | .0 |
| 164.647 | .0021 | | | | | .0002 | .03 | 9.86 | .28 | 4.69 | .015 | .00 | 1.50 | TRAP | |
| 7640.307 | -199.143 | 9.510 | -189.633 | 2072.00 | 4.61 | .33 | -189.30 | .00 | 4.61 | 61.53 | 10.000 | 33.000 | 1.50 | 0 | .0 |
| 159.562 | .0021 | | | | | .0002 | .03 | 9.51 | .30 | 4.69 | .015 | .00 | 1.50 | TRAP | |



CVWD
MDP
LINE D01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 7799.869 | -198.804 | 9.167 | -189.637 | 2072.00 | 4.83 | .36 | -189.27 | .00 | 4.61 | 60.50 | 10.000 | 33.000 | 1.50 | 0 | .0 |
| 154.599 | .0021 | | | | | .0002 | .03 | 9.17 | .32 | 4.69 | .015 | .00 | 1.50 | TRAP | |
| 7954.468 | -198.475 | 8.835 | -189.641 | 2072.00 | 5.07 | .40 | -189.24 | .00 | 4.61 | 59.50 | 10.000 | 33.000 | 1.50 | 0 | .0 |
| 149.757 | .0021 | | | | | .0002 | .04 | 8.83 | .34 | 4.69 | .015 | .00 | 1.50 | TRAP | |
| 8104.225 | -198.157 | 8.512 | -189.644 | 2072.00 | 5.32 | .44 | -189.21 | .00 | 4.61 | 58.54 | 10.000 | 33.000 | 1.50 | 0 | .0 |
| 145.037 | .0021 | | | | | .0003 | .04 | 8.51 | .36 | 4.69 | .015 | .00 | 1.50 | TRAP | |
| 8249.262 | -197.848 | 8.200 | -189.648 | 2072.00 | 5.58 | .48 | -189.17 | .00 | 4.61 | 57.60 | 10.000 | 33.000 | 1.50 | 0 | .0 |
| 140.443 | .0021 | | | | | .0003 | .04 | 8.20 | .39 | 4.69 | .015 | .00 | 1.50 | TRAP | |
| 8389.705 | -197.550 | 7.898 | -189.652 | 2072.00 | 5.85 | .53 | -189.12 | .00 | 4.61 | 56.69 | 10.000 | 33.000 | 1.50 | 0 | .0 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 135.976 | .0021 | | | | | | .0004 | .05 | 7.90 | .41 | 4.69 | .015 | .00 | 1.50 | TRAP | | | | |
| 8525.681 | -197.261 | 7.605 | -189.656 | 2072.00 | 6.14 | .58 | -189.07 | .00 | 4.61 | 55.81 | 10.000 | 33.000 | 1.50 | 0 | .0 | | | | |
| 131.642 | .0021 | | | | | | .0004 | .05 | 7.60 | .44 | 4.69 | .015 | .00 | 1.50 | TRAP | | | | |
| 8657.322 | -196.981 | 7.321 | -189.660 | 2072.00 | 6.44 | .64 | -189.02 | .00 | 4.61 | 54.96 | 10.000 | 33.000 | 1.50 | 0 | .0 | | | | |
| 127.448 | .0021 | | | | | | .0005 | .06 | 7.32 | .47 | 4.69 | .015 | .00 | 1.50 | TRAP | | | | |
| 8784.771 | -196.710 | 7.046 | -189.664 | 2072.00 | 6.75 | .71 | -188.96 | .00 | 4.61 | 54.14 | 10.000 | 33.000 | 1.50 | 0 | .0 | | | | |
| 123.406 | .0021 | | | | | | .0005 | .07 | 7.05 | .50 | 4.69 | .015 | .00 | 1.50 | TRAP | | | | |
| 8908.177 | -196.448 | 6.780 | -189.667 | 2072.00 | 7.08 | .78 | -188.89 | .00 | 4.61 | 53.34 | 10.000 | 33.000 | 1.50 | 0 | .0 | | | | |
| 119.533 | .0021 | | | | | | .0006 | .07 | 6.78 | .53 | 4.69 | .015 | .00 | 1.50 | TRAP | | | | |



CVWD
MDP
LINE D01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 9027.710 | -196.193 | 6.523 | -189.670 | 2072.00 | 7.42 | .86 | -188.81 | .00 | 4.61 | 52.57 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 115.854 | .0021 | | | | | .0007 | .08 | 6.52 | .57 | 4.69 | .015 | .00 | 1.50 | TRAP |
| 9143.563 | -195.947 | 6.274 | -189.673 | 2072.00 | 7.79 | .94 | -188.73 | .00 | 4.61 | 51.82 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 112.410 | .0021 | | | | | .0008 | .09 | 6.27 | .61 | 4.69 | .015 | .00 | 1.50 | TRAP |
| 9255.974 | -195.708 | 6.034 | -189.674 | 2072.00 | 8.17 | 1.04 | -188.64 | .00 | 4.61 | 51.10 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 109.275 | .0021 | | | | | .0009 | .10 | 6.03 | .65 | 4.69 | .015 | .00 | 1.50 | TRAP |
| 9365.249 | -195.476 | 5.801 | -189.675 | 2072.00 | 8.57 | 1.14 | -188.54 | .00 | 4.61 | 50.40 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 106.577 | .0021 | | | | | .0011 | .12 | 5.80 | .69 | 4.69 | .015 | .00 | 1.50 | TRAP |
| 9471.826 | -195.249 | 5.576 | -189.673 | 2072.00 | 8.98 | 1.25 | -188.42 | .00 | 4.61 | 49.73 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 104.588 | .0021 | | | | | .0012 | .13 | 5.58 | .74 | 4.69 | .015 | .00 | 1.50 | TRAP |
| 9576.414 | -195.027 | 5.359 | -189.668 | 2072.00 | 9.42 | 1.38 | -188.29 | .00 | 4.61 | 49.08 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 63.355 | .0021 | | | | | .0014 | .09 | 5.36 | .78 | 4.69 | .015 | .00 | 1.50 | TRAP |
| 9639.770 | -194.892 | 5.230 | -189.662 | 2072.00 | 9.70 | 1.46 | -188.20 | .00 | 4.61 | 48.69 | 10.000 | 33.000 | 1.50 | 0 .0 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 104.942 | .0021 | | | | | .0016 | .16 | 5.23 | .82 | 4.69 | .015 | .00 | 1.50 | TRAP |
| 9744.712 | -194.669 | 5.024 | -189.645 | 2072.00 | 10.17 | 1.61 | -188.04 | .00 | 4.61 | 48.07 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 113.696 | .0021 | | | | | .0018 | .20 | 5.02 | .87 | 4.69 | .015 | .00 | 1.50 | TRAP |
| 9858.408 | -194.427 | 4.826 | -189.601 | 2072.00 | 10.67 | 1.77 | -187.83 | .00 | 4.61 | 47.48 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 125.432 | .0021 | | | | | .0020 | .25 | 4.83 | .93 | 4.69 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE D01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 9983.840 | -194.160 | 4.686 | -189.474 | 2072.00 | 11.05 | 1.89 | -187.58 | .00 | 4.61 | 47.06 | 10.000 | 33.000 | 1.50 | 0 .0 |
| 16.160 | .0021 | | | | | .0021 | .03 | 4.69 | .97 | 4.69 | .015 | .00 | 1.50 | TRAP |
| 10000.000 | -194.126 | 4.686 | -189.440 | 2072.00 | 11.05 | 1.89 | -187.55 | .00 | 4.61 | 47.06 | 10.000 | 33.000 | 1.50 | 0 .0 |
| JUNCT STR | .0021 | | | | | | | 4.69 | .97 | | .015 | .00 | 1.50 | TRAP |
| 10030.000 | -194.062 | 4.574 | -189.488 | 1440.00 | 10.91 | 1.85 | -187.64 | .00 | 4.57 | 35.72 | 10.000 | 22.000 | 1.50 | 0 .0 |
| 39.970 | .0021 | | | | | .0022 | .09 | 4.57 | 1.00 | 4.72 | .015 | .00 | 1.50 | TRAP |
| 10069.970 | -193.978 | 4.699 | -189.279 | 1440.00 | 10.55 | 1.73 | -187.55 | .00 | 4.57 | 36.10 | 10.000 | 22.000 | 1.50 | 0 .0 |
| 185.328 | .0019 | | | | | .0020 | .37 | 4.70 | .96 | 4.87 | .015 | .00 | 1.50 | TRAP |
| 10255.300 | -193.629 | 4.865 | -188.764 | 1440.00 | 10.10 | 1.58 | -187.18 | .00 | 4.57 | 36.60 | 10.000 | 22.000 | 1.50 | 0 .0 |
| 1557.662 | .0019 | | | | | .0019 | 2.93 | 4.87 | .90 | 4.87 | .015 | .00 | 1.50 | TRAP |
| 11812.960 | -190.699 | 4.865 | -185.834 | 1440.00 | 10.10 | 1.58 | -184.25 | .00 | 4.57 | 36.60 | 10.000 | 22.000 | 1.50 | 0 .0 |
| 2.040 | .0015 | | | | | .0019 | .00 | 4.87 | .90 | 5.21 | .015 | .00 | 1.50 | TRAP |
| 11815.000 | -190.696 | 4.870 | -185.826 | 1440.00 | 10.09 | 1.58 | -184.25 | .00 | 4.57 | 36.61 | 10.000 | 22.000 | 1.50 | 0 .0 |
| JUNCT STR | .0016 | | | | | .0019 | .03 | 5.37 | .90 | | .015 | .00 | 1.50 | TRAP |
| 11830.000 | -190.672 | 4.884 | -185.788 | 1323.00 | 9.91 | 1.53 | -184.26 | .20 | 4.56 | 34.65 | 10.000 | 20.000 | 1.50 | 0 .0 |
| 362.926 | .0016 | | | | | .0017 | .63 | 5.09 | .89 | 5.08 | .015 | .00 | 1.50 | TRAP |
| 12192.930 | -190.091 | 5.071 | -185.020 | 1323.00 | 9.45 | 1.39 | -183.63 | .19 | 4.56 | 35.21 | 10.000 | 20.000 | 1.50 | 0 .0 |
| 64.334 | .0016 | | | | | .0016 | .10 | 5.26 | .84 | 5.08 | .015 | .00 | 1.50 | TRAP |

CVWD
MDP
LINE D01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 12257.260 | -189.988 | 5.074 | -184.914 | 1323.00 | 9.44 | 1.39 | -183.53 | .00 | 4.56 | 35.22 | 10.000 | 20.000 | 1.50 | 0 .0 |
| 478.837 | .0016 | | | | | .0016 | .78 | 5.07 | .83 | 5.05 | .015 | .00 | 1.50 | TRAP |
| 12736.100 | -189.204 | 5.051 | -184.152 | 1323.00 | 9.50 | 1.40 | -182.75 | .00 | 4.56 | 35.15 | 10.000 | 20.000 | 1.50 | 0 .0 |
| 1355.399 | .0016 | | | | | .0016 | 2.22 | 5.05 | .84 | 5.05 | .015 | .00 | 1.50 | TRAP |
| 14091.500 | -186.983 | 5.051 | -181.932 | 1323.00 | 9.50 | 1.40 | -180.53 | .00 | 4.56 | 35.15 | 10.000 | 20.000 | 1.50 | 0 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |
| 14091.500 | -186.983 | 4.094 | -182.889 | 1323.00 | 12.36 | 2.37 | -180.52 | .00 | 4.56 | 32.28 | 10.000 | 20.000 | 1.50 | 0 .0 |
| 38.504 | .0016 | | | | | .0037 | .14 | 4.09 | 1.20 | 5.05 | .015 | .00 | 1.50 | TRAP |
| 14130.000 | -186.920 | 3.941 | -182.979 | 1323.00 | 12.95 | 2.61 | -180.37 | .00 | 4.56 | 31.82 | 10.000 | 20.000 | 1.50 | 0 .0 |
| JUNCT STR | .0017 | | | | | .0032 | .05 | 5.50 | 1.27 | | .015 | .00 | 1.50 | TRAP |
| 14145.000 | -186.894 | 4.742 | -182.152 | 1127.00 | 10.75 | 1.79 | -180.36 | .43 | 4.74 | 29.23 | 10.000 | 15.000 | 1.50 | 0 .0 |
| 18.699 | .0017 | | | | | .0023 | .04 | 5.18 | 1.00 | 5.21 | .015 | .00 | 1.50 | TRAP |
| 14163.700 | -186.862 | 4.916 | -181.946 | 1127.00 | 10.25 | 1.63 | -180.32 | .40 | 4.74 | 29.75 | 10.000 | 15.000 | 1.50 | 0 .0 |
| 108.949 | .0017 | | | | | .0020 | .22 | 5.32 | .94 | 5.21 | .015 | .00 | 1.50 | TRAP |
| 14272.650 | -186.676 | 5.095 | -181.581 | 1127.00 | 9.77 | 1.48 | -180.10 | .37 | 4.74 | 30.28 | 10.000 | 15.000 | 1.50 | 0 .0 |
| 90.883 | .0017 | | | | | .0018 | .17 | 5.47 | .88 | 5.21 | .015 | .00 | 1.50 | TRAP |
| 14363.530 | -186.520 | 5.141 | -181.379 | 1127.00 | 9.65 | 1.45 | -179.93 | .00 | 4.74 | 30.42 | 10.000 | 15.000 | 1.50 | 0 .0 |
| 115.046 | .0017 | | | | | .0018 | .21 | 5.14 | .87 | 5.20 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE D01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14478.580 | -186.322 | 5.167 | -181.156 | 1127.00 | 9.59 | 1.43 | -179.73 | .00 | 4.74 | 30.50 | 10.000 | 15.000 | 1.50 | 0 | .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | | |
| 14478.580 | -186.322 | 4.336 | -181.986 | 1127.00 | 12.09 | 2.27 | -179.72 | .00 | 4.74 | 28.01 | 10.000 | 15.000 | 1.50 | 0 | .0 |
| 7.626 | .0017 | | | | | .0034 | .03 | 4.34 | 1.17 | 5.20 | .015 | .00 | 1.50 | TRAP | |
| 14486.200 | -186.309 | 4.306 | -182.003 | 1127.00 | 12.20 | 2.31 | -179.69 | .00 | 4.74 | 27.92 | 10.000 | 15.000 | 1.50 | 0 | .0 |
| 37.988 | .0017 | | | | | .0037 | .14 | 4.31 | 1.18 | 5.20 | .015 | .00 | 1.50 | TRAP | |
| 14524.190 | -186.244 | 4.150 | -182.094 | 1127.00 | 12.79 | 2.54 | -179.55 | .00 | 4.74 | 27.45 | 10.000 | 15.000 | 1.50 | 0 | .0 |
| 15.810 | .0017 | | | | | .0041 | .06 | 4.15 | 1.26 | 5.21 | .015 | .00 | 1.50 | TRAP | |
| 14540.000 | -186.217 | 4.091 | -182.126 | 1127.00 | 13.04 | 2.64 | -179.49 | .00 | 4.74 | 27.27 | 10.000 | 15.000 | 1.50 | 0 | .0 |
| TRANS STR | .0025 | | | | | .0039 | .12 | 4.09 | 1.29 | | .015 | .00 | 1.50 | TRAP | |
| 14570.000 | -186.142 | 4.342 | -181.800 | 1127.00 | 12.56 | 2.45 | -179.35 | .00 | 4.52 | 20.67 | 10.000 | 20.670 | .00 | 0 | .0 |
| WALL EXIT | | | | | | | | | | | | | | | |
| 14570.000 | -186.142 | 4.620 | -181.522 | 1127.00 | 12.20 | 2.31 | -179.21 | .00 | 4.62 | 20.67 | 6.000 | 20.670 | .00 | 1 | .7 |
| 8.024 | .0025 | | | | | .0041 | .03 | 4.62 | 1.02 | 5.87 | .015 | .00 | .00 | BOX | |
| 14578.020 | -186.122 | 4.846 | -181.276 | 1127.00 | 11.63 | 2.10 | -179.18 | .00 | 4.62 | 20.67 | 6.000 | 20.670 | .00 | 1 | .7 |
| 32.563 | .0025 | | | | | .0037 | .12 | 4.85 | .95 | 5.87 | .015 | .00 | .00 | BOX | |
| 14610.590 | -186.041 | 5.082 | -180.959 | 1127.00 | 11.09 | 1.91 | -179.05 | .00 | 4.62 | 20.67 | 6.000 | 20.670 | .00 | 1 | .7 |
| 9.412 | .0025 | | | | | .0036 | .03 | 5.08 | .88 | 5.87 | .015 | .00 | .00 | BOX | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11-18-2013 Time: 8:44:17

CVWD
MDP
LINE D01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch | |
| 14620.000 | -186.017 | 5.123 | -180.894 | 1127.00 | 11.00 | 1.88 | -179.02 | .00 | 4.62 | 20.67 | 6.000 | 20.670 | .00 | 1 | .7 |
| WALL ENTRANCE | | | | | | | | | | | | | | | |
| 14620.000 | -186.017 | 5.676 | -180.341 | 1127.00 | 9.61 | 1.43 | -178.91 | .00 | 4.52 | 20.67 | 10.000 | 20.670 | .00 | 0 | .0 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TRANS STR | .0025 | | | | | .0013 | .04 | 5.68 | .71 | | .015 | .00 | .00 | RECTANG | | |
| 14650.000 | -185.942 | 6.300 | -179.642 | 1127.00 | 7.32 | .83 | -178.81 | .00 | 4.74 | 33.90 | 10.000 | 15.000 | 1.50 | 0 | .0 | |
| 9.440 | .0017 | | | | | .0008 | .01 | 6.30 | .60 | 5.22 | .015 | .00 | 1.50 | TRAP | | |
| 14659.440 | -185.926 | 6.288 | -179.638 | 1127.00 | 7.34 | .84 | -178.80 | .28 | 4.74 | 33.86 | 10.000 | 15.000 | 1.50 | 0 | .0 | |
| 167.111 | .0017 | | | | | .0009 | .15 | 6.57 | .61 | 5.24 | .015 | .00 | 1.50 | TRAP | | |
| 14826.550 | -185.646 | 6.075 | -179.571 | 1127.00 | 7.69 | .92 | -178.65 | .30 | 4.74 | 33.22 | 10.000 | 15.000 | 1.50 | 0 | .0 | |
| 16.048 | .0017 | | | | | .0010 | .02 | 6.38 | .65 | 5.24 | .015 | .00 | 1.50 | TRAP | | |
| 14842.600 | -185.619 | 6.055 | -179.564 | 1127.00 | 7.73 | .93 | -178.64 | .00 | 4.74 | 33.17 | 10.000 | 15.000 | 1.50 | 0 | .0 | |
| 178.491 | .0017 | | | | | .0010 | .19 | 6.06 | .65 | 5.24 | .015 | .00 | 1.50 | TRAP | | |
| 15021.090 | -185.320 | 5.849 | -179.471 | 1127.00 | 8.11 | 1.02 | -178.45 | .00 | 4.74 | 32.55 | 10.000 | 15.000 | 1.50 | 0 | .0 | |
| 200.846 | .0017 | | | | | .0012 | .24 | 5.85 | .69 | 5.24 | .015 | .00 | 1.50 | TRAP | | |
| 15221.940 | -184.983 | 5.648 | -179.335 | 1127.00 | 8.50 | 1.12 | -178.21 | .00 | 4.74 | 31.94 | 10.000 | 15.000 | 1.50 | 0 | .0 | |
| 255.385 | .0017 | | | | | .0014 | .35 | 5.65 | .74 | 5.24 | .015 | .00 | 1.50 | TRAP | | |
| 15477.320 | -184.554 | 5.453 | -179.101 | 1127.00 | 8.92 | 1.23 | -177.87 | .00 | 4.74 | 31.36 | 10.000 | 15.000 | 1.50 | 0 | .0 | |
| 497.095 | .0017 | | | | | .0015 | .77 | 5.45 | .78 | 5.24 | .015 | .00 | 1.50 | TRAP | | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11-18-2013 Time: 8:44:17

CVWD
MDP
LINE D01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 15974.420 | -183.720 | 5.264 | -178.456 | 1127.00 | 9.35 | 1.36 | -177.10 | .00 | 4.74 | 30.79 | 10.000 | 15.000 | 1.50 | 0 .0 |
| 472.537 | .0017 | | | | | .0017 | .78 | 5.26 | .83 | 5.24 | .015 | .00 | 1.50 | TRAP |
| 16446.950 | -182.928 | 5.238 | -177.689 | 1127.00 | 9.41 | 1.38 | -176.31 | .00 | 4.74 | 30.71 | 10.000 | 15.000 | 1.50 | 0 .0 |
| 491.869 | .0017 | | | | | .0017 | .82 | 5.24 | .84 | 5.24 | .015 | .00 | 1.50 | TRAP |
| 16938.820 | -182.102 | 5.238 | -176.864 | 1127.00 | 9.41 | 1.38 | -175.49 | .00 | 4.74 | 30.71 | 10.000 | 15.000 | 1.50 | 0 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |
| 16938.820 | -182.102 | 4.273 | -177.830 | 1127.00 | 12.32 | 2.36 | -175.47 | .00 | 4.74 | 27.82 | 10.000 | 15.000 | 1.50 | 0 .0 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.504 | .0017 | | | | | .0036 | .03 | 4.27 | 1.20 | 5.24 | .015 | .00 | 1.50 | TRAP |
| 16946.330 | -182.090 | 4.244 | -177.846 | 1127.00 | 12.43 | 2.40 | -175.45 | .00 | 4.74 | 27.73 | 10.000 | 15.000 | 1.50 | 0 .0 |
| 38.674 | .0017 | | | | | .0039 | .15 | 4.24 | 1.21 | 5.24 | .015 | .00 | 1.50 | TRAP |
| 16985.000 | -182.025 | 4.091 | -177.934 | 1127.00 | 13.04 | 2.64 | -175.30 | .00 | 4.74 | 27.27 | 10.000 | 15.000 | 1.50 | 0 .0 |
| TRANS STR | .0025 | | | | | .0039 | .12 | 4.09 | 1.29 | | .015 | .00 | 1.50 | TRAP |
| 17015.000 | -181.950 | 4.342 | -177.608 | 1127.00 | 12.56 | 2.45 | -175.16 | .00 | 4.52 | 20.67 | 10.000 | 20.670 | .00 | 0 .0 |
| WALL | EXIT | | | | | | | | | | | | | |
| 17015.000 | -181.950 | 4.620 | -177.330 | 1127.00 | 12.20 | 2.31 | -175.02 | .00 | 4.62 | 20.67 | 6.000 | 20.670 | .00 | 1 .7 |
| 8.025 | .0025 | | | | | .0041 | .03 | 4.62 | 1.02 | 5.87 | .015 | .00 | .00 | BOX |
| 17023.030 | -181.930 | 4.846 | -177.084 | 1127.00 | 11.63 | 2.10 | -174.98 | .00 | 4.62 | 20.67 | 6.000 | 20.670 | .00 | 1 .7 |
| 32.564 | .0025 | | | | | .0037 | .12 | 4.85 | .95 | 5.87 | .015 | .00 | .00 | BOX |



CVWD
MDP
LINE D01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 17055.590 | -181.849 | 5.082 | -176.767 | 1127.00 | 11.09 | 1.91 | -174.86 | .00 | 4.62 | 20.67 | 6.000 | 20.670 | .00 | 1 .7 |
| 29.410 | .0025 | | | | | .0034 | .10 | 5.08 | .88 | 5.87 | .015 | .00 | .00 | BOX |
| 17085.000 | -181.775 | 5.195 | -176.580 | 1127.00 | 10.85 | 1.83 | -174.75 | .00 | 4.62 | 20.67 | 6.000 | 20.670 | .00 | 1 .7 |
| WALL | ENTRANCE | | | | | | | | | | | | | |
| 17085.000 | -181.775 | 5.712 | -176.063 | 1127.00 | 9.55 | 1.41 | -174.65 | .00 | 4.52 | 20.67 | 10.000 | 20.670 | .00 | 0 .0 |
| TRANS STR | .0025 | | | | | .0012 | .04 | 5.71 | .70 | | .015 | .00 | .00 | RECTANG |
| 17115.000 | -181.700 | 6.327 | -175.373 | 1127.00 | 7.27 | .82 | -174.55 | .00 | 4.74 | 33.98 | 10.000 | 15.000 | 1.50 | 0 .0 |
| 18.660 | .0028 | | | | | .0008 | .02 | 6.33 | .60 | 4.54 | .015 | .00 | 1.50 | TRAP |
| 17133.660 | -181.647 | 6.268 | -175.379 | 1127.00 | 7.37 | .84 | -174.54 | .71 | 4.74 | 33.81 | 10.000 | 15.000 | 1.50 | 0 .0 |
| 67.313 | .0028 | | | | | .0009 | .06 | 6.98 | .61 | 4.55 | .015 | .00 | 1.50 | TRAP |
| 17200.970 | -181.457 | 6.056 | -175.402 | 1127.00 | 7.73 | .93 | -174.47 | .76 | 4.74 | 33.17 | 10.000 | 15.000 | 1.50 | 0 .0 |
| 64.039 | .0028 | | | | | .0010 | .07 | 6.82 | .65 | 4.55 | .015 | .00 | 1.50 | TRAP |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17265.010 | -181.277 | 5.849 | -175.428 | 1127.00 | 8.10 | 1.02 | -174.41 | .82 | 4.74 | 32.55 | 10.000 | 15.000 | 1.50 | 0 .0 |
| 34.406 | .0028 | | | | | .0012 | .04 | 6.67 | .69 | 4.55 | .015 | .00 | 1.50 | TRAP |
| 17299.420 | -181.180 | 5.736 | -175.444 | 1127.00 | 8.32 | 1.08 | -174.37 | .00 | 4.74 | 32.21 | 10.000 | 15.000 | 1.50 | 0 .0 |
| .580 | .0034 | | | | | .0012 | .00 | 5.74 | .72 | 4.31 | .015 | .00 | 1.50 | TRAP |
| 17300.000 | -181.178 | 5.734 | -175.444 | 1127.00 | 8.33 | 1.08 | -174.37 | .00 | 4.74 | 32.20 | 10.000 | 15.000 | 1.50 | 0 .0 |
| JUNCT STR | .0028 | | | | | .0009 | .01 | 5.73 | .72 | | .015 | .00 | 1.50 | TRAP |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 17315.000 | -181.136 | 6.265 | -174.871 | 702.00 | 5.78 | .52 | -174.35 | .00 | 4.29 | 28.79 | 12.000 | 10.000 | 1.50 | 0 .0 |
| 66.932 | .0028 | | | | | .0006 | .04 | 6.26 | .50 | 4.20 | .015 | .00 | 1.50 | TRAP |
| 17381.930 | -180.947 | 6.066 | -174.881 | 702.00 | 6.06 | .57 | -174.31 | .00 | 4.29 | 28.20 | 12.000 | 10.000 | 1.50 | 0 .0 |
| 64.734 | .0028 | | | | | .0007 | .05 | 6.07 | .53 | 4.20 | .015 | .00 | 1.50 | TRAP |
| 17446.670 | -180.765 | 5.873 | -174.892 | 702.00 | 6.35 | .63 | -174.26 | .00 | 4.29 | 27.62 | 12.000 | 10.000 | 1.50 | 0 .0 |
| 62.521 | .0028 | | | | | .0008 | .05 | 5.87 | .56 | 4.20 | .015 | .00 | 1.50 | TRAP |
| 17509.190 | -180.589 | 5.685 | -174.904 | 702.00 | 6.66 | .69 | -174.21 | .00 | 4.29 | 27.06 | 12.000 | 10.000 | 1.50 | 0 .0 |
| 60.275 | .0028 | | | | | .0009 | .06 | 5.69 | .60 | 4.20 | .015 | .00 | 1.50 | TRAP |
| 17569.460 | -180.419 | 5.502 | -174.917 | 702.00 | 6.99 | .76 | -174.16 | .00 | 4.29 | 26.51 | 12.000 | 10.000 | 1.50 | 0 .0 |
| 57.969 | .0028 | | | | | .0011 | .06 | 5.50 | .63 | 4.20 | .015 | .00 | 1.50 | TRAP |
| 17627.430 | -180.255 | 5.324 | -174.931 | 702.00 | 7.33 | .83 | -174.10 | .00 | 4.29 | 25.97 | 12.000 | 10.000 | 1.50 | 0 .0 |
| 55.553 | .0028 | | | | | .0012 | .07 | 5.32 | .67 | 4.20 | .015 | .00 | 1.50 | TRAP |
| 17682.980 | -180.099 | 5.151 | -174.948 | 702.00 | 7.69 | .92 | -174.03 | .00 | 4.29 | 25.45 | 12.000 | 10.000 | 1.50 | 0 .0 |
| 52.953 | .0028 | | | | | .0014 | .07 | 5.15 | .72 | 4.20 | .015 | .00 | 1.50 | TRAP |
| 17735.940 | -179.949 | 4.982 | -174.967 | 702.00 | 8.06 | 1.01 | -173.96 | .00 | 4.29 | 24.95 | 12.000 | 10.000 | 1.50 | 0 .0 |
| 50.021 | .0028 | | | | | .0016 | .08 | 4.98 | .76 | 4.20 | .015 | .00 | 1.50 | TRAP |

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 17785.960 | -179.808 | 4.818 | -174.990 | 702.00 | 8.46 | 1.11 | -173.88 | .00 | 4.29 | 24.45 | 12.000 | 10.000 | 1.50 | 0 .0 |
| 46.443 | .0028 | | | | | .0018 | .08 | 4.82 | .81 | 4.20 | .015 | .00 | 1.50 | TRAP |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11-18-2013 Time: 8:44:17

CVWD
MDP
LINE D01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 17832.400 | -179.677 | 4.658 | -175.019 | 702.00 | 8.87 | 1.22 | -173.80 | .00 | 4.29 | 23.98 | 12.000 | 10.000 | 1.50 | 0 .0 |
| 41.420 | .0028 | | | | | .0020 | .08 | 4.66 | .86 | 4.20 | .015 | .00 | 1.50 | TRAP |
| 17873.820 | -179.561 | 4.503 | -175.057 | 702.00 | 9.30 | 1.34 | -173.71 | .00 | 4.29 | 23.51 | 12.000 | 10.000 | 1.50 | 0 .0 |
| 28.959 | .0028 | | | | | .0023 | .07 | 4.50 | .92 | 4.20 | .015 | .00 | 1.50 | TRAP |
| 17902.780 | -179.479 | 4.378 | -175.101 | 702.00 | 9.68 | 1.45 | -173.65 | .00 | 4.29 | 23.13 | 12.000 | 10.000 | 1.50 | 0 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |
| 17902.780 | -179.479 | 4.199 | -175.279 | 702.00 | 10.26 | 1.63 | -173.65 | .00 | 4.29 | 22.60 | 12.000 | 10.000 | 1.50 | 0 .0 |
| 1710.252 | .0028 | | | | | .0028 | 4.82 | 4.20 | 1.04 | 4.20 | .015 | .00 | 1.50 | TRAP |
| 19613.030 | -174.657 | 4.199 | -170.458 | 702.00 | 10.26 | 1.63 | -168.82 | .00 | 4.29 | 22.60 | 12.000 | 10.000 | 1.50 | 0 .0 |
| 31.967 | .0028 | | | | | .0027 | .09 | 4.20 | 1.04 | 4.20 | .015 | .00 | 1.50 | TRAP |
| 19645.000 | -174.567 | 4.289 | -170.278 | 702.00 | 9.96 | 1.54 | -168.74 | .00 | 4.29 | 22.87 | 12.000 | 10.000 | 1.50 | 0 .0 |
| JUNCT STR | .0028 | | | | | .0023 | .03 | 4.29 | 1.00 | | .015 | .00 | 1.50 | TRAP |
| 19660.000 | -174.525 | 4.606 | -169.919 | 610.00 | 8.88 | 1.22 | -168.69 | .00 | 4.31 | 21.82 | 10.000 | 8.000 | 1.50 | 0 .0 |
| 40.322 | .0028 | | | | | .0022 | .09 | 4.61 | .88 | 4.25 | .015 | .00 | 1.50 | TRAP |
| 19700.320 | -174.411 | 4.458 | -169.953 | 610.00 | 9.32 | 1.35 | -168.61 | .00 | 4.31 | 21.38 | 10.000 | 8.000 | 1.50 | 0 .0 |
| 23.586 | .0028 | | | | | .0024 | .06 | 4.46 | .94 | 4.25 | .015 | .00 | 1.50 | TRAP |
| 19723.910 | -174.345 | 4.368 | -169.977 | 610.00 | 9.60 | 1.43 | -168.55 | .00 | 4.31 | 21.10 | 10.000 | 8.000 | 1.50 | 0 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11-18-2013 Time: 8:44:17

CVWD
MDP
LINE D01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 19723.910 | -174.345 | 4.248 | -170.097 | 610.00 | 9.99 | 1.55 | -168.55 | .00 | 4.31 | 20.74 | 10.000 | 8.000 | 1.50 | 0 .0 |
| 2534.736 | .0028 | | | | | .0028 | 7.15 | 4.25 | 1.03 | 4.25 | .015 | .00 | 1.50 | TRAP |
| 22258.640 | -167.198 | 4.248 | -162.951 | 610.00 | 9.99 | 1.55 | -161.40 | .00 | 4.31 | 20.74 | 10.000 | 8.000 | 1.50 | 0 .0 |
| 21.355 | .0028 | | | | | .0027 | .06 | 4.25 | 1.03 | 4.25 | .015 | .00 | 1.50 | TRAP |
| 22280.000 | -167.138 | 4.308 | -162.830 | 610.00 | 9.79 | 1.49 | -161.34 | .00 | 4.31 | 20.92 | 10.000 | 8.000 | 1.50 | 0 .0 |
| TRANS STR | .0028 | | | | | .0025 | .07 | 4.31 | 1.00 | | .015 | .00 | 1.50 | TRAP |
| 22310.000 | -167.054 | 4.442 | -162.612 | 610.00 | 9.36 | 1.36 | -161.25 | .00 | 3.77 | 14.67 | 10.000 | 14.670 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 22310.000 | -167.054 | 4.442 | -162.612 | 610.00 | 9.81 | 1.49 | -161.12 | .00 | 3.89 | 14.67 | 6.000 | 14.670 | .00 | 1 .7 |
| 50.000 | .0028 | | | | | .0037 | .18 | 4.44 | .84 | 5.09 | .015 | .00 | .00 | BOX |
| 22360.000 | -166.913 | 4.586 | -162.327 | 610.00 | 9.50 | 1.40 | -160.93 | .00 | 3.89 | 14.67 | 6.000 | 14.670 | .00 | 1 .7 |
| WALL ENTRANCE | | | | | | | | | | | | | | |
| 22360.000 | -166.913 | 5.046 | -161.867 | 610.00 | 8.24 | 1.05 | -160.81 | .00 | 3.77 | 14.67 | 10.000 | 14.670 | .00 | 0 .0 |
| JUNCT STR | .0028 | | | | | .0014 | .04 | 5.05 | .65 | | .015 | .00 | .00 | RECTANG |
| ---------- WARNING - Junction Analysis - Change in Channel Type ---------- | | | | | | | | | | | | | | |
| 22390.000 | -166.828 | 5.287 | -161.541 | 519.00 | 7.05 | .77 | -160.77 | .00 | 4.33 | 21.86 | 10.000 | 6.000 | 1.50 | 0 .0 |
| 10.000 | .0028 | | | | | .0012 | .01 | 5.29 | .68 | 4.31 | .015 | .00 | 1.50 | TRAP |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11-18-2013 Time: 8:44:17

CVWD
MDP
LINE D01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 22400.000 | -166.800 | 5.258 | -161.542 | 519.00 | 7.11 | .78 | -160.76 | .00 | 4.33 | 21.77 | 10.000 | 6.000 | 1.50 | 0 .0 |

```
                                                                                                                E01
T1 CVWD                                                                                                                    0
T2 MDP
T3 LINE E01
SO   6467.880-220.016  1       .015                  -209.500
R    8800.000-218.596  1       .015
JX   8815.000-218.587  1 18    .015   252.000          -217.587          45.0
R   10597.320-217.502  1       .015
R   11030.050-217.238  1       .015                                     39.168     .000 0
R   11400.000-217.013  1       .015
JX  11440.000-216.913  2 27    .015    40.000          -215.913          45.0
WX  11440.000-216.913  3
R   11750.000-216.138  3       .015
WE  11750.000-216.138  2       .500
TS  11790.000-216.038  4       .015                                                .000 0
R   11912.320-215.892  4       .015
R   12479.820-215.216  4       .015                                     40.540
R   12520.000-212.000  4       .015
R   14400.000-208.277  4       .015
JX  14420.000-208.238 32 27    .015    39.000          -207.238          45.0
R   16960.000-203.208 32       .015
JX  17000.000-203.154  5 11    .015   342.000          -202.154          45.0
WX  17000.000-203.154  6
R   18120.000-200.354  6       .015
R   18160.000-200.254  6       .015
R   18785.000-198.692  6       .015
WE  18785.000-198.692  5       .500
JX  18825.000-198.518  7 23    .015  3937.000          -198.518          45.0
TS  19000.000-197.758  8       .015
R   19730.000-194.590  8       .015
JX  19750.000-194.504 31 18    .015   366.000          -193.504          45.0
R   21248.000-188.000 31       .015
R   22385.000-183.806 31       .015
JX  22400.000-183.750  9 18    .015   338.000          -182.750          45.0
R   25070.000-172.000  9       .015
JX  25085.000-171.890 13 18    .015   366.000          -170.993          45.0
R   27722.340-153.254 13       .015
JX  27747.340-153.078 16 18    .015   443.000          -152.264          45.0
WX  27747.340-153.078 17
R   27827.340-152.513 17       .015
WE  27827.340-152.513 16       .500
TS  27845.470-152.385 15       .015
R   30500.000-133.000 15       .015
JX  30515.000-132.792 28 18    .013   444.000          -130.137          45.0
WX  30515.000-132.792 25
R   31500.000-122.000 25       .013
R   33110.000-093.032 25       .013

JX  33125.000-091.788 26 27    .013   225.000           -91.788          45.0
R   34485.000-070.738 26       .013
JX  34500.000-068.995 29 27    .013   226.000           -71.495          45.0
R   35800.000-049.418 29       .013
WE  35800.000-049.418 30       .500
SH  35800.000-049.418 30       .015
CD   1  1   0    .000  10.000  150.000 1.500 1.500   .00
CD   2  2   0    .000  10.000  146.030  .000  .000   .00
CD   3  3   9    .670   7.000  146.030  .000  .000   .00
CD   4  1   0    .000  10.000  120.000 1.500 1.500   .00
CD   5  2   0    .000  10.000  126.030  .000  .000   .00
CD   6  3   9    .670   6.000  126.030  .000  .000   .00
CD   7  1   0    .000  10.000   70.000 1.500 1.500   .00
CD   8  1   0    .000  10.000   25.000 1.500 1.500   .00
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CD   9  1   0    .000  10.000   16.000 1.500 1.500   .00
CD  10  4   1           8.000
CD  11  4   1           6.000
CD  12  3   2    .670   6.000   31.340  .000  .000   .00
CD  13  1   0    .000  10.000   12.000 1.500 1.500   .00
CD  14  1   0    .000  10.000   10.000 1.500 1.500   .00
CD  15  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  16  2   0    .000  10.000   16.670  .000  .000   .00
CD  17  3   1    .670   6.000   16.670  .000  .000   .00
CD  18  4   1           5.000
CD  19  1   0           4.000   10.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   16.670  .000  .000   .00
CD  21  3   1    .670   6.000   16.670  .000  .000   .00
CD  22  3   1    .670   6.000   12.670  .000  .000   .00
CD  23  1   0    .000   6.000   30.000 1.500 1.500   .00
CD  24  2   0    .000  10.000   10.000  .000  .000   .00
CD  25  4   1           8.000
CD  26  4   1    .000   7.000
CD  27  4   1    .000   3.000
CD  28  2   0    .000   8.000    9.000  .000  .000   .00
CD  29  4   1    .000   5.500
CD  30  2   0    .000   8.000   10.000  .000  .000   .00
CD  31  1   0    .000   8.000   20.000 1.500 1.500   .00
CD  32  1   0    .000   8.000  110.000 1.500 1.500   .00
Q          298.000   .0
```

FILE: e01.WSW W S P G W - EDIT LISTING - Version 14.06 Date:11-21-2013 Time:10: 6:57

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 10.000 | 150.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 2 | 0 | .000 | 10.000 | 146.030 | | | .00 | | | | | | | | | | |
| CD | 3 | 3 | 9 | .670 | 7.000 | 146.030 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 4 | 1 | 0 | .000 | 10.000 | 120.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 5 | 2 | 0 | .000 | 10.000 | 126.030 | | | .00 | | | | | | | | | | |
| CD | 6 | 3 | 9 | .670 | 6.000 | 126.030 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 7 | 1 | 0 | .000 | 10.000 | 70.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 8 | 1 | 0 | .000 | 10.000 | 25.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 9 | 1 | 0 | .000 | 10.000 | 16.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 10 | 4 | 1 | | 8.000 | | | | | | | | | | | | | | |
| CD | 11 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 12 | 3 | 2 | .670 | 6.000 | 31.340 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 13 | 1 | 0 | .000 | 10.000 | 12.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 14 | 1 | 0 | .000 | 10.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 15 | 1 | 0 | .000 | 10.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 16 | 2 | 0 | .000 | 10.000 | 16.670 | | | .00 | | | | | | | | | | |
| CD | 17 | 3 | 1 | .670 | 6.000 | 16.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 18 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |
| CD | 19 | 1 | 0 | .000 | 4.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 20 | 2 | 0 | .000 | 10.000 | 16.670 | | | .00 | | | | | | | | | | |
| CD | 21 | 3 | 1 | .670 | 6.000 | 16.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 22 | 3 | 1 | .670 | 6.000 | 12.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 23 | 1 | 0 | .000 | 6.000 | 30.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 24 | 2 | 0 | .000 | 10.000 | 10.000 | | | .00 | | | | | | | | | | |
| CD | 25 | 4 | 1 | | 8.000 | | | | | | | | | | | | | | |
| CD | 26 | 4 | 1 | | 7.000 | | | | | | | | | | | | | | |
| CD | 27 | 4 | 1 | | 3.000 | | | | | | | | | | | | | | |
| CD | 28 | 2 | 0 | .000 | 8.000 | 9.000 | | | .00 | | | | | | | | | | |
| CD | 29 | 4 | 1 | | 5.500 | | | | | | | | | | | | | | |
| CD | 30 | 2 | 0 | .000 | 8.000 | 10.000 | | | .00 | | | | | | | | | | |
| CD | 31 | 1 | 0 | .000 | 8.000 | 20.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 32 | 1 | 0 | .000 | 8.000 | 110.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE E01

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 6467.880 | -220.016 | 1 | -209.500 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 8800.000 | -218.596 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8815.000 | -218.587 | 1 | 18 | 0 | .015 | 252.000 | .000 | -217.587 | .000 | 45.000 | .000 |

```
                                                                                                                RADIUS    ANGLE
                                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO   4 IS A REACH                *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                             10597.320 -217.502    1               .015                             .000     .000      .000     0
 ELEMENT NO   5 IS A REACH                *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                             11030.050 -217.238    1               .015                          633.006   39.168      .000     0
 ELEMENT NO   6 IS A REACH                *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                             11400.000 -217.013    1               .015                             .000     .000      .000     0
 ELEMENT NO   7 IS A JUNCTION             *         *     *     *           *                        *                    *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                             11440.000 -216.913    2    27     0   .015    40.000      .000  -215.913      .000  45.000     .000
                                                                                                                RADIUS    ANGLE
                                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO   8 IS A  WALL  EXIT          *
                    U/S DATA   STATION    INVERT  SECT
                             11440.000 -216.913    3
 ELEMENT NO   9 IS A REACH                *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                             11750.000 -216.138    3               .015                             .000     .000      .000     0
                                                        W S P G W                                                       PAGE NO   3
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  10 IS A  WALL  ENTRANCE        *
                    U/S DATA   STATION    INVERT  SECT              FP
                             11750.000 -216.138    2               .500
 ELEMENT NO  11 IS A TRANSITION           *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                            RADIUS   ANGLE
                             11790.000 -216.038    4               .015                             .000     .000
 ELEMENT NO  12 IS A REACH                *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                             11912.320 -215.892    4               .015                             .000     .000      .000     0
 ELEMENT NO  13 IS A REACH                *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                             12479.820 -215.216    4               .015                          802.056   40.540      .000     0
 ELEMENT NO  14 IS A REACH                *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                             12520.000 -212.000    4               .015                             .000     .000      .000     0
 ELEMENT NO  15 IS A REACH                *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                             14400.000 -208.277    4               .015                             .000     .000      .000     0
 ELEMENT NO  16 IS A JUNCTION             *         *     *     *           *                        *                    *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                             14420.000 -208.238   32    27     0   .015    39.000      .000  -207.238      .000  45.000     .000
                                                                                                                RADIUS    ANGLE
                                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  17 IS A REACH                *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                             16960.000 -203.208   32               .015                             .000     .000      .000     0
 ELEMENT NO  18 IS A JUNCTION             *         *     *     *           *                        *                    *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                             17000.000 -203.154    5    11     0   .015   342.000      .000  -202.154      .000  45.000     .000
                                                                                                                RADIUS    ANGLE
```

.000 .000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 19 IS A WALL EXIT *

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 17000.000 | -203.154 | 6 |



WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 20 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 18120.000 | -200.354 | 6 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 21 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 18160.000 | -200.254 | 6 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 22 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 18785.000 | -198.692 | 6 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 23 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 18785.000 | -198.692 | 5 | .500 |

ELEMENT NO 24 IS A JUNCTION * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 18825.000 | -198.518 | 7 | 23 | 0 | .015 | 3937.000 | .000 | -198.518 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 25 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 19000.000 | -197.758 | 8 | .015 | .000 | .000 |

ELEMENT NO 26 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 19730.000 | -194.590 | 8 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 27 IS A JUNCTION * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19750.000 | -194.504 | 31 | 18 | 0 | .015 | 366.000 | .000 | -193.504 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 28 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 21248.000 | -188.000 | 31 | .015 | .000 | .000 | .000 | 0 |



WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 29 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 22385.000 | -183.806 | 31 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 30 IS A JUNCTION * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 22400.000 | -183.750 | 9 | 18 | 0 | .015 | 338.000 | .000 | -182.750 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 31 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 25070.000 | -172.000 | 9 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 32 IS A JUNCTION * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 25085.000 | -171.890 | 13 | 18 | 0 | .015 | 366.000 | .000 | -170.993 | .000 | 45.000 | .000 |

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                                                                                                                RADIUS    ANGLE
                                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  33 IS A REACH                  *          *      *
                    U/S DATA   STATION    INVERT  SECT                N                            RADIUS    ANGLE     ANG PT  MAN H
                             27722.340 -153.254   13                .015                             .000     .000      .000     0
 ELEMENT NO  34 IS A JUNCTION               *          *      *      *                  *                *                 *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3         Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                             27747.340 -153.078   16    18     0   .015   443.000       .000  -152.264      .000  45.000     .000
                                                                                                                RADIUS    ANGLE
                                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  35 IS A  WALL  EXIT            *
                    U/S DATA   STATION    INVERT  SECT
                             27747.340 -153.078   17
                                                  W S P G W                                                                  PAGE NO   6
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  36 IS A REACH                  *          *      *
                    U/S DATA   STATION    INVERT  SECT                N                            RADIUS    ANGLE     ANG PT  MAN H
                             27827.340 -152.513   17                .015                             .000     .000      .000     0
 ELEMENT NO  37 IS A  WALL  ENTRANCE        *
                    U/S DATA   STATION    INVERT  SECT                FP
                             27827.340 -152.513   16                .500
 ELEMENT NO  38 IS A TRANSITION             *          *      *
                    U/S DATA   STATION    INVERT  SECT                N                            RADIUS   ANGLE
                             27845.470 -152.385   15                .015                             .000     .000
 ELEMENT NO  39 IS A REACH                  *          *      *
                    U/S DATA   STATION    INVERT  SECT                N                            RADIUS    ANGLE     ANG PT  MAN H
                             30500.000 -133.000   15                .015                             .000     .000      .000     0
 ELEMENT NO  40 IS A JUNCTION               *          *      *      *                  *                *                 *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3         Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                             30515.000 -132.792   28    18     0   .013   444.000       .000  -130.137      .000  45.000     .000
                                                                                                                RADIUS    ANGLE
                                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  41 IS A  WALL  EXIT            *
                    U/S DATA   STATION    INVERT  SECT
                             30515.000 -132.792   25
 ELEMENT NO  42 IS A REACH                  *          *      *
                    U/S DATA   STATION    INVERT  SECT                N                            RADIUS    ANGLE     ANG PT  MAN H
                             31500.000 -122.000   25                .013                             .000     .000      .000     0
 ELEMENT NO  43 IS A REACH                  *          *      *
                    U/S DATA   STATION    INVERT  SECT                N                            RADIUS    ANGLE     ANG PT  MAN H
                             33110.000  -93.032   25                .013                             .000     .000      .000     0
 ELEMENT NO  44 IS A JUNCTION               *          *      *      *                  *                *                 *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3         Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                             33125.000  -91.788   26    27     0   .013   225.000       .000   -91.788      .000  45.000     .000
                                                                                                                RADIUS    ANGLE
                                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
                                                  W S P G W                                                                  PAGE NO   7
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  45 IS A REACH                  *          *      *
                    U/S DATA   STATION    INVERT  SECT                N                            RADIUS    ANGLE     ANG PT  MAN H
                             34485.000  -70.738   26                .013                             .000     .000      .000     0
 ELEMENT NO  46 IS A JUNCTION               *          *      *      *                  *                *                 *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3         Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
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                                                                  e01
                          34500.000  -68.995   29    27     0   .013   226.000      .000   -71.495      .000  45.000      .000
                                                                                            RADIUS    ANGLE
                                                                                              .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  47 IS A REACH              *          *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          35800.000  -49.418   29              .013                            .000     .000      .000     0
 ELEMENT NO  48 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT              FP
                          35800.000  -49.418   30              .500
 ELEMENT NO  49 IS A SYSTEM HEADWORKS                 *                        *
                    U/S DATA   STATION    INVERT  SECT                                W S ELEV
                          35800.000  -49.418   30                                      .000
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CVWD
MDP
LINE E01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6467.880 | -220.016 | 10.516 | -209.500 | 7316.00 | 4.20 | .27 | -209.23 | .00 | 4.14 | 181.55 | 10.000 | 150.000 | 1.50 | 0 .0 |
| 826.614 | .0006 | | | | | .0001 | .08 | 10.52 | .24 | 6.00 | .015 | .00 | 1.50 | TRAP |
| 7294.494 | -219.513 | 10.067 | -209.445 | 7316.00 | 4.40 | .30 | -209.14 | .00 | 4.14 | 180.20 | 10.000 | 150.000 | 1.50 | 0 .0 |
| 811.610 | .0006 | | | | | .0001 | .09 | 10.07 | .26 | 6.00 | .015 | .00 | 1.50 | TRAP |
| 8106.104 | -219.018 | 9.637 | -209.382 | 7316.00 | 4.62 | .33 | -209.05 | .00 | 4.14 | 178.91 | 10.000 | 150.000 | 1.50 | 0 .0 |
| 693.896 | .0006 | | | | | .0001 | .09 | 9.64 | .27 | 6.00 | .015 | .00 | 1.50 | TRAP |
| 8800.000 | -218.596 | 9.278 | -209.318 | 7316.00 | 4.81 | .36 | -208.96 | .00 | 4.14 | 177.83 | 10.000 | 150.000 | 1.50 | 0 .0 |
| JUNCT STR | .0006 | | | | | .0001 | .00 | 9.28 | .29 | | .015 | .00 | 1.50 | TRAP |
| 8815.000 | -218.587 | 9.272 | -209.315 | 7064.00 | 4.65 | .34 | -208.98 | .00 | 4.04 | 177.82 | 10.000 | 150.000 | 1.50 | 0 .0 |
| 782.826 | .0006 | | | | | .0001 | .11 | 9.27 | .28 | 5.88 | .015 | .00 | 1.50 | TRAP |
| 9597.826 | -218.110 | 8.873 | -209.237 | 7064.00 | 4.87 | .37 | -208.87 | .00 | 4.04 | 176.62 | 10.000 | 150.000 | 1.50 | 0 .0 |
| 779.188 | .0006 | | | | | .0002 | .13 | 8.87 | .30 | 5.88 | .015 | .00 | 1.50 | TRAP |
| 10377.010 | -217.636 | 8.490 | -209.146 | 7064.00 | 5.11 | .41 | -208.74 | .00 | 4.04 | 175.47 | 10.000 | 150.000 | 1.50 | 0 .0 |
| 220.307 | .0006 | | | | | .0002 | .04 | 8.49 | .32 | 5.88 | .015 | .00 | 1.50 | TRAP |
| 10597.320 | -217.502 | 8.385 | -209.117 | 7064.00 | 5.18 | .42 | -208.70 | .13 | 4.04 | 175.15 | 10.000 | 150.000 | 1.50 | 0 .0 |
| 432.729 | .0006 | | | | | .0002 | .08 | 8.52 | .33 | 5.87 | .015 | .00 | 1.50 | TRAP |
| 11030.050 | -217.238 | 8.181 | -209.057 | 7064.00 | 5.32 | .44 | -208.62 | .00 | 4.04 | 174.54 | 10.000 | 150.000 | 1.50 | 0 .0 |
| 369.950 | .0006 | | | | | .0002 | .08 | 8.18 | .34 | 5.88 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE E01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11400.000 | -217.013 | 8.013 | -209.000 | 7064.00 | 5.44 | .46 | -208.54 | .00 | 4.04 | 174.04 | 10.000 | 150.000 | 1.50 | 0 | .0 | |
| JUNCT STR | .0025 | | | | | .0003 | .01 | 8.01 | .35 | | .015 | .00 | 1.50 | TRAP | | |
| | | | | WARNING - Junction Analysis - Change in Channel Type | | | | | | | | | | | | |
| 11440.000 | -216.913 | 7.794 | -209.119 | 7024.00 | 6.17 | .59 | -208.53 | .00 | 4.16 | 146.03 | 10.000 | 146.030 | .00 | 0 | .0 | |
| WALL | EXIT | | | | | | | | | | | | | | | |
| 11440.000 | -216.913 | 7.794 | -209.119 | 7024.00 | 7.17 | .80 | -208.32 | .00 | 4.28 | 146.03 | 7.000 | 146.030 | .00 | 9 | .7 | |
| 310.000 | .0025 | | | | | .0017 | .52 | 7.79 | .49 | 4.97 | .015 | .00 | .00 | BOX | | |
| 11750.000 | -216.138 | 7.544 | -208.594 | 7024.00 | 7.17 | .80 | -207.80 | .00 | 4.28 | 146.03 | 7.000 | 146.030 | .00 | 9 | .7 | |
| WALL | ENTRANCE | | | | | | | | | | | | | | | |
| 11750.000 | -216.138 | 7.871 | -208.267 | 7024.00 | 6.11 | .58 | -207.69 | .00 | 4.16 | 146.03 | 10.000 | 146.030 | .00 | 0 | .0 | |
| TRANS STR | .0025 | | | | | .0003 | .01 | 7.87 | .38 | | .015 | .00 | .00 | RECTANG | | |
| 11790.000 | -216.038 | 7.702 | -208.336 | 7024.00 | 6.93 | .75 | -207.59 | .00 | 4.65 | 143.10 | 10.000 | 120.000 | 1.50 | 0 | .0 | |
| 122.320 | .0012 | | | | | .0004 | .05 | 7.70 | .46 | 5.46 | .015 | .00 | 1.50 | TRAP | | |
| 11912.320 | -215.892 | 7.576 | -208.316 | 7024.00 | 7.06 | .77 | -207.54 | .16 | 4.65 | 142.73 | 10.000 | 120.000 | 1.50 | 0 | .0 | |
| 325.798 | .0012 | | | | | .0004 | .14 | 7.73 | .47 | 5.47 | .015 | .00 | 1.50 | TRAP | | |
| 12238.120 | -215.504 | 7.250 | -208.254 | 7024.00 | 7.40 | .85 | -207.40 | .17 | 4.65 | 141.75 | 10.000 | 120.000 | 1.50 | 0 | .0 | |
| 174.854 | .0012 | | | | | .0005 | .08 | 7.42 | .50 | 5.47 | .015 | .00 | 1.50 | TRAP | | |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 12412.970 | -215.296 | 7.083 | -208.212 | 7024.00 | 7.59 | .89 | -207.32 | .18 | 4.65 | 141.25 | 10.000 | 120.000 | 1.50 | 0 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |
| 12412.970 | -215.296 | 2.833 | -212.463 | 7024.00 | 19.95 | 6.18 | -206.28 | 1.14 | 4.65 | 128.50 | 10.000 | 120.000 | 1.50 | 0 .0 |
| 20.822 | .0012 | | | | | .0111 | .23 | 3.97 | 2.12 | 5.47 | .015 | .00 | 1.50 | TRAP |
| 12433.790 | -215.271 | 2.779 | -212.492 | 7024.00 | 20.35 | 6.43 | -206.06 | 1.18 | 4.65 | 128.34 | 10.000 | 120.000 | 1.50 | 0 .0 |
| 46.026 | .0012 | | | | | .0124 | .57 | 3.96 | 2.19 | 5.47 | .015 | .00 | 1.50 | TRAP |
| 12479.820 | -215.216 | 2.654 | -212.562 | 7024.00 | 21.35 | 7.08 | -205.49 | .00 | 4.65 | 127.96 | 10.000 | 120.000 | 1.50 | 0 .0 |
| 1.989 | .0800 | | | | | .0132 | .03 | 2.65 | 2.35 | 1.55 | .015 | .00 | 1.50 | TRAP |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12481.810 | -215.057 | 2.684 | -212.373 | 7024.00 | 21.10 | 6.91 | -205.46 | .00 | 4.65 | 128.05 | 10.000 | 120.000 | 1.50 | 0 | .0 |
| 7.374 | .0800 | | | | | .0120 | .09 | 2.68 | 2.31 | 1.55 | .015 | .00 | 1.50 | TRAP | |
| 12489.180 | -214.467 | 2.811 | -211.656 | 7024.00 | 20.12 | 6.29 | -205.37 | .00 | 4.65 | 128.43 | 10.000 | 120.000 | 1.50 | 0 | .0 |
| 6.292 | .0800 | | | | | .0103 | .06 | 2.81 | 2.15 | 1.55 | .015 | .00 | 1.50 | TRAP | |
| 12495.480 | -213.963 | 2.943 | -211.020 | 7024.00 | 19.18 | 5.71 | -205.31 | .00 | 4.65 | 128.83 | 10.000 | 120.000 | 1.50 | 0 | .0 |
| 5.349 | .0800 | | | | | .0088 | .05 | 2.94 | 2.01 | 1.55 | .015 | .00 | 1.50 | TRAP | |
| 12500.820 | -213.535 | 3.082 | -210.453 | 7024.00 | 18.29 | 5.19 | -205.26 | .00 | 4.65 | 129.24 | 10.000 | 120.000 | 1.50 | 0 | .0 |
| 4.518 | .0800 | | | | | .0076 | .03 | 3.08 | 1.87 | 1.55 | .015 | .00 | 1.50 | TRAP | |
| 12505.340 | -213.173 | 3.226 | -209.947 | 7024.00 | 17.44 | 4.72 | -205.22 | .00 | 4.65 | 129.68 | 10.000 | 120.000 | 1.50 | 0 | .0 |
| 3.779 | .0800 | | | | | .0065 | .02 | 3.23 | 1.74 | 1.55 | .015 | .00 | 1.50 | TRAP | |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 12509.120 | -212.871 | 3.378 | -209.493 | 7024.00 | 16.63 | 4.29 | -205.20 | .00 | 4.65 | 130.13 | 10.000 | 120.000 | 1.50 | 0 | .0 |
| 3.116 | .0800 | | | | | .0056 | .02 | 3.38 | 1.63 | 1.55 | .015 | .00 | 1.50 | TRAP | |
| 12512.240 | -212.621 | 3.536 | -209.086 | 7024.00 | 15.85 | 3.90 | -205.18 | .00 | 4.65 | 130.61 | 10.000 | 120.000 | 1.50 | 0 | .0 |
| 2.519 | .0800 | | | | | .0048 | .01 | 3.54 | 1.52 | 1.55 | .015 | .00 | 1.50 | TRAP | |
| 12514.760 | -212.420 | 3.701 | -208.719 | 7024.00 | 15.12 | 3.55 | -205.17 | .00 | 4.65 | 131.10 | 10.000 | 120.000 | 1.50 | 0 | .0 |
| 1.974 | .0800 | | | | | .0041 | .01 | 3.70 | 1.41 | 1.55 | .015 | .00 | 1.50 | TRAP | |
| 12516.730 | -212.262 | 3.874 | -208.388 | 7024.00 | 14.41 | 3.23 | -205.16 | .00 | 4.65 | 131.62 | 10.000 | 120.000 | 1.50 | 0 | .0 |
| 1.475 | .0800 | | | | | .0035 | .01 | 3.87 | 1.32 | 1.55 | .015 | .00 | 1.50 | TRAP | |
| 12518.200 | -212.144 | 4.054 | -208.090 | 7024.00 | 13.74 | 2.93 | -205.16 | .00 | 4.65 | 132.16 | 10.000 | 120.000 | 1.50 | 0 | .0 |
| 1.016 | .0800 | | | | | .0030 | .00 | 4.05 | 1.23 | 1.55 | .015 | .00 | 1.50 | TRAP | |
| 12519.220 | -212.063 | 4.242 | -207.820 | 7024.00 | 13.10 | 2.67 | -205.15 | .00 | 4.65 | 132.73 | 10.000 | 120.000 | 1.50 | 0 | .0 |
| .589 | .0800 | | | | | .0026 | .00 | 4.24 | 1.15 | 1.55 | .015 | .00 | 1.50 | TRAP | |
| 12519.810 | -212.015 | 4.439 | -207.576 | 7024.00 | 12.49 | 2.42 | -205.15 | .00 | 4.65 | 133.32 | 10.000 | 120.000 | 1.50 | 0 | .0 |
| .191 | .0800 | | | | | .0022 | .00 | 4.44 | 1.07 | 1.55 | .015 | .00 | 1.50 | TRAP | |
| 12520.000 | -212.000 | 4.646 | -207.354 | 7024.00 | 11.91 | 2.20 | -205.15 | .00 | 4.65 | 133.94 | 10.000 | 120.000 | 1.50 | 0 | .0 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24.132 | .0020 | | | | .0020 | .05 | 4.65 | 1.00 | 4.70 | .015 | .00 | 1.50 | TRAP | |
| 12544.130 | -211.952 | 4.699 | -207.253 | 7024.00 | 11.77 | 2.15 | -205.10 | .00 | 4.65 | 134.10 | 10.000 | 120.000 | 1.50 | 0 .0 |
| 1552.010 | .0020 | | | | .0020 | 3.07 | 4.70 | .98 | 4.70 | .015 | .00 | 1.50 | TRAP | |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 14096.140 | -208.879 | 4.699 | -204.180 | 7024.00 | 11.77 | 2.15 | -202.03 | .00 | 4.65 | 134.10 | 10.000 | 120.000 | 1.50 | 0 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |
| 14096.140 | -208.879 | 4.585 | -204.294 | 7024.00 | 12.07 | 2.26 | -202.03 | .00 | 4.65 | 133.76 | 10.000 | 120.000 | 1.50 | 0 .0 |
| 11.321 | .0020 | | | | .0022 | .02 | 4.59 | 1.02 | 4.70 | .015 | .00 | 1.50 | TRAP | |
| 14107.460 | -208.856 | 4.558 | -204.298 | 7024.00 | 12.15 | 2.29 | -202.01 | .00 | 4.65 | 133.67 | 10.000 | 120.000 | 1.50 | 0 .0 |
| 69.971 | .0020 | | | | .0024 | .17 | 4.56 | 1.03 | 4.70 | .015 | .00 | 1.50 | TRAP | |
| 14177.430 | -208.718 | 4.356 | -204.362 | 7024.00 | 12.74 | 2.52 | -201.84 | .00 | 4.65 | 133.07 | 10.000 | 120.000 | 1.50 | 0 .0 |
| 75.360 | .0020 | | | | .0028 | .21 | 4.36 | 1.10 | 4.70 | .015 | .00 | 1.50 | TRAP | |
| 14252.790 | -208.568 | 4.163 | -204.405 | 7024.00 | 13.36 | 2.77 | -201.63 | .00 | 4.65 | 132.49 | 10.000 | 120.000 | 1.50 | 0 .0 |
| 74.720 | .0020 | | | | .0032 | .24 | 4.16 | 1.18 | 4.70 | .015 | .00 | 1.50 | TRAP | |
| 14327.510 | -208.421 | 3.978 | -204.442 | 7024.00 | 14.02 | 3.05 | -201.39 | .00 | 4.65 | 131.93 | 10.000 | 120.000 | 1.50 | 0 .0 |
| 72.486 | .0020 | | | | .0037 | .27 | 3.98 | 1.27 | 4.70 | .015 | .00 | 1.50 | TRAP | |
| 14400.000 | -208.277 | 3.801 | -204.476 | 7024.00 | 14.70 | 3.36 | -201.12 | .00 | 4.65 | 131.40 | 10.000 | 120.000 | 1.50 | 0 .0 |
| JUNCT STR | .0019 | | | | .0030 | .06 | 3.80 | 1.36 | | .015 | .00 | 1.50 | TRAP | |
| 14420.000 | -208.238 | 4.891 | -203.347 | 6985.00 | 12.17 | 2.30 | -201.05 | .00 | 4.89 | 124.67 | 8.000 | 110.000 | 1.50 | 0 .0 |
| 18.585 | .0020 | | | | .0020 | .04 | 4.89 | 1.00 | 4.93 | .015 | .00 | 1.50 | TRAP | |
| 14438.580 | -208.201 | 4.930 | -203.271 | 6985.00 | 12.07 | 2.26 | -201.01 | .00 | 4.89 | 124.79 | 8.000 | 110.000 | 1.50 | 0 .0 |
| 2521.415 | .0020 | | | | .0020 | 4.99 | 4.93 | .99 | 4.93 | .015 | .00 | 1.50 | TRAP | |

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 16960.000 | -203.208 | 4.930 | -198.278 | 6985.00 | 12.07 | 2.26 | -196.02 | .00 | 4.89 | 124.79 | 8.000 | 110.000 | 1.50 | 0 .0 |
| JUNCT STR | .0013 | | | | | .0014 | .06 | 4.93 | .99 | | .015 | .00 | 1.50 | TRAP |
| | | | | WARNING - Junction Analysis - Change in Channel Type | | | | | | | | | | |
| 17000.000 | -203.154 | 5.948 | -197.206 | 6643.00 | 8.86 | 1.22 | -195.99 | .00 | 4.42 | 126.03 | 10.000 | 126.030 | .00 | 0 .0 |
| WALL | EXIT | | | | | | | | | | | | | |
| 17000.000 | -203.154 | 5.948 | -197.206 | 6643.00 | 9.31 | 1.34 | -195.86 | .00 | 4.57 | 126.03 | 6.000 | 126.030 | .00 | 9 .7 |
| 460.641 | .0025 | | | | | .0021 | .94 | 5.95 | .69 | 5.53 | .015 | .00 | .00 | BOX |
| | | | | WARNING - Flow depth near top of box conduit | | | | | | | | | | |
| 17460.640 | -202.002 | 5.672 | -196.331 | 6643.00 | 9.76 | 1.48 | -194.85 | .00 | 4.57 | 126.03 | 6.000 | 126.030 | .00 | 9 .7 |
| 659.359 | .0025 | | | | | .0023 | 1.54 | 5.67 | .74 | 5.53 | .015 | .00 | .00 | BOX |
| | | | | WARNING - Flow depth near top of box conduit | | | | | | | | | | |
| 18120.000 | -200.354 | 5.539 | -194.815 | 6643.00 | 9.99 | 1.55 | -193.26 | .00 | 4.57 | 126.03 | 6.000 | 126.030 | .00 | 9 .7 |
| 40.000 | .0025 | | | | | .0025 | .10 | 5.54 | .77 | 5.53 | .015 | .00 | .00 | BOX |
| | | | | WARNING - Flow depth near top of box conduit | | | | | | | | | | |



CVWD
MDP
LINE E01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 18160.000 | -200.254 | 5.537 | -194.717 | 6643.00 | 10.00 | 1.55 | -193.16 | .00 | 4.57 | 126.03 | 6.000 | 126.030 | .00 | 9 .7 |
| 593.297 | .0025 | | | | | .0025 | 1.47 | 5.54 | .77 | 5.53 | .015 | .00 | .00 | BOX |
| | | | | WARNING - Flow depth near top of box conduit | | | | | | | | | | |
| 18753.300 | -198.771 | 5.526 | -193.245 | 6643.00 | 10.02 | 1.56 | -191.69 | .00 | 4.57 | 126.03 | 6.000 | 126.030 | .00 | 9 .7 |
| 31.703 | .0025 | | | | | .0025 | .08 | 5.53 | .77 | 5.53 | .015 | .00 | .00 | BOX |
| | | | | WARNING - Flow depth near top of box conduit | | | | | | | | | | |
| 18785.000 | -198.692 | 5.526 | -193.166 | 6643.00 | 10.02 | 1.56 | -191.61 | .00 | 4.57 | 126.03 | 6.000 | 126.030 | .00 | 9 .7 |
| WALL | ENTRANCE | | | | | | | | | | | | | |
| | | | | WARNING - Flow depth near top of box conduit | | | | | | | | | | |
| 18785.000 | -198.692 | 6.085 | -192.607 | 6643.00 | 8.66 | 1.17 | -191.44 | .00 | 4.42 | 126.03 | 10.000 | 126.030 | .00 | 0 .0 |
| JUNCT STR | .0043 | | | | | .0005 | .02 | 6.09 | .62 | | .015 | .00 | .00 | RECTANG |
| | | | | WARNING - Junction Analysis - Change in Channel Type | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18825.000 | -198.518 | 6.702 | -191.816 | 2706.00 | 5.04 | .40 | -191.42 | .00 | 3.50 | 90.11 | 10.000 | 70.000 | 1.50 | 0 .0 |
| TRANS STR | .0043 | | | | | | | 6.70 | .36 | | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE E01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 19000.000 | -197.758 | 5.145 | -192.613 | 2706.00 | 16.07 | 4.01 | -188.60 | .00 | 6.26 | 40.44 | 10.000 | 25.000 | 1.50 | 0 .0 |
| 118.926 | .0043 | | | | | .0043 | .52 | 5.15 | 1.39 | 5.15 | .015 | .00 | 1.50 | TRAP |
| 19118.930 | -197.242 | 5.145 | -192.097 | 2706.00 | 16.07 | 4.01 | -188.08 | .00 | 6.26 | 40.44 | 10.000 | 25.000 | 1.50 | 0 .0 |
| 611.074 | .0043 | | | | | .0043 | 2.60 | 5.15 | 1.39 | 5.15 | .015 | .00 | 1.50 | TRAP |
| 19730.000 | -194.590 | 5.205 | -189.385 | 2706.00 | 15.85 | 3.90 | -185.49 | .00 | 6.26 | 40.62 | 10.000 | 25.000 | 1.50 | 0 .0 |
| JUNCT STR | .0043 | | | | | .0043 | .09 | 5.21 | 1.36 | | .015 | .00 | 1.50 | TRAP |
| 19750.000 | -194.504 | 5.288 | -189.216 | 2340.00 | 15.84 | 3.90 | -185.32 | .00 | 6.36 | 35.86 | 8.000 | 20.000 | 1.50 | 0 .0 |
| 525.680 | .0043 | | | | | .0043 | 2.28 | 5.29 | 1.38 | 5.29 | .015 | .00 | 1.50 | TRAP |
| 20275.680 | -192.222 | 5.288 | -186.934 | 2340.00 | 15.84 | 3.90 | -183.04 | .00 | 6.36 | 35.86 | 8.000 | 20.000 | 1.50 | 0 .0 |
| 594.354 | .0043 | | | | | .0043 | 2.54 | 5.29 | 1.38 | 5.29 | .015 | .00 | 1.50 | TRAP |
| 20870.030 | -189.641 | 5.330 | -184.311 | 2340.00 | 15.68 | 3.82 | -180.49 | .00 | 6.36 | 35.99 | 8.000 | 20.000 | 1.50 | 0 .0 |
| 377.967 | .0043 | | | | | .0040 | 1.49 | 5.33 | 1.36 | 5.29 | .015 | .00 | 1.50 | TRAP |
| 21248.000 | -188.000 | 5.530 | -182.470 | 2340.00 | 14.95 | 3.47 | -179.00 | .00 | 6.36 | 36.59 | 8.000 | 20.000 | 1.50 | 0 .0 |
| 642.197 | .0037 | | | | | .0037 | 2.37 | 5.53 | 1.27 | 5.53 | .015 | .00 | 1.50 | TRAP |
| 21890.200 | -185.631 | 5.530 | -180.101 | 2340.00 | 14.95 | 3.47 | -176.63 | .00 | 6.36 | 36.59 | 8.000 | 20.000 | 1.50 | 0 .0 |
| 494.803 | .0037 | | | | | .0036 | 1.77 | 5.53 | 1.27 | 5.53 | .015 | .00 | 1.50 | TRAP |
| 22385.000 | -183.806 | 5.619 | -178.187 | 2340.00 | 14.65 | 3.33 | -174.85 | .00 | 6.36 | 36.86 | 8.000 | 20.000 | 1.50 | 0 .0 |
| JUNCT STR | .0037 | | | | | .0039 | .06 | 5.62 | 1.24 | | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE E01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 22400.000 | -183.750 | 5.353 | -178.397 | 2002.00 | 15.56 | 3.76 | -174.64 | .00 | 6.39 | 32.06 | 10.000 | 16.000 | 1.50 | 0 .0 |
| 1299.258 | .0044 | | | | | .0044 | 5.72 | 5.35 | 1.37 | 5.35 | .015 | .00 | 1.50 | TRAP |
| 23699.260 | -178.032 | 5.353 | -172.679 | 2002.00 | 15.56 | 3.76 | -168.92 | .00 | 6.39 | 32.06 | 10.000 | 16.000 | 1.50 | 0 .0 |
| 555.938 | .0044 | | | | | .0044 | 2.45 | 5.35 | 1.37 | 5.35 | .015 | .00 | 1.50 | TRAP |
| 24255.200 | -175.586 | 5.350 | -170.236 | 2002.00 | 15.58 | 3.77 | -166.47 | .00 | 6.39 | 32.05 | 10.000 | 16.000 | 1.50 | 0 .0 |
| 582.275 | .0044 | | | | | .0047 | 2.75 | 5.35 | 1.37 | 5.35 | .015 | .00 | 1.50 | TRAP |
| 24837.470 | -173.023 | 5.162 | -167.861 | 2002.00 | 16.34 | 4.14 | -163.72 | .00 | 6.39 | 31.49 | 10.000 | 16.000 | 1.50 | 0 .0 |
| 232.529 | .0044 | | | | | .0054 | 1.25 | 5.16 | 1.46 | 5.35 | .015 | .00 | 1.50 | TRAP |
| 25070.000 | -172.000 | 4.979 | -167.021 | 2002.00 | 17.13 | 4.56 | -162.46 | .00 | 6.39 | 30.94 | 10.000 | 16.000 | 1.50 | 0 .0 |
| JUNCT STR | .0073 | | | | | .0064 | .10 | 4.98 | 1.55 | | .015 | .00 | 1.50 | TRAP |
| 25085.000 | -171.890 | 4.783 | -167.107 | 1636.00 | 17.84 | 4.94 | -162.16 | .00 | 6.37 | 26.35 | 10.000 | 12.000 | 1.50 | 0 .0 |
| 1308.523 | .0071 | | | | | .0071 | 9.25 | 4.78 | 1.69 | 4.78 | .015 | .00 | 1.50 | TRAP |
| 26393.520 | -162.644 | 4.783 | -157.861 | 1636.00 | 17.84 | 4.94 | -152.92 | .00 | 6.37 | 26.35 | 10.000 | 12.000 | 1.50 | 0 .0 |
| 653.395 | .0071 | | | | | .0069 | 4.50 | 4.78 | 1.69 | 4.78 | .015 | .00 | 1.50 | TRAP |
| 27046.920 | -158.027 | 4.848 | -153.179 | 1636.00 | 17.51 | 4.76 | -148.42 | .00 | 6.37 | 26.54 | 10.000 | 12.000 | 1.50 | 0 .0 |
| 342.875 | .0071 | | | | | .0063 | 2.16 | 4.85 | 1.65 | 4.78 | .015 | .00 | 1.50 | TRAP |
| 27389.790 | -155.604 | 5.018 | -150.586 | 1636.00 | 16.70 | 4.33 | -146.26 | .00 | 6.37 | 27.05 | 10.000 | 12.000 | 1.50 | 0 .0 |
| 141.746 | .0071 | | | | | .0055 | .78 | 5.02 | 1.55 | 4.78 | .015 | .00 | 1.50 | TRAP |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11-21-2013 Time:10: 7:10

CVWD
MDP
LINE E01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 27531.540 | -154.602 | 5.193 | -149.409 | 1636.00 | 15.92 | 3.94 | -145.47 | .00 | 6.37 | 27.58 | 10.000 | 12.000 | 1.50 | 0 .0 |
| 80.033 | .0071 | | | | | .0048 | .39 | 5.19 | 1.45 | 4.78 | .015 | .00 | 1.50 | TRAP |
| 27611.570 | -154.037 | 5.373 | -148.664 | 1636.00 | 15.18 | 3.58 | -145.09 | .00 | 6.37 | 28.12 | 10.000 | 12.000 | 1.50 | 0 .0 |
| 49.746 | .0071 | | | | | .0043 | .21 | 5.37 | 1.37 | 4.78 | .015 | .00 | 1.50 | TRAP |
| 27661.320 | -153.685 | 5.558 | -148.127 | 1636.00 | 14.47 | 3.25 | -144.87 | .00 | 6.37 | 28.67 | 10.000 | 12.000 | 1.50 | 0 .0 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31.535 | .0071 | | | | .0037 | .12 | 5.56 | 1.28 | 4.78 | .015 | .00 | 1.50 | TRAP | | |
| 27692.850 | -153.462 | 5.749 | -147.714 | 1636.00 | 13.80 | 2.96 | -144.76 | .00 | 6.37 | 29.25 | 10.000 | 12.000 | 1.50 | 0 | .0 |
| 19.232 | .0071 | | | | .0033 | .06 | 5.75 | 1.21 | 4.78 | .015 | .00 | 1.50 | TRAP | | |
| 27712.080 | -153.326 | 5.945 | -147.382 | 1636.00 | 13.16 | 2.69 | -144.69 | .00 | 6.37 | 29.83 | 10.000 | 12.000 | 1.50 | 0 | .0 |
| 10.256 | .0071 | | | | .0029 | .03 | 5.94 | 1.14 | 4.78 | .015 | .00 | 1.50 | TRAP | | |
| 27722.340 | -153.254 | 6.146 | -147.108 | 1636.00 | 12.55 | 2.44 | -144.66 | .00 | 6.37 | 30.44 | 10.000 | 12.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0070 | | | | .0047 | .12 | 6.15 | 1.07 | | .015 | .00 | 1.50 | TRAP | | |

---------- WARNING - Junction Analysis - Change in Channel Type ----------

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27747.340 | -153.078 | 4.374 | -148.704 | 1193.00 | 16.36 | 4.16 | -144.55 | .00 | 5.42 | 16.67 | 10.000 | 16.670 | .00 | 0 | .0 |
| WALL | EXIT | | | | | | | | | | | | | | |
| 27747.340 | -153.078 | 4.628 | -148.450 | 1193.00 | 16.11 | 4.03 | -144.42 | .00 | 5.57 | 16.67 | 6.000 | 16.670 | .00 | 1 | .7 |
| 22.990 | .0071 | | | | .0098 | .22 | 4.63 | 1.35 | 5.20 | .015 | .00 | .00 | BOX | | |



CVWD
MDP
LINE E01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 27770.330 | -152.916 | 4.549 | -148.367 | 1193.00 | 16.39 | 4.17 | -144.19 | .00 | 5.57 | 16.67 | 6.000 | 16.670 | .00 | 1 | .7 |
| 57.010 | .0071 | | | | .0107 | .61 | 4.55 | 1.38 | 5.20 | .015 | .00 | .00 | BOX | | |
| 27827.340 | -152.513 | 4.337 | -148.176 | 1193.00 | 17.19 | 4.59 | -143.59 | .00 | 5.57 | 16.67 | 6.000 | 16.670 | .00 | 1 | .7 |
| WALL | ENTRANCE | | | | | | | | | | | | | | |
| 27827.340 | -152.513 | 3.782 | -148.731 | 1193.00 | 18.92 | 5.56 | -143.17 | .00 | 5.42 | 16.67 | 10.000 | 16.670 | .00 | 0 | .0 |
| TRANS STR | .0071 | | | | .0088 | .16 | 3.78 | 1.71 | | .015 | .00 | .00 | RECTANG | | |
| 27845.470 | -152.385 | 5.115 | -147.270 | 1193.00 | 17.06 | 4.52 | -142.75 | .00 | 6.58 | 21.34 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 1435.158 | .0073 | | | | .0073 | 10.48 | 5.11 | 1.66 | 5.11 | .015 | .00 | 1.50 | TRAP | | |
| 29280.630 | -141.905 | 5.115 | -136.790 | 1193.00 | 17.06 | 4.52 | -132.27 | .00 | 6.58 | 21.34 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 594.477 | .0073 | | | | .0077 | 4.56 | 5.11 | 1.66 | 5.11 | .015 | .00 | 1.50 | TRAP | | |
| 29875.100 | -137.563 | 4.996 | -132.567 | 1193.00 | 17.69 | 4.86 | -127.71 | .00 | 6.58 | 20.99 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 257.322 | .0073 | | | | .0086 | 2.21 | 5.00 | 1.74 | 5.11 | .015 | .00 | 1.50 | TRAP | | |
| 30132.430 | -135.684 | 4.845 | -130.839 | 1193.00 | 18.56 | 5.35 | -125.49 | .00 | 6.58 | 20.54 | 10.000 | 6.000 | 1.50 | 0 | .0 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 156.254 | .0073 | | | | .0098 | 1.53 | 4.85 | 1.85 | 5.11 | .015 | .00 | 1.50 | TRAP | | |
| 30288.680 | -134.543 | 4.698 | -129.845 | 1193.00 | 19.46 | 5.88 | -123.96 | .00 | 6.58 | 20.09 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 116.420 | .0073 | | | | .0111 | 1.29 | 4.70 | 1.96 | 5.11 | .015 | .00 | 1.50 | TRAP | | |
| 30405.100 | -133.693 | 4.555 | -129.138 | 1193.00 | 20.41 | 6.47 | -122.67 | .00 | 6.58 | 19.66 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 94.900 | .0073 | | | | .0126 | 1.20 | 4.55 | 2.09 | 5.11 | .015 | .00 | 1.50 | TRAP | | |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 30500.000 | -133.000 | 4.415 | -128.585 | 1193.00 | 21.41 | 7.12 | -121.47 | .00 | 6.58 | 19.24 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0139 | | | | .0125 | .19 | 4.41 | 2.22 | | .013 | .00 | 1.50 | TRAP | | |
| | | | | WARNING - Junction Analysis - Change in Channel Type | | | | | | | | | | | |
| 30515.000 | -132.792 | 3.713 | -129.079 | 749.00 | 22.41 | 7.80 | -121.28 | .00 | 5.99 | 9.00 | 8.000 | 9.000 | .00 | 0 | .0 |
| WALL EXIT | | | | | | | | | | | | | | | |
| 30515.000 | -132.792 | 5.286 | -127.507 | 749.00 | 21.26 | 7.02 | -120.49 | .00 | 6.87 | 7.58 | 8.000 | .000 | .00 | 1 | .0 |
| 459.801 | .0110 | | | | .0119 | 5.46 | 5.29 | 1.74 | 5.34 | .013 | .00 | .00 | PIPE | | |
| 30974.800 | -127.754 | 5.098 | -122.656 | 749.00 | 22.16 | 7.62 | -115.03 | .00 | 6.87 | 7.69 | 8.000 | .000 | .00 | 1 | .0 |
| 241.029 | .0110 | | | | .0133 | 3.20 | 5.10 | 1.86 | 5.34 | .013 | .00 | .00 | PIPE | | |
| 31215.830 | -125.113 | 4.895 | -120.218 | 749.00 | 23.24 | 8.38 | -111.83 | .00 | 6.87 | 7.80 | 8.000 | .000 | .00 | 1 | .0 |
| 160.318 | .0110 | | | | .0150 | 2.40 | 4.90 | 2.01 | 5.34 | .013 | .00 | .00 | PIPE | | |
| 31376.150 | -123.357 | 4.703 | -118.654 | 749.00 | 24.37 | 9.22 | -109.43 | .00 | 6.87 | 7.88 | 8.000 | .000 | .00 | 1 | .0 |
| 123.850 | .0110 | | | | .0169 | 2.10 | 4.70 | 2.17 | 5.34 | .013 | .00 | .00 | PIPE | | |
| 31500.000 | -122.000 | 4.523 | -117.477 | 749.00 | 25.56 | 10.14 | -107.33 | .00 | 6.87 | 7.93 | 8.000 | .000 | .00 | 1 | .0 |
| 559.379 | .0180 | | | | .0180 | 10.07 | 4.52 | 2.34 | 4.52 | .013 | .00 | .00 | PIPE | | |
| 32059.380 | -111.935 | 4.523 | -107.413 | 749.00 | 25.56 | 10.14 | -97.27 | .00 | 6.87 | 7.93 | 8.000 | .000 | .00 | 1 | .0 |
| 709.922 | .0180 | | | | .0170 | 12.05 | 4.52 | 2.34 | 4.52 | .013 | .00 | .00 | PIPE | | |

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 32769.300 | -99.162 | 4.698 | -94.464 | 749.00 | 24.41 | 9.25 | -85.21 | .00 | 6.87 | 7.88 | 8.000 | .000 | .00 | 1 .0 |
| 220.406 | .0180 | | | | | .0150 | 3.32 | 4.70 | 2.18 | 4.52 | .013 | .00 | .00 | PIPE |
| 32989.710 | -95.196 | 4.889 | -90.307 | 749.00 | 23.27 | 8.41 | -81.90 | .00 | 6.87 | 7.80 | 8.000 | .000 | .00 | 1 .0 |
| 120.293 | .0180 | | | | | .0133 | 1.60 | 4.89 | 2.02 | 4.52 | .013 | .00 | .00 | PIPE |
| 33110.000 | -93.032 | 5.092 | -87.940 | 749.00 | 22.19 | 7.64 | -80.30 | .00 | 6.87 | 7.70 | 8.000 | .000 | .00 | 1 .0 |
| JUNCT STR | .0829 | | | | | .0140 | .21 | 5.09 | 1.87 | | .013 | .00 | .00 | PIPE |
| 33125.000 | -91.788 | 4.149 | -87.639 | 524.00 | 22.06 | 7.55 | -80.09 | .00 | 5.96 | 6.88 | 7.000 | .000 | .00 | 1 .0 |
| 368.250 | .0155 | | | | | .0155 | 5.70 | 4.15 | 2.09 | 4.15 | .013 | .00 | .00 | PIPE |
| 33493.250 | -86.088 | 4.149 | -81.939 | 524.00 | 22.06 | 7.55 | -74.39 | .00 | 5.96 | 6.88 | 7.000 | .000 | .00 | 1 .0 |
| 585.141 | .0155 | | | | | .0150 | 8.80 | 4.15 | 2.09 | 4.15 | .013 | .00 | .00 | PIPE |
| 34078.390 | -77.031 | 4.229 | -72.802 | 524.00 | 21.56 | 7.22 | -65.59 | .00 | 5.96 | 6.85 | 7.000 | .000 | .00 | 1 .0 |
| 281.148 | .0155 | | | | | .0138 | 3.87 | 4.23 | 2.02 | 4.15 | .013 | .00 | .00 | PIPE |
| 34359.540 | -72.680 | 4.403 | -68.277 | 524.00 | 20.55 | 6.56 | -61.72 | .00 | 5.96 | 6.76 | 7.000 | .000 | .00 | 1 .0 |
| 125.465 | .0155 | | | | | .0122 | 1.53 | 4.40 | 1.87 | 4.15 | .013 | .00 | .00 | PIPE |
| 34485.000 | -70.738 | 4.589 | -66.149 | 524.00 | 19.60 | 5.96 | -60.19 | .00 | 5.96 | 6.65 | 7.000 | .000 | .00 | 1 .0 |
| JUNCT STR | .1162 | | | | | .0133 | .20 | 4.59 | 1.72 | | .013 | .00 | .00 | PIPE |
| 34500.000 | -68.995 | 3.466 | -65.529 | 298.00 | 18.90 | 5.54 | -59.99 | .00 | 4.75 | 5.31 | 5.500 | .000 | .00 | 1 .0 |
| 568.789 | .0151 | | | | | .0151 | 8.57 | 3.47 | 1.93 | 3.47 | .013 | .00 | .00 | PIPE |



CVWD
MDP
LINE E01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 35068.790 | -60.429 | 3.466 | -56.964 | 298.00 | 18.90 | 5.54 | -51.42 | .00 | 4.75 | 5.31 | 5.500 | .000 | .00 | 1 .0 |
| 424.797 | .0151 | | | | | .0144 | 6.10 | 3.47 | 1.93 | 3.47 | .013 | .00 | .00 | PIPE |
| 35493.590 | -54.032 | 3.583 | -50.449 | 298.00 | 18.18 | 5.13 | -45.32 | .00 | 4.75 | 5.24 | 5.500 | .000 | .00 | 1 .0 |

e01

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 144.902 | .0151 | | | | | .0129 | 1.87 | 3.58 | 1.81 | 3.47 | .013 | .00 | .00 | PIPE | | | | |
| 35638.490 | -51.850 | 3.738 | -48.112 | 298.00 | 17.33 | 4.66 | -43.45 | .00 | 4.75 | 5.13 | 5.500 | .000 | .00 | 1 | .0 | | | |
| 72.695 | .0151 | | | | | .0115 | .84 | 3.74 | 1.67 | 3.47 | .013 | .00 | .00 | PIPE | | | | |
| 35711.190 | -50.755 | 3.903 | -46.852 | 298.00 | 16.53 | 4.24 | -42.61 | .00 | 4.75 | 4.99 | 5.500 | .000 | .00 | 1 | .0 | | | |
| 42.891 | .0151 | | | | | .0103 | .44 | 3.90 | 1.53 | 3.47 | .013 | .00 | .00 | PIPE | | | | |
| 35754.080 | -50.110 | 4.083 | -46.026 | 298.00 | 15.76 | 3.85 | -42.17 | .00 | 4.75 | 4.81 | 5.500 | .000 | .00 | 1 | .0 | | | |
| 26.406 | .0151 | | | | | .0092 | .24 | 4.08 | 1.40 | 3.47 | .013 | .00 | .00 | PIPE | | | | |
| 35780.480 | -49.712 | 4.279 | -45.433 | 298.00 | 15.02 | 3.50 | -41.93 | .00 | 4.75 | 4.57 | 5.500 | .000 | .00 | 1 | .0 | | | |
| 14.609 | .0151 | | | | | .0083 | .12 | 4.28 | 1.27 | 3.47 | .013 | .00 | .00 | PIPE | | | | |
| 35795.090 | -49.492 | 4.499 | -44.993 | 298.00 | 14.32 | 3.19 | -41.81 | .00 | 4.75 | 4.24 | 5.500 | .000 | .00 | 1 | .0 | | | |
| 4.906 | .0151 | | | | | .0076 | .04 | 4.50 | 1.14 | 3.47 | .013 | .00 | .00 | PIPE | | | | |
| 35800.000 | -49.418 | 4.753 | -44.665 | 298.00 | 13.65 | 2.90 | -41.77 | .00 | 4.75 | 3.77 | 5.500 | .000 | .00 | 1 | .0 | | | |
| WALL | ENTRANCE | | | | | | | | | | | | | | | | | |
| 35800.000 | -49.418 | 9.811 | -39.607 | 298.00 | 3.04 | .14 | -39.46 | .00 | 3.02 | 10.00 | 8.000 | 10.000 | .00 | 0 | .0 | | | |

```
T1 CVWD                                                                                                  0
T2 MDP
T3 LINE E01-01
SO   1200.000-200.000  1      .015               -194.717
R    1500.000-195.550  1      .015
WE   1500.000-195.550  2      .200
TS   1530.000-195.446  3      .015                                    00.000    .000 0
R    6285.000-186.667  3      .015
JX   6300.000-186.646  5 11   .015   473.000         -185.646         30.0
R    9315.000-182.397  5      .015
JX   9365.000-181.827  7  6   .015  1684.000         -182.327         45.0
R    9400.490-181.705  7      .015
R    9815.240-180.277  7      .015                                    30.292
R   11722.080-173.712  7      .015                                   -27.236
R   12305.000-171.705  7      .015
TS  12335.000-171.596 14      .015
WX  12335.000-171.596 15
R   12455.000-170.663 15      .015
WE  12455.000-170.663 14      .500
TS  12485.000-170.554  7      .015
R   12500.000-170.500  7      .015
R   12981.470-169.549  7      .015
R   14377.390-165.341  7      .015                                    16.549
R   14980.000-163.524  7      .015
JX  15000.000-163.464  8  4   .015  399.000         -161.464         45.0
R   18083.390-157.710  8      .015
R   18649.640-156.654  8      .015                                    35.577
R   19000.000-156.000  8      .015
R   19030.000-155.937  8      .015
JX  19045.000-155.546  9  4   .015  249.000         -154.546         45.0
WX  19045.000-155.546 10
R   19115.000-153.719 10      .015
WE  19115.000-153.719  9      .500
JX  19130.000-153.327  8 11   .015  420.000         -152.327         45.0
TS  19220.000-150.978 12      .015
R   21849.000-148.500 12      .015
SH  21849.000-148.500 12      .015
CD   1  3   4    .670   6.000   62.680  .000  .000   .00
CD   2  2   0    .000   9.000   62.680  .000  .000   .00
CD   3  1   0    .000   9.000   55.000 1.500 1.500   .00
CD   4  4   1           5.000
CD   5  1   0    .000   9.000   47.000 1.500 1.500   .00
CD   6  1   0    .000   9.000   17.000 1.500 1.500   .00
CD   7  1   0    .000   9.000   16.000 1.500 1.500   .00
CD   8  1   0    .000   9.000   10.000 1.500 1.500   .00
CD   9  2   0    .000   9.000   16.670  .000  .000   .00
CD  10  3   1    .670   6.000   16.670  .000  .000   .00
CD  11  4   1           6.000
CD  12  1   0    .000   9.000    6.000 1.500 1.500   .00
CD  13  1   0    .000   9.000    8.000 1.500 1.500   .00
CD  14  2   0    .000   9.000   24.670  .000  .000   .00
CD  15  3   1    .670   6.000   24.670  .000  .000   .00

Q          459.000   .0
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FILE: E01-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 8-12-2013 Time: 2:26:25

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 3 | 4 | .670 | 6.000 | 62.680 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 2 | 2 | 0 | .000 | 9.000 | 62.680 | | | .00 | | | | | | | | | | |
| CD | 3 | 1 | 0 | .000 | 9.000 | 55.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 4 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |
| CD | 5 | 1 | 0 | .000 | 9.000 | 47.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 6 | 1 | 0 | .000 | 9.000 | 17.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 7 | 1 | 0 | .000 | 9.000 | 16.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 8 | 1 | 0 | .000 | 9.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 9 | 2 | 0 | .000 | 9.000 | 16.670 | | | .00 | | | | | | | | | | |
| CD | 10 | 3 | 1 | .670 | 6.000 | 16.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 11 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 12 | 1 | 0 | .000 | 9.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 13 | 1 | 0 | .000 | 9.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 14 | 2 | 0 | .000 | 9.000 | 24.670 | | | .00 | | | | | | | | | | |
| CD | 15 | 3 | 1 | .670 | 6.000 | 24.670 | .000 | .000 | .00 | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE E01-01

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1200.000 | -200.000 | 1 | -194.717 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1500.000 | -195.550 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 1500.000 | -195.550 | 2 | .200 |

ELEMENT NO 4 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 1530.000 | -195.446 | 3 | .015 | .000 | .000 |

ELEMENT NO 5 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 6285.000 | -186.667 | 3 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 6 IS A JUNCTION * * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6300.000 | -186.646 | 5 | 11 | 0 | .015 | 473.000 | .000 | -185.640 | .006 | 30.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 7 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 9315.000 | -182.397 | 5 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 8 IS A JUNCTION * * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 9365.000 | -181.827 | 7 | 6 | 0 | .015 | 1684.000 | .000 | -182.320 | .007 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

```
ELEMENT NO   9 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           9400.490 -181.705    7              .015                           .000     .000       .000      0
                                                                W S P G W                                                PAGE NO   3
                                WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  10 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           9815.240 -180.277    7              .015                        784.479   30.292       .000      0
ELEMENT NO  11 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          11722.080 -173.712    7              .015                       4011.377  -27.236       .000      0
ELEMENT NO  12 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          12305.000 -171.705    7              .015                           .000     .000       .000      0
ELEMENT NO  13 IS A TRANSITION           *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                          12335.000 -171.596   14              .015                           .000     .000
ELEMENT NO  14 IS A  WALL  EXIT                        *
                U/S DATA   STATION    INVERT  SECT
                          12335.000 -171.596   15
ELEMENT NO  15 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          12455.000 -170.663   15              .015                           .000     .000       .000      0
ELEMENT NO  16 IS A  WALL  ENTRANCE                    *
                U/S DATA   STATION    INVERT  SECT             FP
                          12455.000 -170.663   14              .500
ELEMENT NO  17 IS A TRANSITION           *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                          12485.000 -170.554    7              .015                           .000     .000
ELEMENT NO  18 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          12500.000 -170.500    7              .015                           .000     .000       .000      0
ELEMENT NO  19 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          12981.470 -169.549    7              .015                           .000     .000       .000      0
ELEMENT NO  20 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          14377.390 -165.341    7              .015                       4832.939   16.549       .000      0
ELEMENT NO  21 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          14980.000 -163.524    7              .015                           .000     .000       .000      0
ELEMENT NO  22 IS A JUNCTION             *         *     *     *              *              *                    *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3   PHI 4
                          15000.000 -163.464    8     4     0   .015   399.000      .000  -161.464      .000  45.000     .000
                                                                                                 RADIUS    ANGLE
                                                                                                   .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
                                                                W S P G W                                                PAGE NO   4
                                WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  23 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          18083.390 -157.710    8              .015                           .000     .000       .000      0
ELEMENT NO  24 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          18649.640 -156.654    8              .015                        911.930   35.577       .000      0
ELEMENT NO  25 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          19000.000 -156.000    8              .015                           .000     .000       .000      0
ELEMENT NO  26 IS A REACH                *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          19030.000 -155.937    8              .015                           .000     .000       .000      0
```

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 ELEMENT NO  27 IS A JUNCTION          *         *     *     *                *                *              *
                   U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                              19045.000 -155.546    9     4     0   .015   249.000      .000  -154.546      .000  45.000     .000
                                                                                                RADIUS    ANGLE
                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  28 IS A  WALL  EXIT                     *
                   U/S DATA   STATION    INVERT  SECT
                              19045.000 -155.546   10
 ELEMENT NO  29 IS A REACH             *         *     *
                   U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                              19115.000 -153.719   10               .015                           .000     .000      .000     0
 ELEMENT NO  30 IS A  WALL  ENTRANCE                 *
                   U/S DATA   STATION    INVERT  SECT              FP
                              19115.000 -153.719    9               .500
 ELEMENT NO  31 IS A JUNCTION          *         *     *     *                *                *              *
                   U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                              19130.000 -153.327    8    11     0   .015   420.000      .000  -152.327      .000  45.000     .000
                                                                                                RADIUS    ANGLE
                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  32 IS A TRANSITION        *         *     *
                   U/S DATA   STATION    INVERT  SECT               N                            RADIUS   ANGLE
                              19220.000 -150.978   12               .015                           .000     .000
                                                      W S P G W                                                        PAGE NO   5
                                 WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  33 IS A REACH             *         *     *
                   U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                              21849.000 -148.500   12               .015                           .000     .000      .000     0
 ELEMENT NO  34 IS A SYSTEM HEADWORKS                *                    *
                   U/S DATA   STATION    INVERT  SECT                                    W S ELEV
                              21849.000 -148.500   12                                       .000
```

CVWD
MDP
LINE E01-01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1200.000 | -200.000 | 3.291 | -196.709 | 3684.00 | 18.66 | 5.41 | -191.30 | .00 | 4.89 | 62.68 | 6.000 | 62.680 | .00 | 4 .7 |
| 51.911 | .0148 | | | | | .0127 | .66 | 3.29 | 1.85 | 3.14 | .015 | .00 | .00 | BOX |
| 1251.911 | -199.230 | 3.341 | -195.889 | 3684.00 | 18.38 | 5.25 | -190.64 | .00 | 4.89 | 62.68 | 6.000 | 62.680 | .00 | 4 .7 |
| 98.446 | .0148 | | | | | .0116 | 1.15 | 3.34 | 1.81 | 3.14 | .015 | .00 | .00 | BOX |
| 1350.357 | -197.770 | 3.504 | -194.266 | 3684.00 | 17.52 | 4.77 | -189.50 | .00 | 4.89 | 62.68 | 6.000 | 62.680 | .00 | 4 .7 |
| 56.295 | .0148 | | | | | .0102 | .57 | 3.50 | 1.69 | 3.14 | .015 | .00 | .00 | BOX |
| 1406.651 | -196.935 | 3.675 | -193.260 | 3684.00 | 16.71 | 4.33 | -188.92 | .00 | 4.89 | 62.68 | 6.000 | 62.680 | .00 | 4 .7 |
| 36.120 | .0148 | | | | | .0089 | .32 | 3.67 | 1.57 | 3.14 | .015 | .00 | .00 | BOX |
| 1442.771 | -196.399 | 3.854 | -192.545 | 3684.00 | 15.93 | 3.94 | -188.60 | .00 | 4.89 | 62.68 | 6.000 | 62.680 | .00 | 4 .7 |
| 24.101 | .0148 | | | | | .0078 | .19 | 3.85 | 1.46 | 3.14 | .015 | .00 | .00 | BOX |
| 1466.873 | -196.041 | 4.042 | -191.999 | 3684.00 | 15.19 | 3.58 | -188.42 | .00 | 4.89 | 62.68 | 6.000 | 62.680 | .00 | 4 .7 |
| 15.990 | .0148 | | | | | .0068 | .11 | 4.04 | 1.36 | 3.14 | .015 | .00 | .00 | BOX |
| 1482.863 | -195.804 | 4.240 | -191.565 | 3684.00 | 14.48 | 3.26 | -188.31 | .00 | 4.89 | 62.68 | 6.000 | 62.680 | .00 | 4 .7 |
| 10.046 | .0148 | | | | | .0060 | .06 | 4.24 | 1.27 | 3.14 | .015 | .00 | .00 | BOX |
| 1492.909 | -195.655 | 4.446 | -191.209 | 3684.00 | 13.81 | 2.96 | -188.25 | .00 | 4.89 | 62.68 | 6.000 | 62.680 | .00 | 4 .7 |
| 5.425 | .0148 | | | | | .0052 | .03 | 4.45 | 1.18 | 3.14 | .015 | .00 | .00 | BOX |
| 1498.334 | -195.575 | 4.664 | -190.911 | 3684.00 | 13.17 | 2.69 | -188.22 | .00 | 4.89 | 62.68 | 6.000 | 62.680 | .00 | 4 .7 |
| 1.666 | .0148 | | | | | .0046 | .01 | 4.66 | 1.10 | 3.14 | .015 | .00 | .00 | BOX |



CVWD
MDP
LINE E01-01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1500.000 | -195.550 | 4.892 | -190.658 | 3684.00 | 12.55 | 2.45 | -188.21 | .00 | 4.89 | 62.68 | 6.000 | 62.680 | .00 | 4 | .7 |
| WALL | ENTRANCE | | | | | | | | | | | | | | |
| 1500.000 | -195.550 | 6.100 | -189.450 | 3684.00 | 9.63 | 1.44 | -188.01 | .00 | 4.75 | 62.68 | 9.000 | 62.680 | .00 | 0 | .0 |
| TRANS STR | .0035 | | | | .0011 | .03 | 6.10 | .69 | | .015 | .00 | .00 | RECTANG | | |
| 1530.000 | -195.446 | 6.106 | -189.340 | 3684.00 | 9.40 | 1.37 | -187.97 | .00 | 4.95 | 73.32 | 9.000 | 55.000 | 1.50 | 0 | .0 |
| 152.808 | .0018 | | | | .0011 | .17 | 6.11 | .72 | 5.15 | .015 | .00 | 1.50 | TRAP | | |
| 1682.808 | -195.164 | 5.856 | -189.307 | 3684.00 | 9.86 | 1.51 | -187.80 | .00 | 4.95 | 72.57 | 9.000 | 55.000 | 1.50 | 0 | .0 |
| 158.443 | .0018 | | | | .0013 | .20 | 5.86 | .77 | 5.15 | .015 | .00 | 1.50 | TRAP | | |
| 1841.251 | -194.871 | 5.616 | -189.256 | 3684.00 | 10.34 | 1.66 | -187.59 | .00 | 4.95 | 71.85 | 9.000 | 55.000 | 1.50 | 0 | .0 |
| 178.335 | .0018 | | | | .0015 | .26 | 5.62 | .82 | 5.15 | .015 | .00 | 1.50 | TRAP | | |
| 2019.586 | -194.542 | 5.384 | -189.158 | 3684.00 | 10.85 | 1.83 | -187.33 | .00 | 4.95 | 71.15 | 9.000 | 55.000 | 1.50 | 0 | .0 |
| 290.428 | .0018 | | | | .0017 | .50 | 5.38 | .88 | 5.15 | .015 | .00 | 1.50 | TRAP | | |
| 2310.014 | -194.006 | 5.161 | -188.845 | 3684.00 | 11.38 | 2.01 | -186.84 | .00 | 4.95 | 70.48 | 9.000 | 55.000 | 1.50 | 0 | .0 |
| 187.707 | .0018 | | | | .0018 | .34 | 5.16 | .94 | 5.15 | .015 | .00 | 1.50 | TRAP | | |
| 2497.721 | -193.659 | 5.147 | -188.512 | 3684.00 | 11.41 | 2.02 | -186.49 | .00 | 4.95 | 70.44 | 9.000 | 55.000 | 1.50 | 0 | .0 |
| 3787.279 | .0018 | | | | .0018 | 6.99 | 5.15 | .94 | 5.15 | .015 | .00 | 1.50 | TRAP | | |
| 6285.000 | -186.667 | 5.147 | -181.520 | 3684.00 | 11.41 | 2.02 | -179.50 | .00 | 4.95 | 70.44 | 9.000 | 55.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0014 | | | | | | | 5.15 | .94 | | .015 | .00 | 1.50 | TRAP | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8-12-2013 Time: 2:26:37

CVWD
MDP
LINE E01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6300.000 | -186.646 | 4.970 | -181.676 | 3211.00 | 11.86 | 2.19 | -179.49 | .00 | 4.97 | 61.91 | 9.000 | 47.000 | 1.50 | 0 | .0 |
| 23.196 | .0014 | | | | .0020 | .05 | 4.97 | 1.00 | 5.61 | .015 | .00 | 1.50 | TRAP | | |
| 6323.196 | -186.613 | 5.182 | -181.431 | 3211.00 | 11.31 | 1.99 | -179.44 | .00 | 4.97 | 62.55 | 9.000 | 47.000 | 1.50 | 0 | .0 |
| 124.192 | .0014 | | | | .0017 | .21 | 5.18 | .94 | 5.61 | .015 | .00 | 1.50 | TRAP | | |
| 6447.388 | -186.438 | 5.403 | -181.036 | 3211.00 | 10.79 | 1.81 | -179.23 | .00 | 4.97 | 63.21 | 9.000 | 47.000 | 1.50 | 0 | .0 |
| 594.663 | .0014 | | | | .0015 | .90 | 5.40 | .88 | 5.61 | .015 | .00 | 1.50 | TRAP | | |
| 7042.051 | -185.600 | 5.612 | -179.988 | 3211.00 | 10.32 | 1.66 | -178.33 | .00 | 4.97 | 63.84 | 9.000 | 47.000 | 1.50 | 0 | .0 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2272.949 | .0014 | | | | .0014 | 3.20 | 5.61 | .82 | 5.61 | .015 | .00 | 1.50 | TRAP | |
| 9315.000 | -182.397 | 5.612 | -176.785 | 3211.00 | 10.32 | 1.66 | -175.13 | .00 | 4.97 | 63.84 | 9.000 | 47.000 | 1.50 | 0 .0 |
| JUNCT STR | .0114 | | | | | | 5.61 | .82 | | .015 | .00 | 1.50 | TRAP | |
| 9365.000 | -181.827 | 4.942 | -176.885 | 1527.00 | 13.20 | 2.70 | -174.18 | .00 | 5.49 | 30.83 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 35.490 | .0034 | | | | .0034 | .12 | 4.94 | 1.20 | 4.94 | .015 | .00 | 1.50 | TRAP | |
| 9400.490 | -181.705 | 4.942 | -176.763 | 1527.00 | 13.20 | 2.70 | -174.06 | .28 | 5.49 | 30.82 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 414.750 | .0034 | | | | .0034 | 1.43 | 5.22 | 1.20 | 4.94 | .015 | .00 | 1.50 | TRAP | |
| 9815.240 | -180.277 | 4.942 | -175.335 | 1527.00 | 13.20 | 2.70 | -172.63 | .05 | 5.49 | 30.83 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 1544.741 | .0034 | | | | .0034 | 5.32 | 5.00 | 1.20 | 4.94 | .015 | .00 | 1.50 | TRAP | |
| 11359.980 | -174.959 | 4.942 | -170.017 | 1527.00 | 13.20 | 2.70 | -167.31 | .05 | 5.49 | 30.83 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 362.099 | .0034 | | | | .0034 | 1.25 | 5.00 | 1.20 | 4.94 | .015 | .00 | 1.50 | TRAP | |



CVWD
MDP
LINE E01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 11722.080 | -173.712 | 4.942 | -168.770 | 1527.00 | 13.20 | 2.70 | -166.07 | .00 | 5.49 | 30.82 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 199.625 | .0034 | | | | .0034 | .69 | 4.94 | 1.20 | 4.94 | .015 | .00 | 1.50 | TRAP | |
| 11921.710 | -173.025 | 4.942 | -168.083 | 1527.00 | 13.20 | 2.70 | -165.38 | .00 | 5.49 | 30.82 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 303.555 | .0034 | | | | .0032 | .99 | 4.94 | 1.20 | 4.94 | .015 | .00 | 1.50 | TRAP | |
| 12225.260 | -171.980 | 5.107 | -166.872 | 1527.00 | 12.64 | 2.48 | -164.39 | .00 | 5.49 | 31.32 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 66.319 | .0034 | | | | .0029 | .19 | 5.11 | 1.13 | 4.94 | .015 | .00 | 1.50 | TRAP | |
| 12291.580 | -171.751 | 5.294 | -166.457 | 1527.00 | 12.05 | 2.25 | -164.20 | .00 | 5.49 | 31.88 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 13.421 | .0034 | | | | .0025 | .03 | 5.29 | 1.06 | 4.94 | .015 | .00 | 1.50 | TRAP | |
| 12305.000 | -171.705 | 5.487 | -166.218 | 1527.00 | 11.48 | 2.05 | -164.17 | .00 | 5.49 | 32.46 | 9.000 | 16.000 | 1.50 | 0 .0 |
| TRANS STR | .0036 | | | | | | 5.49 | 1.00 | | .015 | .00 | 1.50 | TRAP | |
| 12335.000 | -171.596 | 4.091 | -167.505 | 1527.00 | 15.13 | 3.55 | -163.95 | .00 | 4.92 | 24.67 | 9.000 | 24.670 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 12335.000 | -171.596 | 4.255 | -167.341 | 1527.00 | 14.95 | 3.47 | -163.87 | .00 | 5.01 | 24.67 | 6.000 | 24.670 | .00 | 1 .7 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42.115 | .0078 | | | | .0066 | .28 | 4.25 | 1.30 | 4.05 | .015 | .00 | .00 | BOX | |
| 12377.120 | -171.269 | 4.341 | -166.927 | 1527.00 | 14.66 | 3.34 | -163.59 | .00 | 5.01 | 24.67 | 6.000 | 24.670 | .00 | 1 .7 |
| 51.188 | .0078 | | | | .0060 | .31 | 4.34 | 1.26 | 4.05 | .015 | .00 | .00 | BOX | |
| 12428.300 | -170.871 | 4.553 | -166.317 | 1527.00 | 13.97 | 3.03 | -163.29 | .00 | 5.01 | 24.67 | 6.000 | 24.670 | .00 | 1 .7 |
| 21.173 | .0078 | | | | .0053 | .11 | 4.55 | 1.17 | 4.05 | .015 | .00 | .00 | BOX | |





| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 12449.480 | -170.706 | 4.776 | -165.930 | 1527.00 | 13.32 | 2.76 | -163.17 | .00 | 5.01 | 24.67 | 6.000 | 24.670 | .00 | 1 .7 |
| 5.524 | .0078 | | | | .0046 | .03 | 4.78 | 1.09 | 4.05 | .015 | .00 | .00 | BOX | |
| 12455.000 | -170.663 | 5.010 | -165.653 | 1527.00 | 12.70 | 2.50 | -163.15 | .00 | 5.01 | 24.67 | 6.000 | 24.670 | .00 | 1 .7 |
| WALL | ENTRANCE | | | | | | | | | | | | | |
| 12455.000 | -170.663 | 5.930 | -164.733 | 1527.00 | 10.44 | 1.69 | -163.04 | .00 | 4.92 | 24.67 | 9.000 | 24.670 | .00 | 0 .0 |
| TRANS STR | .0036 | | | | .0018 | .05 | 5.93 | .76 | | | .015 | .00 | .00 | RECTANG |
| 12485.000 | -170.554 | 5.857 | -164.697 | 1527.00 | 10.52 | 1.72 | -162.98 | .00 | 5.49 | 33.57 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 15.000 | .0036 | | | | .0019 | .03 | 5.86 | .89 | 4.88 | .015 | .00 | 1.50 | TRAP | |
| 12500.000 | -170.500 | 5.708 | -164.792 | 1527.00 | 10.89 | 1.84 | -162.95 | .00 | 5.49 | 33.12 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 224.820 | .0020 | | | | .0020 | .45 | 5.71 | .93 | 5.74 | .015 | .00 | 1.50 | TRAP | |
| 12724.820 | -170.056 | 5.739 | -164.317 | 1527.00 | 10.81 | 1.82 | -162.50 | .00 | 5.49 | 33.22 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 225.682 | .0020 | | | | .0020 | .45 | 5.74 | .92 | 5.74 | .015 | .00 | 1.50 | TRAP | |
| 12950.500 | -169.610 | 5.739 | -163.872 | 1527.00 | 10.81 | 1.82 | -162.06 | .00 | 5.49 | 33.22 | 9.000 | 16.000 | 1.50 | 0 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |
| 12950.500 | -169.610 | 5.241 | -164.369 | 1527.00 | 12.21 | 2.32 | -162.05 | .00 | 5.49 | 31.72 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 30.968 | .0020 | | | | .0029 | .09 | 5.24 | 1.08 | 5.74 | .015 | .00 | 1.50 | TRAP | |
| 12981.470 | -169.549 | 5.123 | -164.426 | 1527.00 | 12.59 | 2.46 | -161.97 | .04 | 5.49 | 31.37 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 1175.519 | .0030 | | | | .0030 | 3.54 | 5.16 | 1.13 | 5.12 | .015 | .00 | 1.50 | TRAP | |

MDP
LINE E01-01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14156.990 | -166.005 | 5.123 | -160.883 | 1527.00 | 12.59 | 2.46 | -158.42 | .04 | 5.49 | 31.37 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 220.401 | .0030 | | | | | .0030 | .66 | 5.16 | 1.13 | 5.12 | .015 | .00 | 1.50 | TRAP |
| 14377.390 | -165.341 | 5.122 | -160.219 | 1527.00 | 12.59 | 2.46 | -157.76 | .00 | 5.49 | 31.37 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 378.622 | .0030 | | | | | .0030 | 1.14 | 5.12 | 1.13 | 5.12 | .015 | .00 | 1.50 | TRAP |
| 14756.010 | -164.199 | 5.122 | -159.077 | 1527.00 | 12.59 | 2.46 | -156.62 | .00 | 5.49 | 31.37 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 199.362 | .0030 | | | | | .0028 | .57 | 5.12 | 1.13 | 5.12 | .015 | .00 | 1.50 | TRAP |
| 14955.370 | -163.598 | 5.294 | -158.304 | 1527.00 | 12.05 | 2.25 | -156.05 | .00 | 5.49 | 31.88 | 9.000 | 16.000 | 1.50 | 0 .0 |
| 24.626 | .0030 | | | | | .0025 | .06 | 5.29 | 1.06 | 5.12 | .015 | .00 | 1.50 | TRAP |
| 14980.000 | -163.524 | 5.487 | -158.037 | 1527.00 | 11.48 | 2.05 | -155.99 | .00 | 5.49 | 32.46 | 9.000 | 16.000 | 1.50 | 0 .0 |
| JUNCT STR | .0030 | | | | | | | 5.49 | 1.00 | | .015 | .00 | 1.50 | TRAP |
| 15000.000 | -163.464 | 5.552 | -157.912 | 1128.00 | 11.09 | 1.91 | -156.00 | .00 | 5.55 | 26.66 | 9.000 | 10.000 | 1.50 | 0 .0 |
| 24.628 | .0019 | | | | | .0023 | .06 | 5.55 | 1.00 | 5.95 | .015 | .00 | 1.50 | TRAP |
| 15024.630 | -163.418 | 5.736 | -157.682 | 1128.00 | 10.57 | 1.73 | -155.95 | .00 | 5.55 | 27.21 | 9.000 | 10.000 | 1.50 | 0 .0 |
| 194.994 | .0019 | | | | | .0020 | .40 | 5.74 | .94 | 5.95 | .015 | .00 | 1.50 | TRAP |
| 15219.620 | -163.054 | 5.926 | -157.128 | 1128.00 | 10.08 | 1.58 | -155.55 | .00 | 5.55 | 27.78 | 9.000 | 10.000 | 1.50 | 0 .0 |
| 386.554 | .0019 | | | | | .0019 | .73 | 5.93 | .88 | 5.95 | .015 | .00 | 1.50 | TRAP |
| 15606.180 | -162.333 | 5.951 | -156.382 | 1128.00 | 10.02 | 1.56 | -154.82 | .00 | 5.55 | 27.85 | 9.000 | 10.000 | 1.50 | 0 .0 |
| 2477.213 | .0019 | | | | | .0019 | 4.62 | 5.95 | .88 | 5.95 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE E01-01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18083.390 | -157.710 | 5.951 | -151.759 | 1128.00 | 10.02 | 1.56 | -150.20 | .05 | 5.55 | 27.85 | 9.000 | 10.000 | 1.50 | 0 .0 |
| 296.928 | .0019 | | | | | .0019 | .55 | 6.01 | .88 | 5.95 | .015 | .00 | 1.50 | TRAP |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18380.320 | -157.156 | 5.952 | -151.205 | 1128.00 | 10.01 | 1.56 | -149.65 | .05 | 5.55 | 27.85 | 9.000 | 10.000 | 1.50 | 0 | .0 |
| 269.322 | .0019 | | | | | .0019 | .50 | 6.01 | .88 | 5.95 | .015 | .00 | 1.50 | TRAP | |
| 18649.640 | -156.654 | 5.952 | -150.702 | 1128.00 | 10.01 | 1.56 | -149.15 | .00 | 5.55 | 27.85 | 9.000 | 10.000 | 1.50 | 0 | .0 |
| 139.789 | .0019 | | | | | .0019 | .26 | 5.95 | .88 | 5.95 | .015 | .00 | 1.50 | TRAP | |
| 18789.430 | -156.393 | 5.950 | -150.443 | 1128.00 | 10.02 | 1.56 | -148.88 | .00 | 5.55 | 27.85 | 9.000 | 10.000 | 1.50 | 0 | .0 |
| 34.559 | .0019 | | | | | .0019 | .06 | 5.95 | .88 | 5.95 | .015 | .00 | 1.50 | TRAP | |
| 18823.990 | -156.329 | 5.950 | -150.378 | 1128.00 | 10.02 | 1.56 | -148.82 | .00 | 5.55 | 27.85 | 9.000 | 10.000 | 1.50 | 0 | .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | | |
| 18823.990 | -156.329 | 5.168 | -151.161 | 1128.00 | 12.30 | 2.35 | -148.81 | .00 | 5.55 | 25.50 | 9.000 | 10.000 | 1.50 | 0 | .0 |
| 37.590 | .0019 | | | | | .0035 | .13 | 5.17 | 1.14 | 5.95 | .015 | .00 | 1.50 | TRAP | |
| 18861.580 | -156.258 | 5.012 | -151.247 | 1128.00 | 12.85 | 2.56 | -148.68 | .00 | 5.55 | 25.04 | 9.000 | 10.000 | 1.50 | 0 | .0 |
| 44.275 | .0019 | | | | | .0039 | .17 | 5.01 | 1.21 | 5.95 | .015 | .00 | 1.50 | TRAP | |
| 18905.850 | -156.176 | 4.847 | -151.329 | 1128.00 | 13.48 | 2.82 | -148.51 | .00 | 5.55 | 24.54 | 9.000 | 10.000 | 1.50 | 0 | .0 |
| 46.529 | .0019 | | | | | .0045 | .21 | 4.85 | 1.29 | 5.95 | .015 | .00 | 1.50 | TRAP | |
| 18952.380 | -156.089 | 4.687 | -151.402 | 1128.00 | 14.13 | 3.10 | -148.30 | .00 | 5.55 | 24.06 | 9.000 | 10.000 | 1.50 | 0 | .0 |
| 47.617 | .0019 | | | | | .0051 | .24 | 4.69 | 1.37 | 5.95 | .015 | .00 | 1.50 | TRAP | |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 19000.000 | -156.000 | 4.531 | -151.469 | 1128.00 | 14.82 | 3.41 | -148.06 | .00 | 5.55 | 23.59 | 9.000 | 10.000 | 1.50 | 0 .0 |
| 30.000 | .0021 | | | | | .0057 | .17 | 4.53 | 1.45 | 5.78 | .015 | .00 | 1.50 | TRAP |
| 19030.000 | -155.937 | 4.441 | -151.496 | 1128.00 | 15.24 | 3.61 | -147.89 | .00 | 5.55 | 23.32 | 9.000 | 10.000 | 1.50 | 0 .0 |
| JUNCT STR | .0261 | | | | | .0084 | .13 | 4.44 | 1.51 | | .015 | .00 | 1.50 | TRAP |
| ---------- WARNING - Junction Analysis - Change in Channel Type ---------- | | | | | | | | | | | | | | |
| 19045.000 | -155.546 | 3.006 | -152.540 | 879.00 | 17.54 | 4.78 | -147.76 | .00 | 4.42 | 16.67 | 9.000 | 16.670 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 19045.000 | -155.546 | 3.156 | -152.390 | 879.00 | 17.40 | 4.70 | -147.69 | .00 | 4.54 | 16.67 | 6.000 | 16.670 | .00 | 1 .7 |
| 14.705 | .0261 | | | | | .0139 | .20 | 3.16 | 1.76 | 2.55 | .015 | .00 | .00 | BOX |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19059.710 | -155.162 | 3.253 | -151.909 | 879.00 | 16.89 | 4.43 | -147.48 | .00 | 4.54 | 16.67 | 6.000 | 16.670 | .00 | 1 | .7 |
| 17.955 | .0261 | | | | | .0125 | .22 | 3.25 | 1.68 | 2.55 | .015 | .00 | .00 | BOX | |
| 19077.660 | -154.694 | 3.412 | -151.282 | 879.00 | 16.10 | 4.03 | -147.26 | .00 | 4.54 | 16.67 | 6.000 | 16.670 | .00 | 1 | .7 |
| 13.209 | .0261 | | | | | .0110 | .15 | 3.41 | 1.57 | 2.55 | .015 | .00 | .00 | BOX | |
| 19090.870 | -154.349 | 3.578 | -150.771 | 879.00 | 15.35 | 3.66 | -147.11 | .00 | 4.54 | 16.67 | 6.000 | 16.670 | .00 | 1 | .7 |
| 9.621 | .0261 | | | | | .0097 | .09 | 3.58 | 1.46 | 2.55 | .015 | .00 | .00 | BOX | |
| 19100.490 | -154.098 | 3.753 | -150.345 | 879.00 | 14.64 | 3.33 | -147.02 | .00 | 4.54 | 16.67 | 6.000 | 16.670 | .00 | 1 | .7 |
| 6.781 | .0261 | | | | | .0085 | .06 | 3.75 | 1.36 | 2.55 | .015 | .00 | .00 | BOX | |





| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 19107.270 | -153.921 | 3.936 | -149.985 | 879.00 | 13.96 | 3.02 | -146.96 | .00 | 4.54 | 16.67 | 6.000 | 16.670 | .00 | 1 | .7 |
| 4.453 | .0261 | | | | | .0075 | .03 | 3.94 | 1.27 | 2.55 | .015 | .00 | .00 | BOX | |
| 19111.730 | -153.804 | 4.128 | -149.676 | 879.00 | 13.31 | 2.75 | -146.93 | .00 | 4.54 | 16.67 | 6.000 | 16.670 | .00 | 1 | .7 |
| 2.486 | .0261 | | | | | .0066 | .02 | 4.13 | 1.18 | 2.55 | .015 | .00 | .00 | BOX | |
| 19114.210 | -153.740 | 4.330 | -149.410 | 879.00 | 12.69 | 2.50 | -146.91 | .00 | 4.54 | 16.67 | 6.000 | 16.670 | .00 | 1 | .7 |
| .787 | .0261 | | | | | .0058 | .00 | 4.33 | 1.10 | 2.55 | .015 | .00 | .00 | BOX | |
| 19115.000 | -153.719 | 4.542 | -149.177 | 879.00 | 12.10 | 2.27 | -146.91 | .00 | 4.54 | 16.67 | 6.000 | 16.670 | .00 | 1 | .7 |
| WALL | ENTRANCE | | | | | | | | | | | | | | |
| 19115.000 | -153.719 | 5.548 | -148.171 | 879.00 | 9.50 | 1.40 | -146.77 | .00 | 4.42 | 16.67 | 9.000 | 16.670 | .00 | 0 | .0 |
| JUNCT STR | .0261 | | | | | .0010 | .02 | 5.55 | .71 | | .015 | .00 | .00 | RECTANG | |

---------- WARNING - Junction Analysis - Change in Channel Type ----------

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19130.000 | -153.327 | 6.364 | -146.963 | 459.00 | 3.69 | .21 | -146.75 | .00 | 3.38 | 29.09 | 9.000 | 10.000 | 1.50 | 0 | .0 |
| TRANS STR | .0261 | | | | | | | 6.36 | .31 | | .015 | .00 | 1.50 | TRAP | |
| 19220.000 | -150.978 | 4.066 | -146.912 | 459.00 | 9.33 | 1.35 | -145.56 | .00 | 4.07 | 18.20 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| 4.582 | .0009 | | | | | .0026 | .01 | 4.07 | 1.00 | 5.28 | .015 | .00 | 1.50 | TRAP | |
| 19224.580 | -150.974 | 4.197 | -146.777 | 459.00 | 8.90 | 1.23 | -145.55 | .00 | 4.07 | 18.59 | 9.000 | 6.000 | 1.50 | 0 | .0 |
| 16.410 | .0009 | | | | | .0023 | .04 | 4.20 | .94 | 5.28 | .015 | .00 | 1.50 | TRAP | |

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8-12-2013 Time: 2:26:37

CVWD
MDP
LINE E01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 19240.990 | -150.958 | 4.331 | -146.627 | 459.00 | 8.48 | 1.12 | -145.51 | .00 | 4.07 | 18.99 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 33.285 | .0009 | | | | | .0020 | .07 | 4.33 | .89 | 5.28 | .015 | .00 | 1.50 | TRAP |
| 19274.280 | -150.927 | 4.468 | -146.458 | 459.00 | 8.09 | 1.02 | -145.44 | .00 | 4.07 | 19.41 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 58.326 | .0009 | | | | | .0018 | .10 | 4.47 | .83 | 5.28 | .015 | .00 | 1.50 | TRAP |
| 19332.600 | -150.872 | 4.610 | -146.262 | 459.00 | 7.71 | .92 | -145.34 | .00 | 4.07 | 19.83 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 97.809 | .0009 | | | | | .0016 | .15 | 4.61 | .78 | 5.28 | .015 | .00 | 1.50 | TRAP |
| 19430.410 | -150.780 | 4.755 | -146.025 | 459.00 | 7.35 | .84 | -145.19 | .00 | 4.07 | 20.26 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 166.479 | .0009 | | | | | .0014 | .23 | 4.75 | .74 | 5.28 | .015 | .00 | 1.50 | TRAP |
| 19596.890 | -150.623 | 4.903 | -145.719 | 459.00 | 7.01 | .76 | -144.96 | .00 | 4.07 | 20.71 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 309.148 | .0009 | | | | | .0012 | .37 | 4.90 | .69 | 5.28 | .015 | .00 | 1.50 | TRAP |
| 19906.040 | -150.331 | 5.056 | -145.275 | 459.00 | 6.68 | .69 | -144.58 | .00 | 4.07 | 21.17 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 756.959 | .0009 | | | | | .0011 | .81 | 5.06 | .65 | 5.28 | .015 | .00 | 1.50 | TRAP |
| 20663.000 | -149.618 | 5.213 | -144.405 | 459.00 | 6.37 | .63 | -143.77 | .00 | 4.07 | 21.64 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 1185.998 | .0009 | | | | | .0010 | 1.16 | 5.21 | .62 | 5.28 | .015 | .00 | 1.50 | TRAP |
| 21849.000 | -148.500 | 5.273 | -143.227 | 459.00 | 6.26 | .61 | -142.62 | .00 | 4.07 | 21.82 | 9.000 | 6.000 | 1.50 | 0 .0 |

```
T1 CVWD                                                                                                  0
T2 MDP
T3 LINE E01-02
SO   1067.630-180.647  1      .015                -177.266
R    2500.000-176.500  1      .015
JX   2515.000-176.445  2  4   .015   88.000         -176.929         45.0
R    3775.000-171.850  2      .015
JX   3795.000-171.380  5  3   .015  380.000         -170.868         45.0
WX   3795.000-171.380  6
R    3855.000-169.970  6      .015
WE   3855.000-169.970  5      .500
TS   3875.000-169.500  7      .015
R    4500.000-166.000  7      .015
R    6500.000-152.000  7      .015
JX   6550.000-150.000  8  3   .015  380.000         -150.861         45.0
R    9090.000-130.500  8      .015
JX   9110.000-130.412  9 10   .015  451.000         -127.912         45.0
WX   9110.000-130.412 10      .013
R   11850.000-113.000 10      .013
WE  11850.000-113.000  9      .500
SH  11850.000-113.000  9      .015
CD   1  1   0    .000   9.000   20.000 1.500 1.500   .00
CD   2  1   0    .000   9.000   17.000 1.500 1.500   .00
CD   3  4   1           5.000
CD   4  4   1           3.000
CD   5  2   0    .000   9.000   20.670  .000  .000   .00
CD   6  3   1    .670   5.000   20.670  .000  .000   .00
CD   7  1   0    .000   9.000   10.000 1.500 1.500   .00
CD   8  1   0    .000   9.000    6.000 1.500 1.500   .00
CD   9  2   0           7.000   10.000  .000  .000   .00
CD  10  4   1           7.000
CD  11  4   1           6.000
CD  12  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  13  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  14  2   0    .000  10.000   24.670  .000  .000   .00
CD  15  3   1    .670   6.000   24.670  .000  .000   .00

Q          453.000   .0
```

FILE: E01-02.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 8- 9-2013 Time: 8:53:22

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 9.000 | 20.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 1 | 0 | .000 | 9.000 | 17.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 3 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |
| CD | 4 | 4 | 1 | | 3.000 | | | | | | | | | | | | | | |
| CD | 5 | 2 | 0 | .000 | 9.000 | 20.670 | | | .00 | | | | | | | | | | |
| CD | 6 | 3 | 1 | .670 | 5.000 | 20.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 7 | 1 | 0 | .000 | 9.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 8 | 1 | 0 | .000 | 9.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 9 | 2 | 0 | .000 | 7.000 | 10.000 | | | .00 | | | | | | | | | | |
| CD | 10 | 4 | 1 | | 7.000 | | | | | | | | | | | | | | |
| CD | 11 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 12 | 1 | 0 | .000 | 10.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 13 | 1 | 0 | .000 | 10.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 14 | 2 | 0 | .000 | 10.000 | 24.670 | | | .00 | | | | | | | | | | |
| CD | 15 | 3 | 1 | .670 | 6.000 | 24.670 | .000 | .000 | .00 | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE E01-02

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1067.630 | -180.647 | 1 | -177.266 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2500.000 | -176.500 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2515.000 | -176.445 | 2 | 4 | 0 | .015 | 88.000 | .000 | -176.929 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 4 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3775.000 | -171.850 | 2 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 5 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3795.000 | -171.380 | 5 | 3 | 0 | .015 | 380.000 | .000 | -170.868 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 6 IS A WALL EXIT *

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 3795.000 | -171.380 | 6 |

ELEMENT NO 7 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3855.000 | -169.970 | 6 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 8 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 3855.000 | -169.970 | 5 | .500 |

ELEMENT NO 9 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 3875.000 | -169.500 | 7 | .015 | .000 | .000 |



WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 10 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 4500.000 | -166.000 | 7 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 11 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 6500.000 | -152.000 | 7 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 12 IS A JUNCTION * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6550.000 | -150.000 | 8 | 3 | 0 | .015 | 380.000 | .000 | -150.861 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 13 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 9090.000 | -130.500 | 8 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 14 IS A JUNCTION * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 9110.000 | -130.412 | 9 | 10 | 0 | .015 | 451.000 | .000 | -127.912 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 15 IS A WALL EXIT *

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 9110.000 | -130.412 | 10 |

ELEMENT NO 16 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 11850.000 | -113.000 | 10 | .013 | .000 | .000 | .000 | 0 |

ELEMENT NO 17 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 11850.000 | -113.000 | 9 | .500 |

ELEMENT NO 18 IS A SYSTEM HEADWORKS * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 11850.000 | -113.000 | 9 | .000 |

Program Package Serial Number: 1585
WATER SURFACE PROFILE LISTING Date: 8- 9-2013 Time: 8:53:34

CVWD
MDP
LINE E01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 1067.630 | -180.647 | 5.041 | -175.606 | 1752.00 | 12.61 | 2.47 | -173.14 | .00 | 5.38 | 35.12 | 9.000 | 20.000 | 1.50 | 0 .0 |
| 888.188 | .0029 | | | | | .0029 | 2.57 | 5.04 | 1.12 | 5.04 | .015 | .00 | 1.50 | TRAP |
| 1955.818 | -178.076 | 5.041 | -173.035 | 1752.00 | 12.61 | 2.47 | -170.57 | .00 | 5.38 | 35.12 | 9.000 | 20.000 | 1.50 | 0 .0 |
| 283.626 | .0029 | | | | | .0031 | .87 | 5.04 | 1.12 | 5.04 | .015 | .00 | 1.50 | TRAP |
| 2239.444 | -177.254 | 4.889 | -172.366 | 1752.00 | 13.11 | 2.67 | -169.70 | .00 | 5.38 | 34.67 | 9.000 | 20.000 | 1.50 | 0 .0 |
| 150.457 | .0029 | | | | | .0035 | .52 | 4.89 | 1.18 | 5.04 | .015 | .00 | 1.50 | TRAP |
| 2389.901 | -176.819 | 4.708 | -172.111 | 1752.00 | 13.75 | 2.94 | -169.17 | .00 | 5.38 | 34.12 | 9.000 | 20.000 | 1.50 | 0 .0 |
| 110.099 | .0029 | | | | | .0040 | .44 | 4.71 | 1.25 | 5.04 | .015 | .00 | 1.50 | TRAP |
| 2500.000 | -176.500 | 4.533 | -171.967 | 1752.00 | 14.42 | 3.23 | -168.74 | .00 | 5.38 | 33.60 | 9.000 | 20.000 | 1.50 | 0 .0 |
| JUNCT STR | .0037 | | | | | .0039 | .06 | 4.53 | 1.34 | | .015 | .00 | 1.50 | TRAP |
| 2515.000 | -176.445 | 4.960 | -171.485 | 1664.00 | 13.73 | 2.93 | -168.56 | .00 | 5.62 | 31.88 | 9.000 | 17.000 | 1.50 | 0 .0 |
| 232.744 | .0036 | | | | | .0036 | .85 | 4.96 | 1.24 | 4.96 | .015 | .00 | 1.50 | TRAP |
| 2747.743 | -175.596 | 4.960 | -170.636 | 1664.00 | 13.73 | 2.93 | -167.71 | .00 | 5.62 | 31.88 | 9.000 | 17.000 | 1.50 | 0 .0 |
| 432.743 | .0036 | | | | | .0039 | 1.68 | 4.96 | 1.24 | 4.96 | .015 | .00 | 1.50 | TRAP |
| 3180.487 | -174.018 | 4.799 | -169.219 | 1664.00 | 14.33 | 3.19 | -166.03 | .00 | 5.62 | 31.40 | 9.000 | 17.000 | 1.50 | 0 .0 |
| 189.758 | .0036 | | | | | .0044 | .84 | 4.80 | 1.31 | 4.96 | .015 | .00 | 1.50 | TRAP |
| 3370.245 | -173.326 | 4.625 | -168.701 | 1664.00 | 15.03 | 3.51 | -165.19 | .00 | 5.62 | 30.88 | 9.000 | 17.000 | 1.50 | 0 .0 |
| 130.285 | .0036 | | | | | .0050 | .66 | 4.63 | 1.40 | 4.96 | .015 | .00 | 1.50 | TRAP |


Program Package Serial Number: 1585
WATER SURFACE PROFILE LISTING Date: 8- 9-2013 Time: 8:53:34

CVWD
MDP
LINE E01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 3500.530 | -172.851 | 4.457 | -168.394 | 1664.00 | 15.76 | 3.86 | -164.54 | .00 | 5.62 | 30.37 | 9.000 | 17.000 | 1.50 | 0 .0 |
| 104.628 | .0036 | | | | | .0058 | .60 | 4.46 | 1.49 | 4.96 | .015 | .00 | 1.50 | TRAP |
| 3605.157 | -172.469 | 4.294 | -168.176 | 1664.00 | 16.53 | 4.24 | -163.93 | .00 | 5.62 | 29.88 | 9.000 | 17.000 | 1.50 | 0 .0 |
| 89.864 | .0036 | | | | | .0066 | .59 | 4.29 | 1.59 | 4.96 | .015 | .00 | 1.50 | TRAP |
| 3695.021 | -172.142 | 4.136 | -168.006 | 1664.00 | 17.34 | 4.67 | -163.34 | .00 | 5.62 | 29.41 | 9.000 | 17.000 | 1.50 | 0 .0 |
| 79.979 | .0036 | | | | | .0076 | .61 | 4.14 | 1.69 | 4.96 | .015 | .00 | 1.50 | TRAP |
| 3775.000 | -171.850 | 3.983 | -167.867 | 1664.00 | 18.19 | 5.14 | -162.73 | .00 | 5.62 | 28.95 | 9.000 | 17.000 | 1.50 | 0 .0 |
| JUNCT STR | .0235 | | | | | .0094 | .19 | 3.98 | 1.80 | | .015 | .00 | 1.50 | TRAP |

---------- WARNING - Junction Analysis - Change in Channel Type ----------

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3795.000 | -171.380 | 3.285 | -168.095 | 1284.00 | 18.91 | 5.55 | -162.54 | .00 | 4.93 | 20.67 | 9.000 | 20.670 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 3795.000 | -171.380 | 3.414 | -167.966 | 1284.00 | 18.80 | 5.49 | -162.48 | .00 | 5.00 | 20.67 | 5.000 | 20.670 | .00 | 1 .7 |
| 8.528 | .0235 | | | | | .0138 | .12 | 3.41 | 1.82 | 2.84 | .015 | .00 | .00 | BOX |
| 3803.528 | -171.180 | 3.452 | -167.728 | 1284.00 | 18.60 | 5.37 | -162.36 | .00 | 5.00 | 20.67 | 5.000 | 20.670 | .00 | 1 .7 |
| 29.781 | .0235 | | | | | .0128 | .38 | 3.45 | 1.79 | 2.84 | .015 | .00 | .00 | BOX |
| 3833.309 | -170.480 | 3.620 | -166.859 | 1284.00 | 17.73 | 4.88 | -161.98 | .00 | 5.00 | 20.67 | 5.000 | 20.670 | .00 | 1 .7 |
| 21.691 | .0235 | | | | | .0112 | .24 | 3.62 | 1.67 | 2.84 | .015 | .00 | .00 | BOX |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 9-2013 Time: 8:53:34

CVWD
MDP
LINE E01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 3855.000 | -169.970 | 3.797 | -166.173 | 1284.00 | 16.91 | 4.44 | -161.73 | .00 | 5.00 | 20.67 | 5.000 | 20.670 | .00 | 1 .7 |
| WALL ENTRANCE | | | | | | | | | | | | | | |
| 3855.000 | -169.970 | 3.416 | -166.554 | 1284.00 | 18.19 | 5.14 | -161.42 | .00 | 4.93 | 20.67 | 9.000 | 20.670 | .00 | 0 .0 |
| TRANS STR | .0235 | | | | | .0076 | .15 | 3.42 | 1.73 | | .015 | .00 | .00 | RECTANG |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3875.000 | -169.500 | 4.786 | -164.714 | 1284.00 | 15.62 | 3.79 | -160.93 | .00 | 5.95 | 24.36 | 9.000 | 10.000 | 1.50 | 0 .0 |
| 374.120 | .0056 | | | | | .0059 | 2.22 | 4.79 | 1.50 | 4.81 | .015 | .00 | 1.50 | TRAP |
| 4249.120 | -167.405 | 4.695 | -162.710 | 1284.00 | 16.05 | 4.00 | -158.71 | .00 | 5.95 | 24.08 | 9.000 | 10.000 | 1.50 | 0 .0 |
| 250.880 | .0056 | | | | | .0066 | 1.65 | 4.69 | 1.55 | 4.81 | .015 | .00 | 1.50 | TRAP |
| 4500.000 | -166.000 | 4.539 | -161.461 | 1284.00 | 16.83 | 4.40 | -157.06 | .00 | 5.95 | 23.62 | 9.000 | 10.000 | 1.50 | 0 .0 |
| 820.712 | .0070 | | | | | .0070 | 5.75 | 4.54 | 1.65 | 4.54 | .015 | .00 | 1.50 | TRAP |
| 5320.712 | -160.255 | 4.539 | -155.716 | 1284.00 | 16.83 | 4.40 | -151.32 | .00 | 5.95 | 23.62 | 9.000 | 10.000 | 1.50 | 0 .0 |
| 579.592 | .0070 | | | | | .0071 | 4.12 | 4.54 | 1.65 | 4.54 | .015 | .00 | 1.50 | TRAP |
| 5900.304 | -156.198 | 4.501 | -151.697 | 1284.00 | 17.03 | 4.50 | -147.19 | .00 | 5.95 | 23.50 | 9.000 | 10.000 | 1.50 | 0 .0 |
| 407.791 | .0070 | | | | | .0077 | 3.15 | 4.50 | 1.68 | 4.54 | .015 | .00 | 1.50 | TRAP |
| 6308.095 | -153.343 | 4.350 | -148.993 | 1284.00 | 17.86 | 4.95 | -144.04 | .00 | 5.95 | 23.05 | 9.000 | 10.000 | 1.50 | 0 .0 |
| 191.905 | .0070 | | | | | .0088 | 1.69 | 4.35 | 1.78 | 4.54 | .015 | .00 | 1.50 | TRAP |
| 6500.000 | -152.000 | 4.204 | -147.796 | 1284.00 | 18.73 | 5.45 | -142.35 | .00 | 5.95 | 22.61 | 9.000 | 10.000 | 1.50 | 0 .0 |
| JUNCT STR | .0400 | | | | | .0085 | .43 | 4.20 | 1.90 | | .015 | .00 | 1.50 | TRAP |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 9-2013 Time: 8:53:34

CVWD
MDP
LINE E01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6549.999 | -150.000 | 4.422 | -145.578 | 904.00 | 16.18 | 4.07 | -141.51 | .00 | 5.74 | 19.27 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 1571.225 | .0077 | | | | | .0077 | 12.06 | 4.42 | 1.67 | 4.42 | .015 | .00 | 1.50 | TRAP |
| 8121.224 | -137.937 | 4.422 | -133.516 | 904.00 | 16.18 | 4.07 | -129.45 | .00 | 5.74 | 19.27 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 501.285 | .0077 | | | | | .0074 | 3.73 | 4.42 | 1.67 | 4.42 | .015 | .00 | 1.50 | TRAP |
| 8622.509 | -134.089 | 4.493 | -129.596 | 904.00 | 15.79 | 3.87 | -125.72 | .00 | 5.74 | 19.48 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 227.287 | .0077 | | | | | .0068 | 1.53 | 4.49 | 1.62 | 4.42 | .015 | .00 | 1.50 | TRAP |
| 8849.796 | -132.344 | 4.635 | -127.709 | 904.00 | 15.06 | 3.52 | -124.19 | .00 | 5.74 | 19.91 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 100.317 | .0077 | | | | | .0059 | .60 | 4.64 | 1.53 | 4.42 | .015 | .00 | 1.50 | TRAP |
| 8950.113 | -131.574 | 4.781 | -126.793 | 904.00 | 14.36 | 3.20 | -123.59 | .00 | 5.74 | 20.34 | 9.000 | 6.000 | 1.50 | 0 .0 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 57.659 | .0077 | | | | | | .0052 | .30 | 4.78 | 1.44 | 4.42 | .015 | .00 | 1.50 | TRAP | | | |
| 9007.772 | -131.131 | 4.930 | -126.201 | 904.00 | 13.69 | 2.91 | -123.29 | .00 | 5.74 | 20.79 | 9.000 | 6.000 | 1.50 | 0 | .0 | | | |
| 36.050 | .0077 | | | | | | .0046 | .17 | 4.93 | 1.35 | 4.42 | .015 | .00 | 1.50 | TRAP | | | |
| 9043.822 | -130.855 | 5.084 | -125.771 | 904.00 | 13.05 | 2.64 | -123.13 | .00 | 5.74 | 21.25 | 9.000 | 6.000 | 1.50 | 0 | .0 | | | |
| 22.855 | .0077 | | | | | | .0040 | .09 | 5.08 | 1.27 | 4.42 | .015 | .00 | 1.50 | TRAP | | | |
| 9066.678 | -130.679 | 5.241 | -125.438 | 904.00 | 12.44 | 2.40 | -123.03 | .00 | 5.74 | 21.72 | 9.000 | 6.000 | 1.50 | 0 | .0 | | | |
| 13.865 | .0077 | | | | | | .0036 | .05 | 5.24 | 1.20 | 4.42 | .015 | .00 | 1.50 | TRAP | | | |
| 9080.543 | -130.573 | 5.403 | -125.170 | 904.00 | 11.86 | 2.19 | -122.98 | .00 | 5.74 | 22.21 | 9.000 | 6.000 | 1.50 | 0 | .0 | | | |
| 7.274 | .0077 | | | | | | .0031 | .02 | 5.40 | 1.13 | 4.42 | .015 | .00 | 1.50 | TRAP | | | |



CVWD
MDP
LINE E01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 9087.817 | -130.517 | 5.568 | -124.949 | 904.00 | 11.31 | 1.99 | -122.96 | .00 | 5.74 | 22.70 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 2.183 | .0077 | | | | | .0028 | .01 | 5.57 | 1.06 | 4.42 | .015 | .00 | 1.50 | TRAP |
| 9090.000 | -130.500 | 5.739 | -124.761 | 904.00 | 10.78 | 1.81 | -122.96 | .00 | 5.74 | 23.22 | 9.000 | 6.000 | 1.50 | 0 .0 |
| JUNCT STR | .0044 | | | | | | | 5.74 | 1.00 | | .015 | .00 | 1.50 | TRAP |
| 9110.000 | -130.412 | 2.591 | -127.821 | 453.00 | 17.48 | 4.74 | -123.08 | .00 | 3.99 | 10.00 | 7.000 | 10.000 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 9110.000 | -130.412 | 5.141 | -125.271 | 453.00 | 14.95 | 3.47 | -121.80 | .00 | 5.59 | 6.18 | 7.000 | .000 | .00 | 1 .0 |
| 2466.443 | .0064 | | | | | .0064 | 15.67 | 5.14 | 1.19 | 5.14 | .013 | .00 | .00 | PIPE |
| 11576.440 | -114.738 | 5.141 | -109.597 | 453.00 | 14.95 | 3.47 | -106.13 | .00 | 5.59 | 6.18 | 7.000 | .000 | .00 | 1 .0 |
| 237.055 | .0064 | | | | | .0061 | 1.45 | 5.14 | 1.19 | 5.14 | .013 | .00 | .00 | PIPE |
| 11813.500 | -113.232 | 5.324 | -107.908 | 453.00 | 14.42 | 3.23 | -104.68 | .00 | 5.59 | 5.97 | 7.000 | .000 | .00 | 1 .0 |
| 36.502 | .0064 | | | | | .0056 | .20 | 5.32 | 1.11 | 5.14 | .013 | .00 | .00 | PIPE |
| 11850.000 | -113.000 | 5.590 | -107.410 | 453.00 | 13.75 | 2.94 | -104.47 | .00 | 5.59 | 5.61 | 7.000 | .000 | .00 | 1 .0 |

| WALL | ENTRANCE | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11850.000 | -113.000 | 10.071 | -102.929 | 453.00 | 4.50 | .31 | -102.61 | .00 | 3.99 | 10.00 | 7.000 | 10.000 | .00 | 0 | .0 |

```
T1 CVWD                                                                                                  0
T2 MDP
T3 LINE E01-03
SO   1000.000-183.868 10      .015               -178.187
R    1850.060-176.983 10      .015
WE   1850.060-176.983 11      .500
TS   1865.000-173.500 12      .015
R    3250.000-163.000 12      .015
JX   3265.000-158.807 13 14   .015  129.000         -161.807        45.0
R    6350.000-122.000 13      .015
SH   6350.000-122.000 13      .015
CD   1  1   0    .000   8.000    8.000 1.500 1.500   .00
CD   2  1   0    .000   8.000    6.000 1.500 1.500   .00
CD   3  2   0    .000   8.000   12.000 0.000 0.000   .00
CD   4  3   0    .000   5.000   12.000 0.000 0.000   .00
CD   5  1   0    .000   9.000    6.000 1.500 1.500   .00
CD   6  2   0    .000   8.000   24.670 0.000 0.000   .00
CD   7  3   1    .670   6.000   24.670 0.000 0.000   .00
CD   8  2   0    .000   8.000   16.670  .000  .000   .00
CD   9  3   1    .670   6.000   16.670  .000  .000   .00
CD  10  3   0    .000   6.000    6.000  .000  .000   .00
CD  11  2   0    .000   6.000    6.000  .000  .000   .00
CD  12  1   0           6.000    6.000 1.500 1.500   .00
CD  13  1   0    .000   5.000    6.000 1.500 1.500   .00
CD  14  4   1           4.000
CD  15  4   1           3.000
CD  16  4   1           5.000
Q           238.000   .0
```

FILE: E01-03.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 8- 9-2013 Time: 2:13:28

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 8.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 1 | 0 | .000 | 8.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 3 | 2 | 0 | .000 | 8.000 | 12.000 | | | .00 | | | | | | | | | | |
| CD | 4 | 3 | 0 | .000 | 5.000 | 12.000 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 5 | 1 | 0 | .000 | 9.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 6 | 2 | 0 | .000 | 8.000 | 24.670 | | | .00 | | | | | | | | | | |
| CD | 7 | 3 | 1 | .670 | 6.000 | 24.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 8 | 2 | 0 | .000 | 8.000 | 16.670 | | | .00 | | | | | | | | | | |
| CD | 9 | 3 | 1 | .670 | 6.000 | 16.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 10 | 3 | 0 | .000 | 6.000 | 6.000 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 11 | 2 | 0 | .000 | 6.000 | 6.000 | | | .00 | | | | | | | | | | |
| CD | 12 | 1 | 0 | .000 | 6.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 13 | 1 | 0 | .000 | 5.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 14 | 4 | 1 | | 4.000 | | | | | | | | | | | | | | |
| CD | 15 | 4 | 1 | | 3.000 | | | | | | | | | | | | | | |
| CD | 16 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE E01-03

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1000.000 | -183.868 | 10 | -178.187 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1850.060 | -176.983 | 10 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 1850.060 | -176.983 | 11 | .500 |

ELEMENT NO 4 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 1865.000 | -173.500 | 12 | .015 | .000 | .000 |

ELEMENT NO 5 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3250.000 | -163.000 | 12 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 6 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3265.000 | -158.807 | 13 | 14 | 0 | .015 | 129.000 | .000 | -161.807 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 7 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 6350.000 | -122.000 | 13 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 8 IS A SYSTEM HEADWORKS * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 6350.000 | -122.000 | 13 | .000 |

CVWD
MDP
LINE E01-03

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000.000 | -183.868 | 5.681 | -178.187 | 367.00 | 10.77 | 1.80 | -176.39 | .00 | 4.88 | 6.00 | 6.000 | 6.000 | .00 | 0 .0 |
| 28.174 | .0081 | | | | | .0048 | .14 | 5.68 | .80 | 4.61 | .015 | .00 | .00 | BOX |
| | | WARNING - Flow depth near top of box conduit | | | | | | | | | | | | |
| 1028.174 | -183.640 | 5.417 | -178.223 | 367.00 | 11.29 | 1.98 | -176.24 | .00 | 4.88 | 6.00 | 6.000 | 6.000 | .00 | 0 .0 |
| 22.954 | .0081 | | | | | .0054 | .12 | 5.42 | .86 | 4.61 | .015 | .00 | .00 | BOX |
| | | WARNING - Flow depth near top of box conduit | | | | | | | | | | | | |
| 1051.128 | -183.454 | 5.165 | -178.289 | 367.00 | 11.84 | 2.18 | -176.11 | .00 | 4.88 | 6.00 | 6.000 | 6.000 | .00 | 0 .0 |
| .204 | .0081 | | | | | .0061 | .00 | 5.16 | .92 | 4.61 | .015 | .00 | .00 | BOX |
| 1051.332 | -183.452 | 5.165 | -178.288 | 367.00 | 11.84 | 2.18 | -176.11 | .00 | 4.88 | 6.00 | 6.000 | 6.000 | .00 | 0 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |
| 1051.332 | -183.452 | 4.607 | -178.845 | 367.00 | 13.28 | 2.74 | -176.11 | .00 | 4.88 | 6.00 | 6.000 | 6.000 | .00 | 0 .0 |
| 406.324 | .0081 | | | | | .0081 | 3.29 | 4.61 | 1.09 | 4.61 | .015 | .00 | .00 | BOX |
| 1457.656 | -180.161 | 4.607 | -175.554 | 367.00 | 13.28 | 2.74 | -172.82 | .00 | 4.88 | 6.00 | 6.000 | 6.000 | .00 | 0 .0 |
| 91.448 | .0081 | | | | | .0082 | .75 | 4.61 | 1.09 | 4.61 | .015 | .00 | .00 | BOX |
| 1549.104 | -179.421 | 4.557 | -174.863 | 367.00 | 13.42 | 2.80 | -172.07 | .00 | 4.88 | 6.00 | 6.000 | 6.000 | .00 | 0 .0 |
| 88.742 | .0081 | | | | | .0089 | .79 | 4.56 | 1.11 | 4.61 | .015 | .00 | .00 | BOX |



CVWD
MDP
LINE E01-03

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1637.846 | -178.702 | 4.345 | -174.357 | 367.00 | 14.08 | 3.08 | -171.28 | .00 | 4.88 | 6.00 | 6.000 | 6.000 | .00 | 0 .0 |
| 55.372 | .0081 | | | | | .0100 | .55 | 4.35 | 1.19 | 4.61 | .015 | .00 | .00 | BOX |
| 1693.218 | -178.253 | 4.143 | -174.110 | 367.00 | 14.76 | 3.38 | -170.73 | .00 | 4.88 | 6.00 | 6.000 | 6.000 | .00 | 0 .0 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 45.472 | .0081 | | | | .0113 | .51 | 4.14 | 1.28 | 4.61 | .015 | .00 | .00 | BOX | |
| 1738.690 | -177.885 | 3.950 | -173.935 | 367.00 | 15.48 | 3.72 | -170.21 | .00 | 4.88 | 6.00 | 6.000 | 6.000 | .00 | 0 .0 |
| 40.277 | .0081 | | | | .0128 | .51 | 3.95 | 1.37 | 4.61 | .015 | .00 | .00 | BOX | |
| 1778.967 | -177.559 | 3.766 | -173.792 | 367.00 | 16.24 | 4.10 | -169.70 | .00 | 4.88 | 6.00 | 6.000 | 6.000 | .00 | 0 .0 |
| 36.837 | .0081 | | | | .0145 | .53 | 3.77 | 1.47 | 4.61 | .015 | .00 | .00 | BOX | |
| 1815.805 | -177.260 | 3.591 | -173.669 | 367.00 | 17.03 | 4.50 | -169.16 | .00 | 4.88 | 6.00 | 6.000 | 6.000 | .00 | 0 .0 |
| 34.255 | .0081 | | | | .0164 | .56 | 3.59 | 1.58 | 4.61 | .015 | .00 | .00 | BOX | |
| 1850.060 | -176.983 | 3.425 | -173.558 | 367.00 | 17.86 | 4.95 | -168.61 | .00 | 4.88 | 6.00 | 6.000 | 6.000 | .00 | 0 .0 |
| TRANS STR | .2331 | | | | .0125 | .19 | 3.42 | 1.70 | | .015 | .00 | .00 | RECTANG | |
| 1865.000 | -173.500 | 2.824 | -170.676 | 367.00 | 12.70 | 2.50 | -168.17 | .00 | 3.62 | 14.47 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 604.844 | .0076 | | | | .0076 | 4.59 | 2.82 | 1.58 | 2.82 | .015 | .00 | 1.50 | TRAP | |
| 2469.844 | -168.915 | 2.824 | -166.091 | 367.00 | 12.70 | 2.50 | -163.59 | .00 | 3.62 | 14.47 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 292.059 | .0076 | | | | .0078 | 2.28 | 2.82 | 1.58 | 2.82 | .015 | .00 | 1.50 | TRAP | |
| 2761.903 | -166.700 | 2.783 | -163.917 | 367.00 | 12.96 | 2.61 | -161.31 | .00 | 3.62 | 14.35 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 168.407 | .0076 | | | | .0086 | 1.44 | 2.78 | 1.63 | 2.82 | .015 | .00 | 1.50 | TRAP | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 9-2013 Time: 2:13:35

CVWD
MDP
LINE E01-03

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 2930.311 | -165.424 | 2.690 | -162.733 | 367.00 | 13.59 | 2.87 | -159.86 | .00 | 3.62 | 14.07 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 89.538 | .0076 | | | | .0098 | .88 | 2.69 | 1.73 | 2.82 | .015 | .00 | 1.50 | TRAP | |
| 3019.849 | -164.745 | 2.600 | -162.145 | 367.00 | 14.26 | 3.16 | -158.99 | .00 | 3.62 | 13.80 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 63.915 | .0076 | | | | .0111 | .71 | 2.60 | 1.84 | 2.82 | .015 | .00 | 1.50 | TRAP | |
| 3083.764 | -164.260 | 2.512 | -161.748 | 367.00 | 14.95 | 3.47 | -158.28 | .00 | 3.62 | 13.54 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 51.066 | .0076 | | | | .0127 | .65 | 2.51 | 1.96 | 2.82 | .015 | .00 | 1.50 | TRAP | |
| 3134.830 | -163.873 | 2.427 | -161.446 | 367.00 | 15.68 | 3.82 | -157.63 | .00 | 3.62 | 13.28 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 43.245 | .0076 | | | | .0145 | .63 | 2.43 | 2.08 | 2.82 | .015 | .00 | 1.50 | TRAP | |
| 3178.075 | -163.545 | 2.344 | -161.201 | 367.00 | 16.45 | 4.20 | -157.00 | .00 | 3.62 | 13.03 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 37.918 | .0076 | | | | .0165 | .63 | 2.34 | 2.22 | 2.82 | .015 | .00 | 1.50 | TRAP | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3215.992 | -163.258 | 2.264 | -160.994 | 367.00 | 17.25 | 4.62 | -156.37 | .00 | 3.62 | 12.79 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 34.008 | .0076 | | | | | .0189 | .64 | 2.26 | 2.36 | 2.82 | .015 | .00 | 1.50 | TRAP |
| 3250.000 | -163.000 | 2.186 | -160.814 | 367.00 | 18.09 | 5.08 | -155.73 | .00 | 3.62 | 12.56 | 6.000 | 6.000 | 1.50 | 0 .0 |
| JUNCT STR | .2795 | | | | | .0160 | .24 | 2.19 | 2.51 | | .015 | .00 | 1.50 | TRAP |
| 3265.000 | -158.807 | 1.994 | -156.813 | 238.00 | 13.28 | 2.74 | -154.08 | .00 | 2.86 | 11.98 | 5.000 | 6.000 | 1.50 | 0 .0 |
| 2583.480 | .0119 | | | | | .0119 | 30.83 | 1.99 | 1.91 | 1.99 | .015 | .00 | 1.50 | TRAP |
| 5848.480 | -127.984 | 1.994 | -125.990 | 238.00 | 13.28 | 2.74 | -123.25 | .00 | 2.86 | 11.98 | 5.000 | 6.000 | 1.50 | 0 .0 |
| 239.429 | .0119 | | | | | .0116 | 2.78 | 1.99 | 1.91 | 1.99 | .015 | .00 | 1.50 | TRAP |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 9-2013 Time: 2:13:35

CVWD
MDP
LINE E01-03

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6087.910 | -125.127 | 2.025 | -123.102 | 238.00 | 13.00 | 2.62 | -120.48 | .00 | 2.86 | 12.08 | 5.000 | 6.000 | 1.50 | 0 .0 |
| 120.002 | .0119 | | | | | .0106 | 1.27 | 2.03 | 1.86 | 1.99 | .015 | .00 | 1.50 | TRAP |
| 6207.912 | -123.695 | 2.099 | -121.597 | 238.00 | 12.40 | 2.39 | -119.21 | .00 | 2.86 | 12.30 | 5.000 | 6.000 | 1.50 | 0 .0 |
| 52.625 | .0119 | | | | | .0092 | .49 | 2.10 | 1.75 | 1.99 | .015 | .00 | 1.50 | TRAP |
| 6260.536 | -123.067 | 2.174 | -120.893 | 238.00 | 11.82 | 2.17 | -118.72 | .00 | 2.86 | 12.52 | 5.000 | 6.000 | 1.50 | 0 .0 |
| 31.168 | .0119 | | | | | .0081 | .25 | 2.17 | 1.64 | 1.99 | .015 | .00 | 1.50 | TRAP |
| 6291.704 | -122.696 | 2.252 | -120.444 | 238.00 | 11.27 | 1.97 | -118.47 | .00 | 2.86 | 12.76 | 5.000 | 6.000 | 1.50 | 0 .0 |
| 20.526 | .0119 | | | | | .0071 | .15 | 2.25 | 1.54 | 1.99 | .015 | .00 | 1.50 | TRAP |
| 6312.230 | -122.451 | 2.332 | -120.119 | 238.00 | 10.74 | 1.79 | -118.33 | .00 | 2.86 | 13.00 | 5.000 | 6.000 | 1.50 | 0 .0 |
| 14.111 | .0119 | | | | | .0062 | .09 | 2.33 | 1.45 | 1.99 | .015 | .00 | 1.50 | TRAP |
| 6326.341 | -122.282 | 2.414 | -119.868 | 238.00 | 10.24 | 1.63 | -118.24 | .00 | 2.86 | 13.24 | 5.000 | 6.000 | 1.50 | 0 .0 |
| 9.782 | .0119 | | | | | .0055 | .05 | 2.41 | 1.36 | 1.99 | .015 | .00 | 1.50 | TRAP |
| 6336.124 | -122.166 | 2.499 | -119.666 | 238.00 | 9.77 | 1.48 | -118.18 | .00 | 2.86 | 13.50 | 5.000 | 6.000 | 1.50 | 0 .0 |
| 6.636 | .0119 | | | | | .0048 | .03 | 2.50 | 1.28 | 1.99 | .015 | .00 | 1.50 | TRAP |
| 6342.759 | -122.086 | 2.587 | -119.500 | 238.00 | 9.31 | 1.35 | -118.15 | .00 | 2.86 | 13.76 | 5.000 | 6.000 | 1.50 | 0 .0 |
| 4.224 | .0119 | | | | | .0042 | .02 | 2.59 | 1.20 | 1.99 | .015 | .00 | 1.50 | TRAP |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6346.983 | -122.036 | 2.676 | -119.360 | 238.00 | 8.88 | 1.22 | -118.14 | .00 | 2.86 | 14.03 | 5.000 | 6.000 | 1.50 | 0 | .0 |
| 2.300 | .0119 | | | | | .0037 | .01 | 2.68 | 1.13 | 1.99 | .015 | .00 | 1.50 | TRAP | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 9-2013 Time: 2:13:35

CVWD
MDP
LINE E01-03

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6349.284 | -122.009 | 2.769 | -119.240 | 238.00 | 8.47 | 1.11 | -118.13 | .00 | 2.86 | 14.31 | 5.000 | 6.000 | 1.50 | 0 | .0 |
| .716 | .0119 | | | | | .0032 | .00 | 2.77 | 1.06 | 1.99 | .015 | .00 | 1.50 | TRAP | |
| 6350.000 | -122.000 | 2.865 | -119.135 | 238.00 | 8.07 | 1.01 | -118.12 | .00 | 2.86 | 14.59 | 5.000 | 6.000 | 1.50 | 0 | .0 |

```
T1 CVWD                                                                                                  0
T2 MDP
T3 LINE F01
SO   3100.000-223.900  1      .015                -217.830
R    4943.000-222.057  1      .015
JX   4973.000-222.027  2  5   .015  298.000         -222.400         45.0
WX   4973.000-222.027  3
R    5013.000-221.927  3      .015
WE   5013.000-221.927  2      .500
TS   5063.000-221.802  4      .015
R    8500.000-217.000  4      .015
TS   8530.000-216.897  6      .015
R    9958.000-213.000  6      .015
TS   9988.000-212.776  7      .015
WX   9988.000-212.776  8
R   10597.000-207.224  8      .015
WE  10597.000-207.224  7      .500
TS  10680.000-205.310  9      .015
JX  10710.000-204.618 10 11   .015 3923.000         -204.618         30.0
R   13000.000-196.000 10      .015
JX  13030.000-193.000 13 12   .015  636.000         -194.765         45.0
R   15565.000-176.905 13      .015
JX  15595.000-176.347 14  5   .015  266.000         -175.347         45.0
WX  15595.000-176.347 15
R   15645.000-175.417 15      .015
WE  15645.000-175.417 14      .500
TS  15675.000-174.859 16      .015
R   18220.000-151.800 16      .015
JX  18250.000-151.200 22 17   .015  428.000         -150.500         45.0
WX  18250.000-151.200 23
R   18290.000-150.400 23      .015
WE  18290.000-150.400 22      .500
TS  18320.000-149.800 21      .015
R   20905.000-124.950 21      .015
JX  20920.000-124.800 18 17   .015  427.000         -123.800         45.0
R   23600.000-102.415 18      .015
JX  23615.000-102.291 20 17   .015  447.000         -101.291         45.0
WX  23615.000-102.291 19
R   23650.000-102.000 19      .013
R   26440.000-085.011 19      .013
WE  26440.000-085.011 20      .500
SH  26440.000-085.011 20      .013
CD   1  1   0    .000  10.000  110.000 1.500 1.500   .00
CD   2  2   0    .000  10.000  113.360  .000  .000   .00
CD   3  3   8   0.670   6.000  113.360  .000  .000   .00
CD   4  1   0    .000  10.000   90.000 1.500 1.500   .00
CD   5  4   1          5.000
CD   6  1   0    .000  10.000   80.000 1.500 1.500   .00
CD   7  2   0    .000  10.000   88.020  .000  .000   .00
CD   8  3   6    .670   6.000   88.020  .000  .000   .00
CD   9  1   0    .000  10.000   60.000 1.500 1.500   .00
CD  10  1   0    .000  10.000   20.000 1.500 1.500   .00
CD  11  1   0    .000  10.000   35.000 1.500 1.500   .00
CD  12  4   1          6.000
CD  13  1   0    .000  10.000   17.000 1.500 1.500   .00
CD  14  2   0    .000  10.000   20.670  .000  .000   .00
CD  15  3   1    .670   6.000   20.670  .000  .000   .00
```

```
CD  16  1   0    .000  10.000   10.000 1.500 1.500   .00
CD  17  4   1          5.500
CD  18  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  19  4   1          8.000
CD  20  2   0    .000  10.000    8.000  .000  .000   .00
CD  21  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  22  2   0    .000  10.000   16.670  .000  .000   .00
CD  23  3   1    .670   5.000   16.670  .000  .000   .00

Q           634.000
```

FILE: F01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 8- 2-2013 Time: 4:43:39

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 10.000 | 110.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 2 | 0 | .000 | 10.000 | 113.360 | | | .00 | | | | | | | | | | |
| CD | 3 | 3 | 8 | .670 | 6.000 | 113.360 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 4 | 1 | 0 | .000 | 10.000 | 90.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 5 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |
| CD | 6 | 1 | 0 | .000 | 10.000 | 80.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 7 | 2 | 0 | .000 | 10.000 | 88.020 | | | .00 | | | | | | | | | | |
| CD | 8 | 3 | 6 | .670 | 6.000 | 88.020 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 9 | 1 | 0 | .000 | 10.000 | 60.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 10 | 1 | 0 | .000 | 10.000 | 20.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 11 | 1 | 0 | .000 | 10.000 | 35.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 12 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 13 | 1 | 0 | .000 | 10.000 | 17.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 14 | 2 | 0 | .000 | 10.000 | 20.670 | | | .00 | | | | | | | | | | |
| CD | 15 | 3 | 1 | .670 | 6.000 | 20.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 16 | 1 | 0 | .000 | 10.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 17 | 4 | 1 | | 5.500 | | | | | | | | | | | | | | |
| CD | 18 | 1 | 0 | .000 | 10.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 19 | 4 | 1 | | 8.000 | | | | | | | | | | | | | | |
| CD | 20 | 2 | 0 | .000 | 10.000 | 8.000 | | | .00 | | | | | | | | | | |
| CD | 21 | 1 | 0 | .000 | 10.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 22 | 2 | 0 | .000 | 10.000 | 16.670 | | | .00 | | | | | | | | | | |
| CD | 23 | 3 | 1 | .670 | 5.000 | 16.670 | .000 | .000 | .00 | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE F01

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 3100.000 | -223.900 | 1 | -217.830 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 4943.000 | -222.057 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4973.000 | -222.027 | 2 | 5 | 0 | .015 | 298.000 | .000 | -222.400 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 4 IS A WALL EXIT *

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 4973.000 | -222.027 | 3 |

ELEMENT NO 5 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 5013.000 | -221.927 | 3 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 6 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 5013.000 | -221.927 | 2 | .500 |

ELEMENT NO 7 IS A TRANSITION * * *

```
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               5063.000 -221.802    4              .015                           .000     .000
 ELEMENT NO   8 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               8500.000 -217.000    4              .015                           .000     .000       .000     0
 ELEMENT NO   9 IS A TRANSITION         *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               8530.000 -216.897    6              .015                           .000     .000
 ELEMENT NO  10 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               9958.000 -213.000    6              .015                           .000     .000       .000     0
 ELEMENT NO  11 IS A TRANSITION         *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               9988.000 -212.776    7              .015                           .000     .000
                                                      W S P G W                                                        PAGE NO   3
                              WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  12 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                               9988.000 -212.776    8
 ELEMENT NO  13 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              10597.000 -207.224    8              .015                           .000     .000       .000     0
 ELEMENT NO  14 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT             FP
                              10597.000 -207.224    7              .500
 ELEMENT NO  15 IS A TRANSITION         *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                              10680.000 -205.310    9              .015                           .000     .000
 ELEMENT NO  16 IS A JUNCTION           *         *     *     *           *                        *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                              10710.000 -204.618   10    11     0   .015  3923.000      .000  -204.618      .000  30.000     .000
                                                                                                RADIUS    ANGLE
                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  17 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              13000.000 -196.000   10              .015                           .000     .000       .000     0
 ELEMENT NO  18 IS A JUNCTION           *         *     *     *           *                        *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                              13030.000 -193.000   13    12     0   .015   636.000      .000  -194.765      .000  45.000     .000
                                                                                                RADIUS    ANGLE
                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  19 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              15565.000 -176.905   13              .015                           .000     .000       .000     0
 ELEMENT NO  20 IS A JUNCTION           *         *     *     *           *                        *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                              15595.000 -176.347   14     5     0   .015   266.000      .000  -175.347      .000  45.000     .000
                                                                                                RADIUS    ANGLE
                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
                                                      W S P G W                                                        PAGE NO   4
                              WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  21 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                              15595.000 -176.347   15
 ELEMENT NO  22 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              15645.000 -175.417   15              .015                           .000     .000       .000     0
 ELEMENT NO  23 IS A  WALL  ENTRANCE                  *
```

```
                    U/S DATA   STATION    INVERT  SECT              FP
                               15645.000 -175.417   14              .500
 ELEMENT NO  24 IS A TRANSITION          *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                              RADIUS   ANGLE
                               15675.000 -174.859   16              .015                             .000     .000
 ELEMENT NO  25 IS A REACH               *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                              RADIUS    ANGLE     ANG PT  MAN H
                               18220.000 -151.800   16              .015                             .000     .000      .000     0
 ELEMENT NO  26 IS A JUNCTION            *         *     *     *           *                          *                 *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                               18250.000 -151.200   22    17     0   .015   428.000      .000  -150.500      .000  45.000     .000
                                                                                                  RADIUS    ANGLE
                                                                                                    .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  27 IS A  WALL  EXIT                     *
                    U/S DATA   STATION    INVERT  SECT
                               18250.000 -151.200   23
 ELEMENT NO  28 IS A REACH               *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                              RADIUS    ANGLE     ANG PT  MAN H
                               18290.000 -150.400   23              .015                             .000     .000      .000     0
 ELEMENT NO  29 IS A  WALL  ENTRANCE                 *
                    U/S DATA   STATION    INVERT  SECT              FP
                               18290.000 -150.400   22              .500
 ELEMENT NO  30 IS A TRANSITION          *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                              RADIUS   ANGLE
                               18320.000 -149.800   21              .015                             .000     .000
 ELEMENT NO  31 IS A REACH               *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                              RADIUS    ANGLE     ANG PT  MAN H
                               20905.000 -124.950   21              .015                             .000     .000      .000     0
 ELEMENT NO  32 IS A JUNCTION            *         *     *     *           *                          *                 *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                               20920.000 -124.800   18    17     0   .015   427.000      .000  -123.800      .000  45.000     .000
                                                                                                  RADIUS    ANGLE
                                                                                                    .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
                                                W S P G W                                                                PAGE NO   5
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  33 IS A REACH               *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                              RADIUS    ANGLE     ANG PT  MAN H
                               23600.000 -102.415   18              .015                             .000     .000      .000     0
 ELEMENT NO  34 IS A JUNCTION            *         *     *     *           *                          *                 *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                               23615.000 -102.291   20    17     0   .015   447.000      .000  -101.291      .000  45.000     .000
                                                                                                  RADIUS    ANGLE
                                                                                                    .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  35 IS A  WALL  EXIT                     *
                    U/S DATA   STATION    INVERT  SECT
                               23615.000 -102.291   19
 ELEMENT NO  36 IS A REACH               *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                              RADIUS    ANGLE     ANG PT  MAN H
                               23650.000 -102.000   19              .013                             .000     .000      .000     0
 ELEMENT NO  37 IS A REACH               *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                              RADIUS    ANGLE     ANG PT  MAN H
                               26440.000  -85.011   19              .013                             .000     .000      .000     0
 ELEMENT NO  38 IS A  WALL  ENTRANCE                 *
                    U/S DATA   STATION    INVERT  SECT              FP
                               26440.000  -85.011   20              .500
 ELEMENT NO  39 IS A SYSTEM HEADWORKS                *                   *
                    U/S DATA   STATION    INVERT  SECT                                    W S ELEV
                               26440.000  -85.011   20                                       .000
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CVWD
MDP
LINE F01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3100.000 | -223.900 | 6.070 | -217.830 | 7059.00 | 9.76 | 1.48 | -216.35 | .00 | 4.92 | 128.21 | 10.000 | 110.000 | 1.50 | 0 .0 |
| 1815.180 | .0010 | | | | | .0010 | 1.82 | 6.07 | .72 | 6.08 | .015 | .00 | 1.50 | TRAP |
| 4915.180 | -222.085 | 6.079 | -216.006 | 7059.00 | 9.75 | 1.48 | -214.53 | .00 | 4.92 | 128.24 | 10.000 | 110.000 | 1.50 | 0 .0 |
| 27.820 | .0010 | | | | | .0010 | .03 | 6.08 | .72 | 6.08 | .015 | .00 | 1.50 | TRAP |
| 4943.000 | -222.057 | 6.079 | -215.978 | 7059.00 | 9.75 | 1.48 | -214.50 | .00 | 4.92 | 128.24 | 10.000 | 110.000 | 1.50 | 0 .0 |
| JUNCT STR | .0010 | | | | | .0010 | .03 | 6.08 | .72 | | .015 | .00 | 1.50 | TRAP |
| ---------- WARNING - Junction Analysis - Change in Channel Type ---------- | | | | | | | | | | | | | | |
| 4973.000 | -222.027 | 6.018 | -216.009 | 6761.00 | 9.91 | 1.52 | -214.48 | .00 | 4.80 | 113.36 | 10.000 | 113.360 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 4973.000 | -222.027 | 6.019 | -216.008 | 6761.00 | 10.43 | 1.69 | -214.32 | .00 | 4.96 | 113.36 | 6.000 | 113.360 | .00 | 8 .7 |
| 40.000 | .0025 | | | | | .0044 | .18 | 6.02 | .77 | 6.00 | .015 | .00 | .00 | BOX |
| 5013.000 | -221.927 | 6.095 | -215.832 | 6761.00 | 10.43 | 1.69 | -214.14 | .00 | 4.96 | 113.36 | 6.000 | 113.360 | .00 | 8 .7 |
| WALL ENTRANCE | | | | | | | | | | | | | | |
| 5013.000 | -221.927 | 6.882 | -215.045 | 6761.00 | 8.67 | 1.17 | -213.88 | .00 | 4.80 | 113.36 | 10.000 | 113.360 | .00 | 0 .0 |
| TRANS STR | .0025 | | | | | .0009 | .04 | 6.88 | .58 | | .015 | .00 | .00 | RECTANG |
| 5063.000 | -221.802 | 6.555 | -215.247 | 6761.00 | 10.33 | 1.66 | -213.59 | .00 | 5.43 | 109.67 | 10.000 | 90.000 | 1.50 | 0 .0 |
| 434.564 | .0014 | | | | | .0011 | .49 | 6.56 | .75 | 6.03 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE F01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 5497.564 | -221.195 | 6.276 | -214.919 | 6761.00 | 10.84 | 1.82 | -213.10 | .00 | 5.43 | 108.83 | 10.000 | 90.000 | 1.50 | 0 .0 |
| 897.243 | .0014 | | | | | .0013 | 1.17 | 6.28 | .80 | 6.03 | .015 | .00 | 1.50 | TRAP |
| 6394.808 | -219.941 | 6.030 | -213.911 | 6761.00 | 11.32 | 1.99 | -211.92 | .00 | 5.43 | 108.09 | 10.000 | 90.000 | 1.50 | 0 .0 |
| 1933.019 | .0014 | | | | | .0014 | 2.70 | 6.03 | .85 | 6.03 | .015 | .00 | 1.50 | TRAP |
| 8327.826 | -217.241 | 6.030 | -211.210 | 6761.00 | 11.32 | 1.99 | -209.22 | .00 | 5.43 | 108.09 | 10.000 | 90.000 | 1.50 | 0 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |
| 8327.826 | -217.241 | 4.858 | -212.383 | 6761.00 | 14.31 | 3.18 | -209.20 | .00 | 5.43 | 104.57 | 10.000 | 90.000 | 1.50 | 0 .0 |
| 40.440 | .0014 | | | | | .0030 | .12 | 4.86 | 1.19 | 6.03 | .015 | .00 | 1.50 | TRAP |
| 8368.267 | -217.184 | 4.723 | -212.461 | 6761.00 | 14.75 | 3.38 | -209.08 | .00 | 5.43 | 104.17 | 10.000 | 90.000 | 1.50 | 0 .0 |
| 64.669 | .0014 | | | | | .0034 | .22 | 4.72 | 1.24 | 6.03 | .015 | .00 | 1.50 | TRAP |
| 8432.936 | -217.094 | 4.517 | -212.576 | 6761.00 | 15.47 | 3.71 | -208.86 | .00 | 5.43 | 103.55 | 10.000 | 90.000 | 1.50 | 0 .0 |
| 67.064 | .0014 | | | | | .0040 | .27 | 4.52 | 1.33 | 6.03 | .015 | .00 | 1.50 | TRAP |
| 8500.000 | -217.000 | 4.320 | -212.680 | 6761.00 | 16.22 | 4.09 | -208.59 | .00 | 5.43 | 102.96 | 10.000 | 90.000 | 1.50 | 0 .0 |
| TRANS STR | .0034 | | | | | .0035 | .11 | 4.32 | 1.42 | | .015 | .00 | 1.50 | TRAP |
| 8530.000 | -216.897 | 5.295 | -211.602 | 6761.00 | 14.52 | 3.27 | -208.33 | .00 | 5.83 | 95.88 | 10.000 | 80.000 | 1.50 | 0 .0 |
| 289.216 | .0027 | | | | | .0027 | .79 | 5.29 | 1.16 | 5.29 | .015 | .00 | 1.50 | TRAP |
| 8819.216 | -216.108 | 5.295 | -210.813 | 6761.00 | 14.52 | 3.27 | -207.54 | .00 | 5.83 | 95.88 | 10.000 | 80.000 | 1.50 | 0 .0 |
| 430.088 | .0027 | | | | | .0028 | 1.22 | 5.29 | 1.16 | 5.29 | .015 | .00 | 1.50 | TRAP |





| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 9249.304 | -214.934 | 5.187 | -209.747 | 6761.00 | 14.85 | 3.42 | -206.32 | .00 | 5.83 | 95.56 | 10.000 | 80.000 | 1.50 | 0 .0 |
| 279.037 | .0027 | | | | | .0032 | .88 | 5.19 | 1.20 | 5.29 | .015 | .00 | 1.50 | TRAP |
| 9528.341 | -214.173 | 4.965 | -209.208 | 6761.00 | 15.57 | 3.77 | -205.44 | .00 | 5.83 | 94.89 | 10.000 | 80.000 | 1.50 | 0 .0 |
| 174.496 | .0027 | | | | | .0037 | .64 | 4.96 | 1.28 | 5.29 | .015 | .00 | 1.50 | TRAP |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9702.837 | -213.696 | 4.751 | -208.945 | 6761.00 | 16.33 | 4.14 | -204.80 | .00 | 5.83 | 94.25 | 10.000 | 80.000 | 1.50 | 0 | .0 |
| 137.603 | .0027 | | | | | .0042 | .58 | 4.75 | 1.37 | 5.29 | .015 | .00 | 1.50 | TRAP | |
| 9840.439 | -213.321 | 4.546 | -208.775 | 6761.00 | 17.13 | 4.56 | -204.22 | .00 | 5.83 | 93.64 | 10.000 | 80.000 | 1.50 | 0 | .0 |
| 117.561 | .0027 | | | | | .0049 | .58 | 4.55 | 1.47 | 5.29 | .015 | .00 | 1.50 | TRAP | |
| 9958.000 | -213.000 | 4.349 | -208.651 | 6761.00 | 17.97 | 5.01 | -203.64 | .00 | 5.83 | 93.05 | 10.000 | 80.000 | 1.50 | 0 | .0 |
| TRANS STR | .0075 | | | | | .0054 | .16 | 4.35 | 1.57 | | .015 | .00 | 1.50 | TRAP | |
| 9988.000 | -212.776 | 4.258 | -208.518 | 6761.00 | 18.04 | 5.05 | -203.46 | .00 | 5.68 | 88.02 | 10.000 | 88.020 | .00 | 0 | .0 |
| WALL | EXIT | | | | | | | | | | | | | | |
| 9988.000 | -212.776 | 4.521 | -208.255 | 6761.00 | 17.80 | 4.92 | -203.33 | .00 | 5.86 | 88.02 | 6.000 | 88.020 | .00 | 6 | .7 |
| 418.475 | .0091 | | | | | .0096 | 4.03 | 4.52 | 1.51 | 4.52 | .015 | .00 | .00 | BOX | |
| 10406.470 | -208.961 | 4.357 | -204.604 | 6761.00 | 18.47 | 5.30 | -199.31 | .00 | 5.86 | 88.02 | 6.000 | 88.020 | .00 | 6 | .7 |
| 190.525 | .0091 | | | | | .0108 | 2.06 | 4.36 | 1.60 | 4.52 | .015 | .00 | .00 | BOX | |
| 10597.000 | -207.224 | 4.154 | -203.070 | 6761.00 | 19.37 | 5.83 | -197.24 | .00 | 5.86 | 88.02 | 6.000 | 88.020 | .00 | 6 | .7 |
| WALL | ENTRANCE | | | | | | | | | | | | | | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 2-2013 Time: 4:43:49

CVWD
MDP
LINE F01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 10597.000 | -207.224 | 3.631 | -203.593 | 6761.00 | 21.15 | 6.95 | -196.64 | .00 | 5.68 | 88.02 | 10.000 | 88.020 | .00 | 0 | .0 |
| TRANS STR | .0231 | | | | | .0055 | .46 | 3.63 | 1.96 | | .015 | .00 | .00 | RECTANG | |
| 10680.000 | -205.310 | 6.904 | -198.406 | 6761.00 | 13.92 | 3.01 | -195.40 | .00 | 6.90 | 80.71 | 10.000 | 60.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0231 | | | | | | | 6.90 | 1.00 | | .015 | .00 | 1.50 | TRAP | |
| 10710.000 | -204.618 | 6.111 | -198.507 | 2838.00 | 15.92 | 3.94 | -194.57 | .00 | 7.11 | 38.33 | 10.000 | 20.000 | 1.50 | 0 | .0 |
| 161.520 | .0038 | | | | | .0038 | .61 | 6.11 | 1.30 | 6.11 | .015 | .00 | 1.50 | TRAP | |
| 10871.520 | -204.010 | 6.111 | -197.899 | 2838.00 | 15.92 | 3.94 | -193.96 | .00 | 7.11 | 38.33 | 10.000 | 20.000 | 1.50 | 0 | .0 |
| 605.325 | .0038 | | | | | .0038 | 2.28 | 6.11 | 1.30 | 6.11 | .015 | .00 | 1.50 | TRAP | |
| 11476.840 | -201.732 | 6.104 | -195.628 | 2838.00 | 15.95 | 3.95 | -191.68 | .00 | 7.11 | 38.31 | 10.000 | 20.000 | 1.50 | 0 | .0 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 618.042 | .0038 | | | | | .0040 | 2.50 | 6.10 | 1.30 | 6.11 | .015 | .00 | 1.50 | TRAP | | | | |
| 12094.890 | -199.406 | 5.886 | -193.520 | 2838.00 | 16.72 | 4.34 | -189.18 | .00 | 7.11 | 37.66 | 10.000 | 20.000 | 1.50 | 0 | .0 | | | |
| 257.339 | .0038 | | | | | .0046 | 1.19 | 5.89 | 1.39 | 6.11 | .015 | .00 | 1.50 | TRAP | | | | |
| 12352.230 | -198.438 | 5.675 | -192.763 | 2838.00 | 17.54 | 4.78 | -187.99 | .00 | 7.11 | 37.02 | 10.000 | 20.000 | 1.50 | 0 | .0 | | | |
| 178.176 | .0038 | | | | | .0053 | .94 | 5.67 | 1.48 | 6.11 | .015 | .00 | 1.50 | TRAP | | | | |
| 12530.400 | -197.767 | 5.470 | -192.298 | 2838.00 | 18.40 | 5.25 | -187.04 | .00 | 7.11 | 36.41 | 10.000 | 20.000 | 1.50 | 0 | .0 | | | |
| 142.542 | .0038 | | | | | .0061 | .86 | 5.47 | 1.57 | 6.11 | .015 | .00 | 1.50 | TRAP | | | | |
| 12672.940 | -197.231 | 5.271 | -191.960 | 2838.00 | 19.29 | 5.78 | -186.18 | .00 | 7.11 | 35.81 | 10.000 | 20.000 | 1.50 | 0 | .0 | | | |
| 121.746 | .0038 | | | | | .0069 | .84 | 5.27 | 1.68 | 6.11 | .015 | .00 | 1.50 | TRAP | | | | |



CVWD
MDP
LINE F01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 12794.690 | -196.773 | 5.078 | -191.694 | 2838.00 | 20.24 | 6.36 | -185.34 | .00 | 7.11 | 35.23 | 10.000 | 20.000 | 1.50 | 0 .0 |
| 107.780 | .0038 | | | | | .0079 | .85 | 5.08 | 1.79 | 6.11 | .015 | .00 | 1.50 | TRAP |
| 12902.470 | -196.367 | 4.891 | -191.476 | 2838.00 | 21.22 | 6.99 | -184.48 | .00 | 7.11 | 34.67 | 10.000 | 20.000 | 1.50 | 0 .0 |
| 97.530 | .0038 | | | | | .0091 | .89 | 4.89 | 1.90 | 6.11 | .015 | .00 | 1.50 | TRAP |
| 13000.000 | -196.000 | 4.711 | -191.289 | 2838.00 | 22.26 | 7.69 | -183.60 | .00 | 7.11 | 34.13 | 10.000 | 20.000 | 1.50 | 0 .0 |
| JUNCT STR | .1000 | | | | | .0080 | .24 | 4.71 | 2.03 | | .015 | .00 | 1.50 | TRAP |
| 13030.000 | -193.000 | 4.968 | -188.032 | 2202.00 | 18.13 | 5.10 | -182.93 | .00 | 6.58 | 31.90 | 10.000 | 17.000 | 1.50 | 0 .0 |
| 786.726 | .0063 | | | | | .0063 | 5.00 | 4.97 | 1.64 | 4.97 | .015 | .00 | 1.50 | TRAP |
| 13816.730 | -188.005 | 4.968 | -183.037 | 2202.00 | 18.13 | 5.10 | -177.94 | .00 | 6.58 | 31.90 | 10.000 | 17.000 | 1.50 | 0 .0 |
| 575.925 | .0063 | | | | | .0063 | 3.66 | 4.97 | 1.64 | 4.97 | .015 | .00 | 1.50 | TRAP |
| 14392.650 | -184.348 | 4.968 | -179.381 | 2202.00 | 18.13 | 5.10 | -174.28 | .00 | 6.58 | 31.90 | 10.000 | 17.000 | 1.50 | 0 .0 |
| 725.840 | .0063 | | | | | .0068 | 4.94 | 4.97 | 1.64 | 4.97 | .015 | .00 | 1.50 | TRAP |
| 15118.490 | -179.740 | 4.789 | -174.951 | 2202.00 | 19.01 | 5.61 | -169.34 | .00 | 6.58 | 31.37 | 10.000 | 17.000 | 1.50 | 0 .0 |

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 270.564 | .0063 | | | | | .0078 | 2.11 | 4.79 | 1.74 | 4.97 | .015 | .00 | 1.50 | TRAP |
| 15389.060 | -178.022 | 4.616 | -173.406 | 2202.00 | 19.94 | 6.17 | -167.23 | .00 | 6.58 | 30.85 | 10.000 | 17.000 | 1.50 | 0 .0 |
| 175.944 | .0063 | | | | | .0089 | 1.57 | 4.62 | 1.86 | 4.97 | .015 | .00 | 1.50 | TRAP |
| 15565.000 | -176.905 | 4.448 | -172.457 | 2202.00 | 20.91 | 6.79 | -165.67 | .00 | 6.58 | 30.34 | 10.000 | 17.000 | 1.50 | 0 .0 |
| JUNCT STR | .0186 | | | | | .0101 | .30 | 4.45 | 1.98 | | .015 | .00 | 1.50 | TRAP |

---------- WARNING - Junction Analysis - Change in Channel Type ----------





| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 15595.000 | -176.347 | 4.352 | -171.995 | 1936.00 | 21.52 | 7.19 | -164.80 | .00 | 6.48 | 20.67 | 10.000 | 20.670 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 15595.000 | -176.347 | 4.525 | -171.822 | 1936.00 | 21.39 | 7.11 | -164.72 | .00 | 6.00 | 20.67 | 6.000 | 20.670 | .00 | 1 .7 |
| 50.000 | .0186 | | | | | .0143 | .71 | 4.52 | 1.80 | 4.15 | .015 | .00 | .00 | BOX |
| 15645.000 | -175.417 | 4.631 | -170.786 | 1936.00 | 20.90 | 6.78 | -164.00 | .00 | 6.00 | 20.67 | 6.000 | 20.670 | .00 | 1 .7 |
| WALL ENTRANCE | | | | | | | | | | | | | | |
| 15645.000 | -175.417 | 4.211 | -171.206 | 1936.00 | 22.24 | 7.68 | -163.52 | .00 | 6.48 | 20.67 | 10.000 | 20.670 | .00 | 0 .0 |
| TRANS STR | .0186 | | | | | .0104 | .31 | 4.21 | 1.91 | | .015 | .00 | .00 | RECTANG |
| 15675.000 | -174.859 | 5.246 | -169.613 | 1936.00 | 20.66 | 6.62 | -162.99 | .00 | 7.37 | 25.74 | 10.000 | 10.000 | 1.50 | 0 .0 |
| 929.496 | .0091 | | | | | .0091 | 8.42 | 5.25 | 1.91 | 5.25 | .015 | .00 | 1.50 | TRAP |
| 16604.490 | -166.437 | 5.246 | -161.192 | 1936.00 | 20.66 | 6.62 | -154.57 | .00 | 7.37 | 25.74 | 10.000 | 10.000 | 1.50 | 0 .0 |
| 779.055 | .0091 | | | | | .0089 | 6.96 | 5.25 | 1.91 | 5.25 | .015 | .00 | 1.50 | TRAP |
| 17383.550 | -159.379 | 5.283 | -154.096 | 1936.00 | 20.45 | 6.49 | -147.60 | .00 | 7.37 | 25.85 | 10.000 | 10.000 | 1.50 | 0 .0 |
| 526.229 | .0091 | | | | | .0083 | 4.35 | 5.28 | 1.88 | 5.25 | .015 | .00 | 1.50 | TRAP |
| 17909.780 | -154.611 | 5.460 | -149.151 | 1936.00 | 19.49 | 5.90 | -143.25 | .00 | 7.37 | 26.38 | 10.000 | 10.000 | 1.50 | 0 .0 |
| 197.820 | .0091 | | | | | .0073 | 1.44 | 5.46 | 1.77 | 5.25 | .015 | .00 | 1.50 | TRAP |

CVWD
MDP
LINE F01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 18107.600 | -152.818 | 5.642 | -147.177 | 1936.00 | 18.59 | 5.36 | -141.81 | .00 | 7.37 | 26.93 | 10.000 | 10.000 | 1.50 | 0 .0 |
| 112.402 | .0091 | | | | | .0064 | .72 | 5.64 | 1.67 | 5.25 | .015 | .00 | 1.50 | TRAP |
| 18220.000 | -151.800 | 5.829 | -145.971 | 1936.00 | 17.72 | 4.88 | -141.09 | .00 | 7.37 | 27.49 | 10.000 | 10.000 | 1.50 | 0 .0 |
| JUNCT STR | .0200 | | | | | .0080 | .24 | 5.83 | 1.57 | | .015 | .00 | 1.50 | TRAP |
| | | | WARNING - Junction Analysis - Change in Channel Type | | | | | | | | | | | |
| 18250.000 | -151.200 | 4.468 | -146.732 | 1508.00 | 20.25 | 6.36 | -140.37 | .00 | 6.33 | 16.67 | 10.000 | 16.670 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 18250.000 | -151.200 | 4.697 | -146.503 | 1508.00 | 20.06 | 6.25 | -140.25 | .00 | 5.00 | 16.67 | 5.000 | 16.670 | .00 | 1 .7 |
| 40.000 | .0200 | | | | | .0141 | .56 | 4.70 | 1.67 | 4.18 | .015 | .00 | .00 | BOX |
| | | | WARNING - Flow depth near top of box conduit | | | | | | | | | | | |
| 18290.000 | -150.400 | 4.851 | -145.549 | 1508.00 | 19.43 | 5.86 | -139.69 | .00 | 5.00 | 16.67 | 5.000 | 16.670 | .00 | 1 .7 |
| WALL ENTRANCE | | | | | | | | | | | | | | |
| | | | WARNING - Flow depth near top of box conduit | | | | | | | | | | | |
| 18290.000 | -150.400 | 4.270 | -146.130 | 1508.00 | 21.18 | 6.97 | -139.16 | .00 | 6.33 | 16.67 | 10.000 | 16.670 | .00 | 0 .0 |
| TRANS STR | .0200 | | | | | .0105 | .32 | 4.27 | 1.81 | | .015 | .00 | .00 | RECTANG |



CVWD
MDP
LINE F01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 18320.000 | -149.800 | 4.919 | -144.881 | 1508.00 | 19.93 | 6.17 | -138.71 | .00 | 6.90 | 22.76 | 10.000 | 8.000 | 1.50 | 0 .0 |
| 1278.547 | .0096 | | | | | .0096 | 12.29 | 4.92 | 1.93 | 4.92 | .015 | .00 | 1.50 | TRAP |
| 19598.550 | -137.509 | 4.919 | -132.590 | 1508.00 | 19.93 | 6.17 | -126.42 | .00 | 6.90 | 22.76 | 10.000 | 8.000 | 1.50 | 0 .0 |
| 689.145 | .0096 | | | | | .0092 | 6.36 | 4.92 | 1.93 | 4.92 | .015 | .00 | 1.50 | TRAP |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20287.690 | -130.884 | 5.022 | -125.862 | 1508.00 | 19.33 | 5.80 | -120.06 | .00 | 6.90 | 23.07 | 10.000 | 8.000 | 1.50 | 0 | .0 |
| 279.219 | .0096 | | | | | .0083 | 2.32 | 5.02 | 1.85 | 4.92 | .015 | .00 | 1.50 | TRAP | |
| 20566.910 | -128.200 | 5.186 | -123.014 | 1508.00 | 18.43 | 5.27 | -117.74 | .00 | 6.90 | 23.56 | 10.000 | 8.000 | 1.50 | 0 | .0 |
| 134.951 | .0096 | | | | | .0073 | .99 | 5.19 | 1.74 | 4.92 | .015 | .00 | 1.50 | TRAP | |
| 20701.860 | -126.903 | 5.354 | -121.549 | 1508.00 | 17.57 | 4.79 | -116.75 | .00 | 6.90 | 24.06 | 10.000 | 8.000 | 1.50 | 0 | .0 |
| 82.559 | .0096 | | | | | .0064 | .53 | 5.35 | 1.64 | 4.92 | .015 | .00 | 1.50 | TRAP | |
| 20784.420 | -126.109 | 5.526 | -120.583 | 1508.00 | 16.75 | 4.36 | -116.22 | .00 | 6.90 | 24.58 | 10.000 | 8.000 | 1.50 | 0 | .0 |
| 55.277 | .0096 | | | | | .0056 | .31 | 5.53 | 1.54 | 4.92 | .015 | .00 | 1.50 | TRAP | |
| 20839.700 | -125.578 | 5.703 | -119.875 | 1508.00 | 15.97 | 3.96 | -115.91 | .00 | 6.90 | 25.11 | 10.000 | 8.000 | 1.50 | 0 | .0 |
| 38.420 | .0096 | | | | | .0050 | .19 | 5.70 | 1.45 | 4.92 | .015 | .00 | 1.50 | TRAP | |
| 20878.120 | -125.208 | 5.884 | -119.324 | 1508.00 | 15.23 | 3.60 | -115.72 | .00 | 6.90 | 25.65 | 10.000 | 8.000 | 1.50 | 0 | .0 |
| 26.883 | .0096 | | | | | .0044 | .12 | 5.88 | 1.37 | 4.92 | .015 | .00 | 1.50 | TRAP | |
| 20905.000 | -124.950 | 6.071 | -118.879 | 1508.00 | 14.52 | 3.27 | -115.60 | .00 | 6.90 | 26.21 | 10.000 | 8.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0100 | | | | | .0062 | .09 | 6.07 | 1.29 | | .015 | .00 | 1.50 | TRAP | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 2-2013 Time: 4:43:49

CVWD
MDP
LINE F01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 20920.000 | -124.800 | 4.724 | -120.076 | 1081.00 | 17.49 | 4.75 | -115.33 | .00 | 6.27 | 20.17 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 2112.977 | .0084 | | | | | .0084 | 17.65 | 4.72 | 1.76 | 4.72 | .015 | .00 | 1.50 | TRAP | |
| 23032.980 | -107.151 | 4.724 | -102.427 | 1081.00 | 17.49 | 4.75 | -97.68 | .00 | 6.27 | 20.17 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 567.023 | .0084 | | | | | .0080 | 4.56 | 4.72 | 1.76 | 4.72 | .015 | .00 | 1.50 | TRAP | |
| 23600.000 | -102.415 | 4.815 | -97.600 | 1081.00 | 16.98 | 4.48 | -93.12 | .00 | 6.27 | 20.45 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0083 | | | | | .0097 | .14 | 4.82 | 1.70 | | .015 | .00 | 1.50 | TRAP | |
| ---------- WARNING - Junction Analysis - Change in Channel Type ---------- | | | | | | | | | | | | | | | |
| 23615.000 | -102.291 | 4.503 | -97.788 | 634.00 | 17.60 | 4.81 | -92.98 | .00 | 5.80 | 8.00 | 10.000 | 8.000 | .00 | 0 | .0 |
| WALL EXIT | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23615.000 | -102.291 | 5.738 | -96.553 | 634.00 | 16.43 | 4.19 | -92.36 | .00 | 6.40 | 7.21 | 8.000 | .000 | .00 | 1 | .0 |
| 35.000 | .0083 | | | | | .0063 | .22 | 5.74 | 1.25 | 5.23 | .013 | .00 | .00 | PIPE | |
| 23650.000 | -102.000 | 5.883 | -96.117 | 634.00 | 16.00 | 3.98 | -92.14 | .00 | 6.40 | 7.06 | 8.000 | .000 | .00 | 1 | .0 |
| 2464.049 | .0061 | | | | | .0061 | 15.00 | 5.88 | 1.19 | 5.88 | .013 | .00 | .00 | PIPE | |
| 26114.050 | -86.996 | 5.883 | -81.113 | 634.00 | 16.00 | 3.98 | -77.14 | .00 | 6.40 | 7.06 | 8.000 | .000 | .00 | 1 | .0 |
| 281.244 | .0061 | | | | | .0059 | 1.65 | 5.88 | 1.19 | 5.88 | .013 | .00 | .00 | PIPE | |
| 26395.290 | -85.283 | 6.092 | -79.191 | 634.00 | 15.44 | 3.70 | -75.49 | .00 | 6.40 | 6.82 | 8.000 | .000 | .00 | 1 | .0 |
| 44.707 | .0061 | | | | | .0053 | .24 | 6.09 | 1.11 | 5.88 | .013 | .00 | .00 | PIPE | |



CVWD
MDP
LINE F01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 26440.000 | -85.011 | 6.396 | -78.615 | 634.00 | 14.72 | 3.36 | -75.25 | .00 | 6.40 | 6.41 | 8.000 | .000 | .00 | 1 | .0 |
| WALL | ENTRANCE | | | | | | | | | | | | | | |
| 26440.000 | -85.011 | 10.477 | -74.534 | 634.00 | 7.56 | .89 | -73.65 | .00 | 5.80 | 8.00 | 10.000 | 8.000 | .00 | 0 | .0 |

```
T1 CVWD                                                                    0
T2 MDP
T3 LINE F01-01
SO   1035.960-204.617  1      .015                -198.424
R    1145.580-204.255  1      .015
R    1488.500-203.125  1      .015                              65.493
R    2324.620-200.369  1      .015
R    2475.760-199.871  1      .015                             -24.741
R    3650.000-196.000  1      .015
JX   3680.000-195.338  2  5   .015  636.000         -194.849         45.0
R    6235.000-182.000  2      .015
TS   6265.000-181.754  3      .015
WX   6265.000-181.754  4
R    6305.000-181.427  4      .015
WE   6305.000-181.427  3      .500
TS   6335.000-180.740  2      .015
R    6385.000-179.600  2      .015
JX   6455.000-178.000  6  7   .015 2341.000         -178.000         30.0
R    8950.000-170.131  6      .015
JX   8980.000-169.519  8  9   .015  350.000         -169.019         45.0
R   11602.000-156.006  8      .015
TS  11632.000-155.846 10      .015
WX  11632.000-155.846 11
R   11672.000-155.632 11      .015
WE  11672.000-155.632 10      .500
TS  11702.000-155.472  8      .015
R   11800.000-154.952  8      .015
SH  11800.000-154.952  8      .015
CD   1  1   0    .000  10.000   40.000 1.500 1.500   .00
CD   2  1   0    .000  10.000   35.000 1.500 1.500   .00
CD   3  2   0    .000  10.000   42.010  .000  .000   .00
CD   4  3   3    .670   6.000   42.010  .000  .000   .00
CD   5  4   1           5.000
CD   6  1   0    .000  10.000   10.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   20.000 1.500 1.500   .00
CD   8  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   9  4   1    .000   4.000
CD  10  2   0    .000  10.000   14.670  .000  .000   .00
CD  11  3   1    .670   6.000   14.670  .000  .000   .00
CD  12  4   1           6.000
CD  13  1   0    .000  10.000   17.000 1.500 1.500   .00
CD  14  2   0    .000  10.000   20.670  .000  .000   .00
CD  15  3   1    .670   6.000   20.670  .000  .000   .00
CD  16  1   0    .000  10.000   10.000 1.500 1.500   .00
CD  17  4   1           5.500
CD  18  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  19  4   1           8.000
CD  20  2   0    .000  10.000    8.000  .000  .000   .00
CD  21  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  22  2   0    .000  10.000   16.670  .000  .000   .00
CD  23  3   1    .670   5.000   16.670  .000  .000   .00

Q          868.000
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FILE: F01-01.WSW  W S P G W - EDIT LISTING - Version 14.06  Date: 8- 2-2013 Time: 4:53: 8

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING  PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 10.000 | 40.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 1 | 0 | .000 | 10.000 | 35.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 3 | 2 | 0 | .000 | 10.000 | 42.010 | | | .00 | | | | | | | | | | |
| CD | 4 | 3 | 3 | .670 | 6.000 | 42.010 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 5 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |
| CD | 6 | 1 | 0 | .000 | 10.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 7 | 1 | 0 | .000 | 10.000 | 20.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 8 | 1 | 0 | .000 | 10.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 9 | 4 | 1 | | 4.000 | | | | | | | | | | | | | | |
| CD | 10 | 2 | 0 | .000 | 10.000 | 14.670 | | | .00 | | | | | | | | | | |
| CD | 11 | 3 | 1 | .670 | 6.000 | 14.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 12 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 13 | 1 | 0 | .000 | 10.000 | 17.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 14 | 2 | 0 | .000 | 10.000 | 20.670 | | | .00 | | | | | | | | | | |
| CD | 15 | 3 | 1 | .670 | 6.000 | 20.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 16 | 1 | 0 | .000 | 10.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 17 | 4 | 1 | | 5.500 | | | | | | | | | | | | | | |
| CD | 18 | 1 | 0 | .000 | 10.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 19 | 4 | 1 | | 8.000 | | | | | | | | | | | | | | |
| CD | 20 | 2 | 0 | .000 | 10.000 | 8.000 | | | .00 | | | | | | | | | | |
| CD | 21 | 1 | 0 | .000 | 10.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 22 | 2 | 0 | .000 | 10.000 | 16.670 | | | .00 | | | | | | | | | | |
| CD | 23 | 3 | 1 | .670 | 5.000 | 16.670 | .000 | .000 | .00 | | | | | | | | | | |

W S P G W  PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

CVWD

HEADING LINE NO 2 IS -

MDP

HEADING LINE NO 3 IS -

LINE F01-01

W S P G W  PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1035.960 | -204.617 | 1 | -198.424 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1145.580 | -204.255 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1488.500 | -203.125 | 1 | .015 | 300.000 | 65.493 | .000 | 0 |

ELEMENT NO 4 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2324.620 | -200.369 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 5 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2475.760 | -199.871 | 1 | .015 | 350.013 | -24.741 | .000 | 0 |

ELEMENT NO 6 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3650.000 | -196.000 | 1 | .015 | .000 | .000 | .000 | 0 |

```
ELEMENT NO   7 IS A JUNCTION          *         *     *     *                *                  *                *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                           3680.000 -195.338    2     5     0   .015   636.000      .000  -194.849      .000  45.000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
ELEMENT NO   8 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                           6235.000 -182.000    2               .015                           .000     .000      .000     0
ELEMENT NO   9 IS A TRANSITION        *         *     *
                U/S DATA   STATION    INVERT  SECT               N                          RADIUS   ANGLE
                           6265.000 -181.754    3               .015                           .000     .000
ELEMENT NO  10 IS A  WALL  EXIT                  *
                U/S DATA   STATION    INVERT  SECT
                           6265.000 -181.754    4
ELEMENT NO  11 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                           6305.000 -181.427    4               .015                           .000     .000      .000     0
                                                      W S P G W                                                    PAGE NO   3
                         WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  12 IS A  WALL  ENTRANCE              *
                U/S DATA   STATION    INVERT  SECT              FP
                           6305.000 -181.427    3               .500
ELEMENT NO  13 IS A TRANSITION        *         *     *
                U/S DATA   STATION    INVERT  SECT               N                          RADIUS   ANGLE
                           6335.000 -180.740    2               .015                           .000     .000
ELEMENT NO  14 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                           6385.000 -179.600    2               .015                           .000     .000      .000     0
ELEMENT NO  15 IS A JUNCTION          *         *     *     *                *                  *                *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                           6455.000 -178.000    6     7     0   .015  2341.000      .000  -178.000      .000  30.000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
ELEMENT NO  16 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                           8950.000 -170.131    6               .015                           .000     .000      .000     0
ELEMENT NO  17 IS A JUNCTION          *         *     *     *                *                  *                *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                           8980.000 -169.519    8     9     0   .015   350.000      .000  -169.019      .000  45.000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
ELEMENT NO  18 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                          11602.000 -156.006    8               .015                           .000     .000      .000     0
ELEMENT NO  19 IS A TRANSITION        *         *     *
                U/S DATA   STATION    INVERT  SECT               N                          RADIUS   ANGLE
                          11632.000 -155.846   10               .015                           .000     .000
ELEMENT NO  20 IS A  WALL  EXIT                  *
                U/S DATA   STATION    INVERT  SECT
                          11632.000 -155.846   11
                                                      W S P G W                                                    PAGE NO   4
                         WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  21 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
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```
                          11672.000 -155.632   11          .015                    .000     .000      .000     0
ELEMENT NO  22 IS A  WALL  ENTRANCE                    *
                   U/S DATA   STATION    INVERT  SECT        FP
                          11672.000 -155.632   10          .500
ELEMENT NO  23 IS A TRANSITION          *          *     *
                   U/S DATA   STATION    INVERT  SECT         N                    RADIUS   ANGLE
                          11702.000 -155.472    8          .015                    .000     .000
ELEMENT NO  24 IS A REACH               *          *     *
                   U/S DATA   STATION    INVERT  SECT         N                    RADIUS    ANGLE     ANG PT  MAN H
                          11800.000 -154.952    8          .015                    .000     .000      .000     0
ELEMENT NO  25 IS A SYSTEM HEADWORKS                   *                    *
                   U/S DATA   STATION    INVERT  SECT                          W S ELEV
                          11800.000 -154.952    8                               .000
```

CVWD
MDP
LINE F01-01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1035.960 | -204.617 | 5.592 | -199.025 | 4195.00 | 15.50 | 3.73 | -195.29 | .00 | 6.42 | 56.78 | 10.000 | 40.000 | 1.50 | 0 .0 |
| 109.620 | .0033 | | | | | .0033 | .36 | 5.59 | 1.25 | 5.59 | .015 | .00 | 1.50 | TRAP |
| 1145.580 | -204.255 | 5.593 | -198.662 | 4195.00 | 15.50 | 3.73 | -194.93 | 1.84 | 6.42 | 56.78 | 10.000 | 40.000 | 1.50 | 0 .0 |
| 342.920 | .0033 | | | | | .0033 | 1.13 | 7.43 | 1.25 | 5.59 | .015 | .00 | 1.50 | TRAP |
| 1488.500 | -203.125 | 5.593 | -197.532 | 4195.00 | 15.50 | 3.73 | -193.80 | .00 | 6.42 | 56.78 | 10.000 | 40.000 | 1.50 | 0 .0 |
| 302.828 | .0033 | | | | | .0033 | 1.00 | 5.59 | 1.25 | 5.59 | .015 | .00 | 1.50 | TRAP |
| 1791.328 | -202.127 | 5.593 | -196.534 | 4195.00 | 15.50 | 3.73 | -192.80 | .00 | 6.42 | 56.78 | 10.000 | 40.000 | 1.50 | 0 .0 |
| 533.292 | .0033 | | | | | .0033 | 1.76 | 5.59 | 1.25 | 5.59 | .015 | .00 | 1.50 | TRAP |
| 2324.620 | -200.369 | 5.590 | -194.779 | 4195.00 | 15.51 | 3.74 | -191.04 | 1.58 | 6.42 | 56.77 | 10.000 | 40.000 | 1.50 | 0 .0 |
| 151.140 | .0033 | | | | | .0033 | .50 | 7.17 | 1.25 | 5.59 | .015 | .00 | 1.50 | TRAP |
| 2475.760 | -199.871 | 5.586 | -194.285 | 4195.00 | 15.52 | 3.74 | -190.54 | .00 | 6.42 | 56.76 | 10.000 | 40.000 | 1.50 | 0 .0 |
| 540.572 | .0033 | | | | | .0035 | 1.88 | 5.59 | 1.25 | 5.59 | .015 | .00 | 1.50 | TRAP |
| 3016.332 | -198.089 | 5.439 | -192.650 | 4195.00 | 16.02 | 3.98 | -188.67 | .00 | 6.42 | 56.32 | 10.000 | 40.000 | 1.50 | 0 .0 |
| 296.103 | .0033 | | | | | .0039 | 1.16 | 5.44 | 1.31 | 5.59 | .015 | .00 | 1.50 | TRAP |
| 3312.435 | -197.113 | 5.221 | -191.891 | 4195.00 | 16.80 | 4.38 | -187.51 | .00 | 6.42 | 55.66 | 10.000 | 40.000 | 1.50 | 0 .0 |
| 189.606 | .0033 | | | | | .0045 | .85 | 5.22 | 1.40 | 5.59 | .015 | .00 | 1.50 | TRAP |
| 3502.041 | -196.488 | 5.011 | -191.476 | 4195.00 | 17.62 | 4.82 | -186.66 | .00 | 6.42 | 55.03 | 10.000 | 40.000 | 1.50 | 0 .0 |
| 147.959 | .0033 | | | | | .0052 | .77 | 5.01 | 1.49 | 5.59 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE F01-01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3650.000 | -196.000 | 4.809 | -191.191 | 4195.00 | 18.48 | 5.30 | -185.89 | .00 | 6.42 | 54.43 | 10.000 | 40.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0221 | | | | | .0054 | .16 | 4.81 | 1.59 | | .015 | .00 | 1.50 | TRAP | |
| 3680.000 | -195.338 | 4.787 | -190.551 | 3559.00 | 17.62 | 4.82 | -185.73 | .00 | 6.23 | 49.36 | 10.000 | 35.000 | 1.50 | 0 | .0 |
| 1827.023 | .0052 | | | | | .0052 | 9.54 | 4.79 | 1.54 | 4.79 | .015 | .00 | 1.50 | TRAP | |
| 5507.023 | -185.800 | 4.787 | -181.013 | 3559.00 | 17.62 | 4.82 | -176.19 | .00 | 6.23 | 49.36 | 10.000 | 35.000 | 1.50 | 0 | .0 |
| 727.977 | .0052 | | | | | .0054 | 3.94 | 4.79 | 1.54 | 4.79 | .015 | .00 | 1.50 | TRAP | |
| 6235.000 | -182.000 | 4.691 | -177.309 | 3559.00 | 18.05 | 5.06 | -172.25 | .00 | 6.23 | 49.07 | 10.000 | 35.000 | 1.50 | 0 | .0 |
| TRANS STR | .0082 | | | | | .0055 | .16 | 4.69 | 1.59 | | .015 | .00 | 1.50 | TRAP | |
| 6265.000 | -181.754 | 4.755 | -176.999 | 3559.00 | 17.82 | 4.93 | -172.07 | .00 | 6.06 | 42.01 | 10.000 | 42.010 | .00 | 0 | .0 |
| WALL | EXIT | | | | | | | | | | | | | | |
| 6265.000 | -181.754 | 5.076 | -176.678 | 3559.00 | 17.53 | 4.77 | -171.91 | .00 | 6.00 | 42.01 | 6.000 | 42.010 | .00 | 3 | .7 |
| 40.000 | .0082 | | | | | .0092 | .37 | 5.08 | 1.40 | 5.29 | .015 | .00 | .00 | BOX | |
| 6305.000 | -181.427 | 5.029 | -176.398 | 3559.00 | 17.69 | 4.86 | -171.54 | .00 | 6.00 | 42.01 | 6.000 | 42.010 | .00 | 3 | .7 |
| WALL | ENTRANCE | | | | | | | | | | | | | | |
| 6305.000 | -181.427 | 4.244 | -177.183 | 3559.00 | 19.96 | 6.19 | -170.99 | .00 | 6.06 | 42.01 | 10.000 | 42.010 | .00 | 0 | .0 |
| TRANS STR | .0229 | | | | | .0070 | .21 | 4.24 | 1.71 | | .015 | .00 | .00 | RECTANG | |
| 6335.000 | -180.740 | 4.518 | -176.222 | 3559.00 | 18.86 | 5.52 | -170.70 | .00 | 6.23 | 48.55 | 10.000 | 35.000 | 1.50 | 0 | .0 |
| 10.344 | .0228 | | | | | .0061 | .06 | 4.52 | 1.69 | 3.11 | .015 | .00 | 1.50 | TRAP | |



CVWD
MDP
LINE F01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6345.344 | -180.504 | 4.616 | -175.888 | 3559.00 | 18.39 | 5.25 | -170.64 | .00 | 6.23 | 48.85 | 10.000 | 35.000 | 1.50 | 0 | .0 |
| 16.512 | .0228 | | | | | .0055 | .09 | 4.62 | 1.63 | 3.11 | .015 | .00 | 1.50 | TRAP | |
| 6361.856 | -180.128 | 4.808 | -175.319 | 3559.00 | 17.53 | 4.77 | -170.55 | .00 | 6.23 | 49.43 | 10.000 | 35.000 | 1.50 | 0 | .0 |
| 13.045 | .0228 | | | | | .0048 | .06 | 4.81 | 1.52 | 3.11 | .015 | .00 | 1.50 | TRAP | |
| 6374.901 | -179.830 | 5.008 | -174.823 | 3559.00 | 16.72 | 4.34 | -170.48 | .00 | 6.23 | 50.02 | 10.000 | 35.000 | 1.50 | 0 | .0 |
| 10.099 | .0228 | | | | | .0042 | .04 | 5.01 | 1.43 | 3.11 | .015 | .00 | 1.50 | TRAP | |
| 6385.000 | -179.600 | 5.214 | -174.386 | 3559.00 | 15.94 | 3.95 | -170.44 | .00 | 6.23 | 50.64 | 10.000 | 35.000 | 1.50 | 0 | .0 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUNCT STR | .0229 | | | | .0035 | .25 | 5.21 | 1.34 | | .015 | .00 | 1.50 | TRAP | | |
| 6455.000 | -178.000 | 5.420 | -172.580 | 1218.00 | 12.40 | 2.39 | -170.19 | .00 | 5.78 | 26.26 | 10.000 | 10.000 | 1.50 | 0 | .0 |
| 1876.459 | .0032 | | | | .0032 | 5.92 | 5.42 | 1.13 | 5.42 | .015 | .00 | 1.50 | TRAP | | |
| 8331.459 | -172.082 | 5.420 | -166.662 | 1218.00 | 12.40 | 2.39 | -164.28 | .00 | 5.78 | 26.26 | 10.000 | 10.000 | 1.50 | 0 | .0 |
| 275.145 | .0032 | | | | .0033 | .91 | 5.42 | 1.13 | 5.42 | .015 | .00 | 1.50 | TRAP | | |
| 8606.604 | -171.214 | 5.288 | -165.926 | 1218.00 | 12.84 | 2.56 | -163.36 | .00 | 5.78 | 25.86 | 10.000 | 10.000 | 1.50 | 0 | .0 |
| 149.354 | .0032 | | | | .0037 | .55 | 5.29 | 1.18 | 5.42 | .015 | .00 | 1.50 | TRAP | | |
| 8755.958 | -170.743 | 5.116 | -165.627 | 1218.00 | 13.47 | 2.82 | -162.81 | .00 | 5.78 | 25.35 | 10.000 | 10.000 | 1.50 | 0 | .0 |
| 105.906 | .0032 | | | | .0042 | .45 | 5.12 | 1.26 | 5.42 | .015 | .00 | 1.50 | TRAP | | |
| 8861.864 | -170.409 | 4.948 | -165.461 | 1218.00 | 14.13 | 3.10 | -162.36 | .00 | 5.78 | 24.84 | 10.000 | 10.000 | 1.50 | 0 | .0 |
| 88.136 | .0032 | | | | .0048 | .42 | 4.95 | 1.34 | 5.42 | .015 | .00 | 1.50 | TRAP | | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 2-2013 Time: 4:53:19

CVWD
MDP
LINE F01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 8950.000 | -170.131 | 4.785 | -165.346 | 1218.00 | 14.82 | 3.41 | -161.94 | .00 | 5.78 | 24.36 | 10.000 | 10.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0204 | | | | .0051 | .15 | 4.79 | 1.42 | | .015 | .00 | 1.50 | TRAP | | |
| 8979.999 | -169.519 | 4.774 | -164.745 | 868.00 | 13.81 | 2.96 | -161.78 | .00 | 5.62 | 20.32 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 1886.001 | .0052 | | | | .0052 | 9.72 | 4.77 | 1.38 | 4.77 | .015 | .00 | 1.50 | TRAP | | |
| 10866.000 | -159.799 | 4.774 | -155.025 | 868.00 | 13.81 | 2.96 | -152.06 | .00 | 5.62 | 20.32 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 401.045 | .0052 | | | | .0050 | 2.02 | 4.77 | 1.38 | 4.77 | .015 | .00 | 1.50 | TRAP | | |
| 11267.040 | -157.732 | 4.829 | -152.903 | 868.00 | 13.57 | 2.86 | -150.04 | .00 | 5.62 | 20.49 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 203.935 | .0052 | | | | .0046 | .94 | 4.83 | 1.35 | 4.77 | .015 | .00 | 1.50 | TRAP | | |
| 11470.980 | -156.681 | 4.980 | -151.701 | 868.00 | 12.94 | 2.60 | -149.10 | .00 | 5.62 | 20.94 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 74.847 | .0052 | | | | .0041 | .30 | 4.98 | 1.27 | 4.77 | .015 | .00 | 1.50 | TRAP | | |
| 11545.830 | -156.296 | 5.135 | -151.161 | 868.00 | 12.34 | 2.36 | -148.80 | .00 | 5.62 | 21.40 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 35.559 | .0052 | | | | .0036 | .13 | 5.13 | 1.20 | 4.77 | .015 | .00 | 1.50 | TRAP | | |
| 11581.380 | -156.112 | 5.293 | -150.819 | 868.00 | 11.76 | 2.15 | -148.67 | .00 | 5.62 | 21.88 | 10.000 | 6.000 | 1.50 | 0 | .0 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16.189 | .0052 | | | | .0031 | .05 | 5.29 | 1.13 | 4.77 | .015 | .00 | 1.50 | TRAP | |
| 11597.570 | -156.029 | 5.456 | -150.573 | 868.00 | 11.22 | 1.95 | -148.62 | .00 | 5.62 | 22.37 | 10.000 | 6.000 | 1.50 | 0 .0 |
| 4.426 | .0052 | | | | .0028 | .01 | 5.46 | 1.06 | 4.77 | .015 | .00 | 1.50 | TRAP | |
| 11602.000 | -156.006 | 5.624 | -150.382 | 868.00 | 10.69 | 1.77 | -148.61 | .00 | 5.62 | 22.87 | 10.000 | 6.000 | 1.50 | 0 .0 |
| TRANS STR | .0053 | | | | .0025 | .08 | 5.62 | 1.00 | | .015 | .00 | 1.50 | TRAP | |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 11632.000 | -155.846 | 5.557 | -150.289 | 868.00 | 10.65 | 1.76 | -148.53 | .00 | 4.77 | 14.67 | 10.000 | 14.670 | .00 | 0 .0 |
| WALL | EXIT | | | | | | | | | | | | | |
| 11632.000 | -155.846 | 5.558 | -150.288 | 868.00 | 11.16 | 1.93 | -148.36 | .00 | 4.92 | 14.67 | 6.000 | 14.670 | .00 | 1 .7 |
| 40.000 | .0053 | | | | .0046 | .18 | 5.56 | .85 | 5.22 | .015 | .00 | .00 | BOX | |
| | | | | WARNING - Flow depth near top of box conduit | | | | | | | | | | |
| 11672.000 | -155.632 | 5.464 | -150.168 | 868.00 | 11.35 | 2.00 | -148.17 | .00 | 4.92 | 14.67 | 6.000 | 14.670 | .00 | 1 .7 |
| WALL | ENTRANCE | | | | | | | | | | | | | |
| | | | | WARNING - Flow depth near top of box conduit | | | | | | | | | | |
| 11672.000 | -155.632 | 6.726 | -148.906 | 868.00 | 8.80 | 1.20 | -147.70 | .00 | 4.77 | 14.67 | 10.000 | 14.670 | .00 | 0 .0 |
| TRANS STR | .0053 | | | | .0013 | .04 | 6.73 | .60 | | .015 | .00 | .00 | RECTANG | |
| 11702.000 | -155.472 | 6.966 | -148.506 | 868.00 | 7.57 | .89 | -147.61 | .00 | 5.62 | 26.90 | 10.000 | 6.000 | 1.50 | 0 .0 |
| 26.472 | .0053 | | | | .0011 | .03 | 6.97 | .65 | 4.74 | .015 | .00 | 1.50 | TRAP | |
| 11728.470 | -155.332 | 6.766 | -148.566 | 868.00 | 7.94 | .98 | -147.59 | .00 | 5.62 | 26.30 | 10.000 | 6.000 | 1.50 | 0 .0 |
| 24.027 | .0053 | | | | .0012 | .03 | 6.77 | .69 | 4.74 | .015 | .00 | 1.50 | TRAP | |
| 11752.500 | -155.204 | 6.570 | -148.634 | 868.00 | 8.33 | 1.08 | -147.56 | .00 | 5.62 | 25.71 | 10.000 | 6.000 | 1.50 | 0 .0 |
| 21.309 | .0053 | | | | .0014 | .03 | 6.57 | .73 | 4.74 | .015 | .00 | 1.50 | TRAP | |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

F01-01

| L/Elem | Ch Slope | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11773.810 | -155.091 | 6.380 | -148.711 | 868.00 | 8.74 | 1.19 | -147.53 | .00 | 5.62 | 25.14 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 18.221 | .0053 | | | | .0016 | .03 | 6.38 | .77 | 4.74 | .015 | .00 | 1.50 | TRAP | | |
| 11792.030 | -154.994 | 6.194 | -148.801 | 868.00 | 9.17 | 1.30 | -147.50 | .00 | 5.62 | 24.58 | 10.000 | 6.000 | 1.50 | 0 | .0 |
| 7.972 | .0053 | | | | .0018 | .01 | 6.19 | .82 | 4.74 | .015 | .00 | 1.50 | TRAP | | |
| 11800.000 | -154.952 | 6.100 | -148.852 | 868.00 | 9.39 | 1.37 | -147.48 | .00 | 5.62 | 24.30 | 10.000 | 6.000 | 1.50 | 0 | .0 |

```
T1 CVWD                                                                    0
T2 MDP
T3 LINE F01-02
SO   1000.000-180.449  1      .015                -172.592
R    1100.000-178.000  1      .015
R    3550.000-160.000  1      .015
JX   3570.000-159.777  2  3   .015  232.000         -158.760         45.0
R    6295.000-129.381  2      .015
TS   6325.000-129.047  4      .015
BX   6325.000-129.047  5
R    6365.000-128.601  5      .015
BE   6365.000-128.601  4      .500
TS   6395.000-128.266  2      .015
R    6429.150-126.474  2      .015
JX   6459.150-124.900  6  7   .015 1125.000         -124.900         30.0
R    8940.000-099.000  6      .015
JX   8970.000-098.491  8  3   .015  399.000         -097.491         45.0
WX   8970.000-098.491  9
R   11650.000-053.000  9      .013
WE  11650.000-053.000  8      .500
SH  11650.000-053.000  8      .013
CD   1  1   0    .000   8.000   15.000 1.500 1.500   .00
CD   2  1   0    .000   8.000   13.000 1.500 1.500   .00
CD   3  4   1           4.000
CD   4  2   0    .000   8.000   20.670  .000  .000   .00
CD   5  3   1    .670   5.000   20.670  .000  .000   .00
CD   6  1   0    .000   8.000    6.000 1.500 1.500   .00
CD   7  1   0    .000  10.000    7.000 1.500 1.500   .00
CD   8  2   0    .000   8.000    8.000 0.000 0.000   .00
CD   9  4   1    .000   7.000
CD  10  2   0    .000  10.000   14.670  .000  .000   .00
CD  11  3   1    .670   6.000   14.670  .000  .000   .00
CD  12  4   1           6.000
CD  13  1   0    .000  10.000   17.000 1.500 1.500   .00
CD  14  2   0    .000  10.000   20.670  .000  .000   .00
CD  15  3   1    .670   6.000   20.670  .000  .000   .00
CD  16  1   0    .000  10.000   10.000 1.500 1.500   .00
CD  17  4   1           5.500
CD  18  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  19  4   1           8.000
CD  20  2   0    .000  10.000    8.000  .000  .000   .00
CD  21  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  22  2   0    .000  10.000   16.670  .000  .000   .00
CD  23  3   1    .670   5.000   16.670  .000  .000   .00

Q          474.000
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FILE: F01-02.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 8- 5-2013 Time: 8:15: 9

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 8.000 | 15.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 1 | 0 | .000 | 8.000 | 13.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 3 | 4 | 1 | | 4.000 | | | | | | | | | | | | | | |
| CD | 4 | 2 | 0 | .000 | 8.000 | 20.670 | | | .00 | | | | | | | | | | |
| CD | 5 | 3 | 1 | .670 | 5.000 | 20.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 6 | 1 | 0 | .000 | 8.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 7 | 1 | 0 | .000 | 10.000 | 7.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 8 | 2 | 0 | .000 | 8.000 | 8.000 | | | .00 | | | | | | | | | | |
| CD | 9 | 4 | 1 | | 7.000 | | | | | | | | | | | | | | |
| CD | 10 | 2 | 0 | .000 | 10.000 | 14.670 | | | .00 | | | | | | | | | | |
| CD | 11 | 3 | 1 | .670 | 6.000 | 14.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 12 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 13 | 1 | 0 | .000 | 10.000 | 17.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 14 | 2 | 0 | .000 | 10.000 | 20.670 | | | .00 | | | | | | | | | | |
| CD | 15 | 3 | 1 | .670 | 6.000 | 20.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 16 | 1 | 0 | .000 | 10.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 17 | 4 | 1 | | 5.500 | | | | | | | | | | | | | | |
| CD | 18 | 1 | 0 | .000 | 10.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 19 | 4 | 1 | | 8.000 | | | | | | | | | | | | | | |
| CD | 20 | 2 | 0 | .000 | 10.000 | 8.000 | | | .00 | | | | | | | | | | |
| CD | 21 | 1 | 0 | .000 | 10.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 22 | 2 | 0 | .000 | 10.000 | 16.670 | | | .00 | | | | | | | | | | |
| CD | 23 | 3 | 1 | .670 | 5.000 | 16.670 | .000 | .000 | .00 | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

CVWD

HEADING LINE NO 2 IS -

MDP

HEADING LINE NO 3 IS -

LINE F01-02

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1000.000 | -180.449 | 1 | -172.592 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1100.000 | -178.000 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3550.000 | -160.000 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 4 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3570.000 | -159.777 | 2 | 3 | 0 | .015 | 232.000 | .000 | -158.760 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 5 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 6295.000 | -129.381 | 2 | .015 | .000 | .000 | .000 | 0 |

```
ELEMENT NO   6 IS A TRANSITION          *          *     *
                  U/S DATA   STATION    INVERT  SECT              N                              RADIUS   ANGLE
                             6325.000 -129.047    4              .015                               .000     .000
ELEMENT NO   7 IS A BRIDGE EXIT                          *
                  U/S DATA   STATION    INVERT  SECT
                             6325.000 -129.047    5
ELEMENT NO   8 IS A REACH               *          *     *
                  U/S DATA   STATION    INVERT  SECT              N                              RADIUS    ANGLE     ANG PT  MAN H
                             6365.000 -128.601    5              .015                               .000     .000      .000     0
ELEMENT NO   9 IS A BRIDGE ENTRANCE                        *
                  U/S DATA   STATION    INVERT  SECT             FP
                             6365.000 -128.601    4              .500
ELEMENT NO  10 IS A TRANSITION          *          *     *
                  U/S DATA   STATION    INVERT  SECT              N                              RADIUS   ANGLE
                             6395.000 -128.266    2              .015                               .000     .000
ELEMENT NO  11 IS A REACH               *          *     *
                  U/S DATA   STATION    INVERT  SECT              N                              RADIUS    ANGLE     ANG PT  MAN H
                             6429.150 -126.474    2              .015                               .000     .000      .000     0
                                                          W S P G W                                                    PAGE NO   3
                                 WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  12 IS A JUNCTION            *          *     *     *                *                  *                *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                             6459.150 -124.900    6     7     0   .015  1125.000      .000  -124.900      .000  30.000     .000
                                                                                                RADIUS    ANGLE
                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
ELEMENT NO  13 IS A REACH               *          *     *
                  U/S DATA   STATION    INVERT  SECT              N                              RADIUS    ANGLE     ANG PT  MAN H
                             8940.000  -99.000    6              .015                               .000     .000      .000     0
ELEMENT NO  14 IS A JUNCTION            *          *     *     *                *                  *                *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                             8970.000  -98.491    8     3     0   .015   399.000      .000   -97.491      .000  45.000     .000
                                                                                                RADIUS    ANGLE
                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
ELEMENT NO  15 IS A  WALL  EXIT                          *
                  U/S DATA   STATION    INVERT  SECT
                             8970.000  -98.491    9
ELEMENT NO  16 IS A REACH               *          *     *
                  U/S DATA   STATION    INVERT  SECT              N                              RADIUS    ANGLE     ANG PT  MAN H
                            11650.000  -53.000    9              .013                               .000     .000      .000     0
ELEMENT NO  17 IS A  WALL  ENTRANCE                      *
                  U/S DATA   STATION    INVERT  SECT             FP
                            11650.000  -53.000    8              .500
ELEMENT NO  18 IS A SYSTEM HEADWORKS                     *                      *
                  U/S DATA   STATION    INVERT  SECT                                    W S ELEV
                            11650.000  -53.000    8                                       .000
```

CVWD
MDP
LINE F01-02

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000.000 | -180.449 | 4.535 | -175.914 | 2230.00 | 22.55 | 7.90 | -168.02 | .00 | 6.96 | 28.61 | 8.000 | 15.000 | 1.50 | 0 .0 |
| 7.504 | .0245 | | | | | .0111 | .08 | 4.54 | 2.14 | 3.66 | .015 | .00 | 1.50 | TRAP |
| 1007.504 | -180.265 | 4.563 | -175.702 | 2230.00 | 22.37 | 7.77 | -167.93 | .00 | 6.96 | 28.69 | 8.000 | 15.000 | 1.50 | 0 .0 |
| 37.857 | .0245 | | | | | .0103 | .39 | 4.56 | 2.11 | 3.66 | .015 | .00 | 1.50 | TRAP |
| 1045.360 | -179.338 | 4.731 | -174.607 | 2230.00 | 21.33 | 7.06 | -167.54 | .00 | 6.96 | 29.19 | 8.000 | 15.000 | 1.50 | 0 .0 |
| 30.253 | .0245 | | | | | .0090 | .27 | 4.73 | 1.99 | 3.66 | .015 | .00 | 1.50 | TRAP |
| 1075.613 | -178.597 | 4.905 | -173.693 | 2230.00 | 20.34 | 6.42 | -167.27 | .00 | 6.96 | 29.71 | 8.000 | 15.000 | 1.50 | 0 .0 |
| 24.387 | .0245 | | | | | .0079 | .19 | 4.90 | 1.87 | 3.66 | .015 | .00 | 1.50 | TRAP |
| 1100.000 | -178.000 | 5.083 | -172.917 | 2230.00 | 19.39 | 5.84 | -167.08 | .00 | 6.96 | 30.25 | 8.000 | 15.000 | 1.50 | 0 .0 |
| 1304.051 | .0073 | | | | | .0073 | 9.58 | 5.08 | 1.75 | 5.08 | .015 | .00 | 1.50 | TRAP |
| 2404.051 | -168.419 | 5.083 | -163.336 | 2230.00 | 19.39 | 5.84 | -157.50 | .00 | 6.96 | 30.25 | 8.000 | 15.000 | 1.50 | 0 .0 |
| 774.077 | .0073 | | | | | .0077 | 5.93 | 5.08 | 1.75 | 5.08 | .015 | .00 | 1.50 | TRAP |
| 3178.128 | -162.732 | 4.973 | -157.760 | 2230.00 | 19.97 | 6.19 | -151.57 | .00 | 6.96 | 29.92 | 8.000 | 15.000 | 1.50 | 0 .0 |
| 371.872 | .0073 | | | | | .0085 | 3.18 | 4.97 | 1.82 | 5.08 | .015 | .00 | 1.50 | TRAP |
| 3550.000 | -160.000 | 4.797 | -155.203 | 2230.00 | 20.94 | 6.81 | -148.39 | .00 | 6.96 | 29.39 | 8.000 | 15.000 | 1.50 | 0 .0 |
| JUNCT STR | .0112 | | | | | .0101 | .20 | 4.80 | 1.94 | | .015 | .00 | 1.50 | TRAP |
| 3570.000 | -159.777 | 4.557 | -155.220 | 1998.00 | 22.11 | 7.59 | -147.63 | .00 | 6.90 | 26.67 | 8.000 | 13.000 | 1.50 | 0 .0 |
| 1457.715 | .0112 | | | | | .0112 | 16.26 | 4.56 | 2.12 | 4.56 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE F01-02

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5027.715 | -143.517 | 4.557 | -138.960 | 1998.00 | 22.11 | 7.59 | -131.37 | .00 | 6.90 | 26.67 | 8.000 | 13.000 | 1.50 | 0 | .0 |
| 761.382 | .0112 | | | | | .0110 | 8.36 | 4.56 | 2.12 | 4.56 | .015 | .00 | 1.50 | TRAP | |
| 5789.097 | -135.024 | 4.594 | -130.430 | 1998.00 | 21.86 | 7.42 | -123.01 | .00 | 6.90 | 26.78 | 8.000 | 13.000 | 1.50 | 0 | .0 |
| 505.903 | .0112 | | | | | .0101 | 5.13 | 4.59 | 2.09 | 4.56 | .015 | .00 | 1.50 | TRAP | |
| 6295.000 | -129.381 | 4.759 | -124.622 | 1998.00 | 20.85 | 6.75 | -117.87 | .00 | 6.90 | 27.28 | 8.000 | 13.000 | 1.50 | 0 | .0 |
| TRANS STR | .0111 | | | | | .0096 | .29 | 4.76 | 1.96 | | .015 | .00 | 1.50 | TRAP | |
| 6325.000 | -129.047 | 4.567 | -124.480 | 1998.00 | 21.17 | 6.96 | -117.52 | .00 | 6.62 | 20.67 | 8.000 | 20.670 | .00 | 0 | .0 |
| BRIDGE EXIT | | | | | | | | | | | | | | | |
| 6325.000 | -129.047 | 4.800 | -124.247 | 1998.00 | 20.81 | 6.73 | -117.52 | .00 | 5.00 | 20.67 | 5.000 | 20.670 | .00 | 1 | .7 |
| 40.000 | .0111 | | | | | .0136 | .54 | 4.80 | 1.70 | 5.00 | .015 | .00 | .00 | BOX | |
| | | ---------- WARNING - Flow depth near top of box conduit ---------- | | | | | | | | | | | | | |
| 6365.000 | -128.601 | 4.747 | -123.854 | 1998.00 | 21.04 | 6.88 | -116.98 | .00 | 5.00 | 20.67 | 5.000 | 20.670 | .00 | 1 | .7 |
| BRIDGE ENTRANCE | | | | | | | | | | | | | | | |
| | | ---------- WARNING - Flow depth near top of box conduit ---------- | | | | | | | | | | | | | |
| 6365.000 | -128.601 | 4.416 | -124.185 | 1998.00 | 21.89 | 7.44 | -116.75 | .00 | 6.62 | 20.67 | 8.000 | 20.670 | .00 | 0 | .0 |
| TRANS STR | .0112 | | | | | .0106 | .32 | 4.42 | 1.84 | | .015 | .00 | .00 | RECTANG | |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6395.000 | -128.266 | 4.639 | -123.627 | 1998.00 | 21.58 | 7.23 | -116.40 | .00 | 6.90 | 26.92 | 8.000 | 13.000 | 1.50 | 0 | .0 |
| 8.045 | .0525 | | | | | .0100 | .08 | 4.64 | 2.05 | 2.98 | .015 | .00 | 1.50 | TRAP | |
| 6403.045 | -127.844 | 4.752 | -123.092 | 1998.00 | 20.89 | 6.78 | -116.32 | .00 | 6.90 | 27.26 | 8.000 | 13.000 | 1.50 | 0 | .0 |
| 10.252 | .0525 | | | | | .0089 | .09 | 4.75 | 1.97 | 2.98 | .015 | .00 | 1.50 | TRAP | |
| 6413.298 | -127.306 | 4.922 | -122.384 | 1998.00 | 19.92 | 6.16 | -116.22 | .00 | 6.90 | 27.76 | 8.000 | 13.000 | 1.50 | 0 | .0 |
| 8.632 | .0525 | | | | | .0078 | .07 | 4.92 | 1.85 | 2.98 | .015 | .00 | 1.50 | TRAP | |
| 6421.930 | -126.853 | 5.096 | -121.757 | 1998.00 | 18.99 | 5.60 | -116.16 | .00 | 6.90 | 28.29 | 8.000 | 13.000 | 1.50 | 0 | .0 |
| 7.220 | .0525 | | | | | .0069 | .05 | 5.10 | 1.74 | 2.98 | .015 | .00 | 1.50 | TRAP | |
| 6429.150 | -126.474 | 5.276 | -121.198 | 1998.00 | 18.11 | 5.09 | -116.11 | .00 | 6.90 | 28.83 | 8.000 | 13.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0525 | | | | | .0084 | .25 | 5.28 | 1.63 | | .015 | .00 | 1.50 | TRAP | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6459.150 | -124.900 | 4.032 | -120.868 | 873.00 | 17.97 | 5.01 | -115.85 | .00 | 5.64 | 18.10 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 1532.435 | .0104 | | | | | .0104 | 16.00 | 4.03 | 1.93 | 4.03 | .015 | .00 | 1.50 | TRAP |
| 7991.585 | -108.901 | 4.032 | -104.869 | 873.00 | 17.97 | 5.01 | -99.85 | .00 | 5.64 | 18.10 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 518.134 | .0104 | | | | | .0099 | 5.12 | 4.03 | 1.93 | 4.03 | .015 | .00 | 1.50 | TRAP |
| 8509.720 | -103.492 | 4.144 | -99.348 | 873.00 | 17.24 | 4.62 | -94.73 | .00 | 5.64 | 18.43 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 172.485 | .0104 | | | | | .0088 | 1.51 | 4.14 | 1.83 | 4.03 | .015 | .00 | 1.50 | TRAP |
| 8682.205 | -101.691 | 4.277 | -97.415 | 873.00 | 16.44 | 4.20 | -93.22 | .00 | 5.64 | 18.83 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 90.097 | .0104 | | | | | .0077 | .70 | 4.28 | 1.73 | 4.03 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE F01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 8772.302 | -100.751 | 4.413 | -96.338 | 873.00 | 15.68 | 3.82 | -92.52 | .00 | 5.64 | 19.24 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 56.674 | .0104 | | | | | .0068 | .38 | 4.41 | 1.62 | 4.03 | .015 | .00 | 1.50 | TRAP |
| 8828.976 | -100.159 | 4.553 | -95.606 | 873.00 | 14.95 | 3.47 | -92.14 | .00 | 5.64 | 19.66 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 38.436 | .0104 | | | | | .0060 | .23 | 4.55 | 1.53 | 4.03 | .015 | .00 | 1.50 | TRAP |
| 8867.411 | -99.758 | 4.696 | -95.062 | 873.00 | 14.25 | 3.15 | -91.91 | .00 | 5.64 | 20.09 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 26.866 | .0104 | | | | | .0052 | .14 | 4.70 | 1.44 | 4.03 | .015 | .00 | 1.50 | TRAP |
| 8894.277 | -99.477 | 4.843 | -94.634 | 873.00 | 13.59 | 2.87 | -91.77 | .00 | 5.64 | 20.53 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 18.813 | .0104 | | | | | .0046 | .09 | 4.84 | 1.35 | 4.03 | .015 | .00 | 1.50 | TRAP |
| 8913.091 | -99.281 | 4.994 | -94.287 | 873.00 | 12.96 | 2.61 | -91.68 | .00 | 5.64 | 20.98 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 12.844 | .0104 | | | | | .0041 | .05 | 4.99 | 1.27 | 4.03 | .015 | .00 | 1.50 | TRAP |
| 8925.935 | -99.147 | 5.149 | -93.997 | 873.00 | 12.35 | 2.37 | -91.63 | .00 | 5.64 | 21.45 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 8.206 | .0104 | | | | | .0036 | .03 | 5.15 | 1.20 | 4.03 | .015 | .00 | 1.50 | TRAP |
| 8934.141 | -99.061 | 5.308 | -93.753 | 873.00 | 11.78 | 2.15 | -91.60 | .00 | 5.64 | 21.93 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 4.475 | .0104 | | | | | .0031 | .01 | 5.31 | 1.13 | 4.03 | .015 | .00 | 1.50 | TRAP |
| 8938.615 | -99.014 | 5.472 | -93.543 | 873.00 | 11.23 | 1.96 | -91.58 | .00 | 5.64 | 22.41 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 1.385 | .0104 | | | | | .0028 | .00 | 5.47 | 1.06 | 4.03 | .015 | .00 | 1.50 | TRAP |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8940.000 | -99.000 | 5.640 | -93.360 | 873.00 | 10.70 | 1.78 | -91.58 | .00 | 5.64 | 22.92 | 8.000 | 6.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0170 | | | | | | | 5.64 | 1.00 | | .015 | .00 | 1.50 | TRAP | |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 8970.000 | -98.491 | 2.554 | -95.937 | 474.00 | 23.20 | 8.36 | -87.58 | .00 | 4.78 | 8.00 | 8.000 | 8.000 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 8970.000 | -98.491 | 3.784 | -94.707 | 474.00 | 22.33 | 7.74 | -86.97 | .00 | 5.71 | 6.98 | 7.000 | .000 | .00 | 1 .0 |
| 1580.040 | .0170 | | | | | .0170 | 26.82 | 3.78 | 2.26 | 3.78 | .013 | .00 | .00 | PIPE |
| 10550.040 | -71.671 | 3.784 | -67.887 | 474.00 | 22.33 | 7.74 | -60.15 | .00 | 5.71 | 6.98 | 7.000 | .000 | .00 | 1 .0 |
| 558.165 | .0170 | | | | | .0163 | 9.12 | 3.78 | 2.26 | 3.78 | .013 | .00 | .00 | PIPE |
| 11108.210 | -62.197 | 3.876 | -58.320 | 474.00 | 21.67 | 7.29 | -51.03 | .00 | 5.71 | 6.96 | 7.000 | .000 | .00 | 1 .0 |
| 231.242 | .0170 | | | | | .0148 | 3.42 | 3.88 | 2.15 | 3.78 | .013 | .00 | .00 | PIPE |
| 11339.450 | -58.271 | 4.030 | -54.241 | 474.00 | 20.66 | 6.63 | -47.61 | .00 | 5.71 | 6.92 | 7.000 | .000 | .00 | 1 .0 |
| 112.248 | .0170 | | | | | .0131 | 1.47 | 4.03 | 2.00 | 3.78 | .013 | .00 | .00 | PIPE |
| 11451.700 | -56.366 | 4.193 | -52.173 | 474.00 | 19.70 | 6.03 | -46.15 | .00 | 5.71 | 6.86 | 7.000 | .000 | .00 | 1 .0 |
| 69.370 | .0170 | | | | | .0116 | .80 | 4.19 | 1.85 | 3.78 | .013 | .00 | .00 | PIPE |
| 11521.070 | -55.189 | 4.365 | -50.823 | 474.00 | 18.78 | 5.48 | -45.35 | .00 | 5.71 | 6.78 | 7.000 | .000 | .00 | 1 .0 |
| 46.805 | .0170 | | | | | .0102 | .48 | 4.37 | 1.72 | 3.78 | .013 | .00 | .00 | PIPE |
| 11567.870 | -54.394 | 4.548 | -49.846 | 474.00 | 17.91 | 4.98 | -44.87 | .00 | 5.71 | 6.68 | 7.000 | .000 | .00 | 1 .0 |
| 32.721 | .0170 | | | | | .0091 | .30 | 4.55 | 1.59 | 3.78 | .013 | .00 | .00 | PIPE |
| 11600.590 | -53.839 | 4.743 | -49.096 | 474.00 | 17.07 | 4.53 | -44.57 | .00 | 5.71 | 6.54 | 7.000 | .000 | .00 | 1 .0 |
| 22.712 | .0170 | | | | | .0081 | .18 | 4.74 | 1.46 | 3.78 | .013 | .00 | .00 | PIPE |



| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

F01-02

| L/Elem | Ch Slope | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11623.300 | -53.453 | 4.953 | -48.500 | 474.00 | 16.28 | 4.12 | -44.38 | .00 | 5.71 | 6.37 | 7.000 | .000 | .00 | 1 .0 |
| 15.105 | .0170 | | | | .0072 | .11 | 4.95 | 1.34 | 3.78 | .013 | .00 | .00 | PIPE |
| 11638.410 | -53.197 | 5.180 | -48.017 | 474.00 | 15.52 | 3.74 | -44.28 | .00 | 5.71 | 6.14 | 7.000 | .000 | .00 | 1 .0 |
| 8.689 | .0170 | | | | .0065 | .06 | 5.18 | 1.23 | 3.78 | .013 | .00 | .00 | PIPE |
| 11647.100 | -53.049 | 5.429 | -47.620 | 474.00 | 14.80 | 3.40 | -44.22 | .00 | 5.71 | 5.84 | 7.000 | .000 | .00 | 1 .0 |
| 2.902 | .0170 | | | | .0059 | .02 | 5.43 | 1.11 | 3.78 | .013 | .00 | .00 | PIPE |
| 11650.000 | -53.000 | 5.707 | -47.293 | 474.00 | 14.11 | 3.09 | -44.20 | .00 | 5.71 | 5.43 | 7.000 | .000 | .00 | 1 .0 |
| WALL | ENTRANCE | | | | | | | | | | | | | |
| 11650.000 | -53.000 | 10.103 | -42.897 | 474.00 | 5.86 | .53 | -42.36 | .00 | 4.78 | 8.00 | 8.000 | 8.000 | .00 | 0 .0 |

```
T1 CVWD                                                                    0
T2 MDP
T3 LINE F01-03
SO   1000.000-126.427  1      .047               -120.875
R    1020.000-126.328  1      .047
R    1040.000-126.185  1      .015
R    3580.000-108.000  1      .015
JX   3610.000-107.797  2  3   .015  218.000         -106.797        45.0
R    6240.000-090.000  2      .015
SH   6240.000-090.000  2      .015
CD   1  1   0    .000   8.000    8.000 1.500 1.500   .00
CD   2  1   0    .000   8.000    6.000 1.500 1.500   .00
CD   3  4   1           3.000
Q          861.000   .0
```

FILE: F01-03.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 8- 5-2013 Time: 8:40:13

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 8.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 1 | 0 | .000 | 8.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 3 | 4 | 1 | | 3.000 | | | | | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE F01-03

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1000.000 | -126.427 | 1 | -120.875 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1020.000 | -126.328 | 1 | .047 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1040.000 | -126.185 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 4 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3580.000 | -108.000 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 5 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3610.000 | -107.797 | 2 | 3 | 0 | .015 | 218.000 | .000 | -106.797 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 6 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 6240.000 | -90.000 | 2 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 7 IS A SYSTEM HEADWORKS * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 6240.000 | -90.000 | 2 | .000 |

CVWD
MDP
LINE F01-03

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 1000.000 | -126.427 | 5.566 | -120.861 | 1079.00 | 11.86 | 2.18 | -118.68 | .00 | 5.82 | 24.70 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 1.246 | .0049 | | | | | .0308 | .04 | 5.57 | 1.09 | 8.50 | .047 | .00 | 1.50 | TRAP |
| 1001.246 | -126.421 | 5.432 | -120.988 | 1079.00 | 12.30 | 2.35 | -118.64 | .00 | 5.82 | 24.30 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 2.196 | .0049 | | | | | .0346 | .08 | 5.43 | 1.14 | 8.50 | .047 | .00 | 1.50 | TRAP |
| 1003.442 | -126.410 | 5.263 | -121.147 | 1079.00 | 12.90 | 2.58 | -118.56 | .00 | 5.82 | 23.79 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 2.704 | .0049 | | | | | .0394 | .11 | 5.26 | 1.21 | 8.50 | .047 | .00 | 1.50 | TRAP |
| 1006.147 | -126.397 | 5.097 | -121.299 | 1079.00 | 13.53 | 2.84 | -118.46 | .00 | 5.82 | 23.29 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 3.094 | .0049 | | | | | .0448 | .14 | 5.10 | 1.29 | 8.50 | .047 | .00 | 1.50 | TRAP |
| 1009.241 | -126.381 | 4.936 | -121.445 | 1079.00 | 14.19 | 3.13 | -118.32 | .00 | 5.82 | 22.81 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 3.389 | .0049 | | | | | .0510 | .17 | 4.94 | 1.37 | 8.50 | .047 | .00 | 1.50 | TRAP |
| 1012.630 | -126.364 | 4.780 | -121.585 | 1079.00 | 14.88 | 3.44 | -118.15 | .00 | 5.82 | 22.34 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 3.607 | .0049 | | | | | .0580 | .21 | 4.78 | 1.46 | 8.50 | .047 | .00 | 1.50 | TRAP |
| 1016.237 | -126.347 | 4.627 | -121.720 | 1079.00 | 15.61 | 3.78 | -117.94 | .00 | 5.82 | 21.88 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 3.763 | .0049 | | | | | .0660 | .25 | 4.63 | 1.55 | 8.50 | .047 | .00 | 1.50 | TRAP |
| 1020.000 | -126.328 | 4.478 | -121.850 | 1079.00 | 16.37 | 4.16 | -117.69 | .00 | 5.82 | 21.44 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 20.000 | .0072 | | | | | .0072 | .14 | 4.48 | 1.65 | 4.48 | .015 | .00 | 1.50 | TRAP |
| 1040.000 | -126.185 | 4.478 | -121.707 | 1079.00 | 16.37 | 4.16 | -117.54 | .00 | 5.82 | 21.43 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 1741.639 | .0072 | | | | | .0072 | 12.47 | 4.48 | 1.65 | 4.48 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE F01-03

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2781.639 | -113.716 | 4.478 | -109.238 | 1079.00 | 16.37 | 4.16 | -105.08 | .00 | 5.82 | 21.43 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 530.286 | .0072 | | | | | .0068 | 3.61 | 4.48 | 1.65 | 4.48 | .015 | .00 | 1.50 | TRAP |
| 3311.924 | -109.919 | 4.598 | -105.321 | 1079.00 | 15.75 | 3.85 | -101.47 | .00 | 5.82 | 21.79 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 179.736 | .0072 | | | | | .0061 | 1.09 | 4.60 | 1.57 | 4.48 | .015 | .00 | 1.50 | TRAP |
| 3491.660 | -108.632 | 4.750 | -103.883 | 1079.00 | 15.02 | 3.50 | -100.38 | .00 | 5.82 | 22.25 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 88.340 | .0072 | | | | | .0053 | .47 | 4.75 | 1.47 | 4.48 | .015 | .00 | 1.50 | TRAP |
| 3580.000 | -108.000 | 4.906 | -103.094 | 1079.00 | 14.32 | 3.18 | -99.91 | .00 | 5.82 | 22.72 | 8.000 | 8.000 | 1.50 | 0 .0 |
| JUNCT STR | .0068 | | | | | .0059 | .18 | 4.91 | 1.39 | | .015 | .00 | 1.50 | TRAP |
| 3610.000 | -107.797 | 4.453 | -103.344 | 861.00 | 15.25 | 3.61 | -99.73 | .00 | 5.60 | 19.36 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 1747.371 | .0068 | | | | | .0068 | 11.82 | 4.45 | 1.57 | 4.45 | .015 | .00 | 1.50 | TRAP |
| 5357.371 | -95.973 | 4.453 | -91.520 | 861.00 | 15.25 | 3.61 | -87.91 | .00 | 5.60 | 19.36 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 466.080 | .0068 | | | | | .0066 | 3.06 | 4.45 | 1.57 | 4.45 | .015 | .00 | 1.50 | TRAP |
| 5823.451 | -92.819 | 4.521 | -88.298 | 861.00 | 14.90 | 3.45 | -84.85 | .00 | 5.60 | 19.56 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 215.148 | .0068 | | | | | .0060 | 1.29 | 4.52 | 1.53 | 4.45 | .015 | .00 | 1.50 | TRAP |
| 6038.599 | -91.363 | 4.664 | -86.699 | 861.00 | 14.21 | 3.13 | -83.57 | .00 | 5.60 | 19.99 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 91.533 | .0068 | | | | | .0053 | .48 | 4.66 | 1.44 | 4.45 | .015 | .00 | 1.50 | TRAP |
| 6130.132 | -90.743 | 4.810 | -85.934 | 861.00 | 13.55 | 2.85 | -83.08 | .00 | 5.60 | 20.43 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 50.697 | .0068 | | | | | .0046 | .23 | 4.81 | 1.35 | 4.45 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE F01-03

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6180.829 | -90.400 | 4.960 | -85.440 | 861.00 | 12.92 | 2.59 | -82.85 | .00 | 5.60 | 20.88 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 30.099 | .0068 | | | | | .0041 | .12 | 4.96 | 1.27 | 4.45 | .015 | .00 | 1.50 | TRAP |
| 6210.927 | -90.197 | 5.114 | -85.082 | 861.00 | 12.31 | 2.35 | -82.73 | .00 | 5.60 | 21.34 | 8.000 | 6.000 | 1.50 | 0 .0 |

F01-03

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17.522 | .0068 | | | | | .0036 | .06 | 5.11 | 1.20 | 4.45 | .015 | .00 | 1.50 | TRAP | | | | |
| 6228.449 | -90.078 | 5.272 | -84.806 | 861.00 | 11.74 | 2.14 | -82.67 | .00 | 5.60 | 21.82 | 8.000 | 6.000 | 1.50 | 0 | .0 | | | |
| 8.935 | .0068 | | | | | .0031 | .03 | 5.27 | 1.13 | 4.45 | .015 | .00 | 1.50 | TRAP | | | | |
| 6237.384 | -90.018 | 5.435 | -84.583 | 861.00 | 11.19 | 1.95 | -82.64 | .00 | 5.60 | 22.30 | 8.000 | 6.000 | 1.50 | 0 | .0 | | | |
| 2.616 | .0068 | | | | | .0028 | .01 | 5.43 | 1.06 | 4.45 | .015 | .00 | 1.50 | TRAP | | | | |
| 6240.000 | -90.000 | 5.602 | -84.398 | 861.00 | 10.67 | 1.77 | -82.63 | .00 | 5.60 | 22.81 | 8.000 | 6.000 | 1.50 | 0 | .0 | | | |

```
T1 CVWD                                                                    0
T2 MDP
T3 LINE I01
SO   1000.000-236.000  1      .015                -230.000
R    4500.000-224.000  1      .015
JX   4530.000-223.730  4  5   .015   55.000         -222.730         45.0
R    6467.000-206.297  4      .015
R    6497.000-206.027  2      .015
WX   6497.000-206.027  3      .015
R    6710.000-204.110  3      .015
WE   6710.000-204.110  2      .500
TS   6740.000-200.110  4      .015
R    7862.500-189.000  4      .015
JX   7922.500-188.314  7  6   .015 1075.000         -188.314         30.0
R    8015.000-187.257  7      .015
TS   8045.000-186.914  8      .015
WX   8045.000-186.914  9
R    8085.000-186.457  9      .015
WE   8085.000-186.457  8      .500
TS   8115.000-186.114  7      .015
R    9700.000-168.000  7      .015
R   10780.000-154.500  7      .015
JX  10810.000-154.125 13 10   .015  238.000         -153.125         45.0
R   11300.000-148.261 13      .015
R   13550.000-121.333 13      .015
JX  13580.000-118.720 11  6   .015  823.000         -116.125         30.0
WX  13580.000-118.720 12
R   16100.000-079.450 12      .013
JX  16120.000-077.650 14 15   .013  114.000         -078.140         45.0
R   18766.000-039.370 14      .013
JX  18781.000-038.152 16 15   .013  118.000         -036.936         45.0
R   18999.000-034.000 16      .013
SH  18999.000-034.000 16      .013
CD   1  1   0    .000   8.000   30.000 1.500 1.500   .00
CD   2  2   0    .000   8.000   25.340 0.000 0.000   .00
CD   3  3   2    .670   6.000   25.340  .000  .000   .00
CD   4  1   0    .000   8.000   20.000 1.500 1.500   .00
CD   5  4   1           2.000
CD   6  1   0    .000   8.000    6.000 1.500 1.500   .00
CD   7  1   0    .000   8.000    9.000 1.500 1.500   .00
CD   8  2   0    .000   8.000   16.670  .000  .000   .00
CD   9  3   1    .670   6.000   16.670  .000  .000   .00
CD  10  4   1           4.000
CD  11  2   0    .000   7.000    6.500  .000  .000   .00
CD  12  4   1           7.500
CD  13  1   0    .000   8.000    8.000 1.500 1.500   .00
CD  14  4   1           6.000
CD  15  4   1           3.000
CD  16  4   1           5.000
Q           297.000   .0
```

FILE: i01.WSW W S P G W - EDIT LISTING - Version 14.06 Date:11-18-2013 Time: 9:17:10

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING 

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 8.000 | 30.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 2 | 0 | .000 | 8.000 | 25.340 | | | .00 | | | | | | | | | | |
| CD | 3 | 3 | 2 | .670 | 6.000 | 25.340 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 4 | 1 | 0 | .000 | 8.000 | 20.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 5 | 4 | 1 | | 2.000 | | | | | | | | | | | | | | |
| CD | 6 | 1 | 0 | .000 | 8.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 7 | 1 | 0 | .000 | 8.000 | 9.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 8 | 2 | 0 | .000 | 8.000 | 16.670 | | | .00 | | | | | | | | | | |
| CD | 9 | 3 | 1 | .670 | 6.000 | 16.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 10 | 4 | 1 | | 4.000 | | | | | | | | | | | | | | |
| CD | 11 | 2 | 0 | .000 | 7.000 | 6.500 | | | .00 | | | | | | | | | | |
| CD | 12 | 4 | 1 | | 7.500 | | | | | | | | | | | | | | |
| CD | 13 | 1 | 0 | .000 | 8.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 14 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 15 | 4 | 1 | | 3.000 | | | | | | | | | | | | | | |
| CD | 16 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |

W S P G W 

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE I01

W S P G W 

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1000.000 | -236.000 | 1 | -230.000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 4500.000 | -224.000 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A JUNCTION

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4530.000 | -223.730 | 4 | 5 | 0 | .015 | 55.000 | .000 | -222.730 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 4 IS A REACH

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 6467.000 | -206.297 | 4 | .015 | .000 | .000 | .000 | 0 |

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 5 IS A REACH

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 6497.000 | -206.027 | 2 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 6 IS A WALL EXIT

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 6497.000 | -206.027 | 3 |

ELEMENT NO 7 IS A REACH

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 6710.000 | -204.110 | 3 | .015 | .000 | .000 | .000 | 0 |

```
ELEMENT NO   8 IS A  WALL  ENTRANCE                    *
                U/S DATA   STATION    INVERT  SECT              FP
                           6710.000 -204.110    2               .500
ELEMENT NO   9 IS A TRANSITION          *          *     *
                U/S DATA   STATION    INVERT  SECT               N                            RADIUS   ANGLE
                           6740.000 -200.110    4               .015                             .000     .000
ELEMENT NO  10 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                           7862.500 -189.000    4               .015                             .000     .000      .000     0
ELEMENT NO  11 IS A JUNCTION            *          *     *     *               *                  *                  *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3         Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                           7922.500 -188.314    7     6     0   .015  1075.000       .000  -188.314      .000  30.000     .000
                                                                                                RADIUS    ANGLE
                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
                                                  W S P G W                                                          PAGE NO   3
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  12 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                           8015.000 -187.257    7               .015                             .000     .000      .000     0
ELEMENT NO  13 IS A TRANSITION          *          *     *
                U/S DATA   STATION    INVERT  SECT               N                            RADIUS   ANGLE
                           8045.000 -186.914    8               .015                             .000     .000
ELEMENT NO  14 IS A  WALL  EXIT                         *
                U/S DATA   STATION    INVERT  SECT
                           8045.000 -186.914    9
ELEMENT NO  15 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                           8085.000 -186.457    9               .015                             .000     .000      .000     0
ELEMENT NO  16 IS A  WALL  ENTRANCE                     *
                U/S DATA   STATION    INVERT  SECT              FP
                           8085.000 -186.457    8               .500
ELEMENT NO  17 IS A TRANSITION          *          *     *
                U/S DATA   STATION    INVERT  SECT               N                            RADIUS   ANGLE
                           8115.000 -186.114    7               .015                             .000     .000
ELEMENT NO  18 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                           9700.000 -168.000    7               .015                             .000     .000      .000     0
ELEMENT NO  19 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                          10780.000 -154.500    7               .015                             .000     .000      .000     0
ELEMENT NO  20 IS A JUNCTION            *          *     *     *               *                  *                  *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3         Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                          10810.000 -154.125   13    10     0   .015   238.000       .000  -153.125      .000  45.000     .000
                                                                                                RADIUS    ANGLE
                                                                                                  .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
ELEMENT NO  21 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                          11300.000 -148.261   13               .015                             .000     .000      .000     0
ELEMENT NO  22 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                          13550.000 -121.333   13               .015                             .000     .000      .000     0
ELEMENT NO  23 IS A JUNCTION            *          *     *     *               *                  *                  *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3         Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                          13580.000 -118.720   11     6     0   .015   823.000       .000  -116.125      .000  30.000     .000
                                                                                                RADIUS    ANGLE
```

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                                                                                                                .000    .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
                                                  W S P G W                                                                    PAGE NO   4
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  24 IS A  WALL  EXIT                          *
                     U/S DATA   STATION    INVERT  SECT
                                13580.000 -118.720   12
 ELEMENT NO  25 IS A REACH                *         *     *
                     U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                                16100.000  -79.450   12               .013                         .000     .000      .000     0
 ELEMENT NO  26 IS A JUNCTION             *         *     *     *                 *                  *                  *
                     U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                                16120.000  -77.650   14    15     0   .013   114.000      .000   -78.140      .000  45.000     .000
                                                                                                  RADIUS    ANGLE
                                                                                                    .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  27 IS A REACH                *         *     *
                     U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                                18766.000  -39.370   14               .013                         .000     .000      .000     0
 ELEMENT NO  28 IS A JUNCTION             *         *     *     *                 *                  *                  *
                     U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4      INVERT-3 INVERT-4  PHI 3  PHI 4
                                18781.000  -38.152   16    15     0   .013   118.000      .000   -36.936      .000  45.000     .000
                                                                                                  RADIUS    ANGLE
                                                                                                    .000     .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO  29 IS A REACH                *         *     *
                     U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                                18999.000  -34.000   16               .013                         .000     .000      .000     0
 ELEMENT NO  30 IS A SYSTEM HEADWORKS               *                       *
                     U/S DATA   STATION    INVERT  SECT                                  W S ELEV
                                18999.000  -34.000   16                                     .000
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CVWD
MDP
LINE I01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000.000 | -236.000 | 5.025 | -230.975 | 2720.00 | 14.42 | 3.23 | -227.75 | .00 | 5.73 | 45.07 | 8.000 | 30.000 | 1.50 | 0 .0 |
| 1984.085 | .0034 | | | | | .0034 | 6.80 | 5.02 | 1.24 | 5.02 | .015 | .00 | 1.50 | TRAP |
| 2984.085 | -229.197 | 5.025 | -224.173 | 2720.00 | 14.42 | 3.23 | -220.94 | .00 | 5.73 | 45.07 | 8.000 | 30.000 | 1.50 | 0 .0 |
| 480.999 | .0034 | | | | | .0036 | 1.72 | 5.02 | 1.24 | 5.02 | .015 | .00 | 1.50 | TRAP |
| 3465.084 | -227.548 | 4.901 | -222.648 | 2720.00 | 14.86 | 3.43 | -219.22 | .00 | 5.73 | 44.70 | 8.000 | 30.000 | 1.50 | 0 .0 |
| 254.865 | .0034 | | | | | .0040 | 1.02 | 4.90 | 1.29 | 5.02 | .015 | .00 | 1.50 | TRAP |
| 3719.948 | -226.674 | 4.709 | -221.965 | 2720.00 | 15.58 | 3.77 | -218.19 | .00 | 5.73 | 44.13 | 8.000 | 30.000 | 1.50 | 0 .0 |
| 160.591 | .0034 | | | | | .0046 | .74 | 4.71 | 1.38 | 5.02 | .015 | .00 | 1.50 | TRAP |
| 3880.539 | -226.124 | 4.524 | -221.600 | 2720.00 | 16.35 | 4.15 | -217.45 | .00 | 5.73 | 43.57 | 8.000 | 30.000 | 1.50 | 0 .0 |
| 124.898 | .0034 | | | | | .0053 | .66 | 4.52 | 1.47 | 5.02 | .015 | .00 | 1.50 | TRAP |
| 4005.438 | -225.696 | 4.345 | -221.351 | 2720.00 | 17.14 | 4.56 | -216.79 | .00 | 5.73 | 43.03 | 8.000 | 30.000 | 1.50 | 0 .0 |
| 105.430 | .0034 | | | | | .0061 | .65 | 4.34 | 1.57 | 5.02 | .015 | .00 | 1.50 | TRAP |
| 4110.868 | -225.334 | 4.172 | -221.162 | 2720.00 | 17.98 | 5.02 | -216.14 | .00 | 5.73 | 42.52 | 8.000 | 30.000 | 1.50 | 0 .0 |
| 92.753 | .0034 | | | | | .0070 | .65 | 4.17 | 1.68 | 5.02 | .015 | .00 | 1.50 | TRAP |
| 4203.622 | -225.016 | 4.006 | -221.010 | 2720.00 | 18.86 | 5.52 | -215.49 | .00 | 5.73 | 42.02 | 8.000 | 30.000 | 1.50 | 0 .0 |
| 83.577 | .0034 | | | | | .0081 | .68 | 4.01 | 1.79 | 5.02 | .015 | .00 | 1.50 | TRAP |
| 4287.198 | -224.730 | 3.845 | -220.885 | 2720.00 | 19.78 | 6.07 | -214.81 | .00 | 5.73 | 41.54 | 8.000 | 30.000 | 1.50 | 0 .0 |
| 76.449 | .0034 | | | | | .0093 | .71 | 3.85 | 1.92 | 5.02 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE I01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4363.647 | -224.467 | 3.690 | -220.777 | 2720.00 | 20.74 | 6.68 | -214.10 | .00 | 5.73 | 41.07 | 8.000 | 30.000 | 1.50 | 0 | .0 |
| 70.635 | .0034 | | | | | .0108 | .76 | 3.69 | 2.05 | 5.02 | .015 | .00 | 1.50 | TRAP | |
| 4434.282 | -224.225 | 3.541 | -220.685 | 2720.00 | 21.76 | 7.35 | -213.34 | .00 | 5.73 | 40.62 | 8.000 | 30.000 | 1.50 | 0 | .0 |
| 65.718 | .0034 | | | | | .0124 | .82 | 3.54 | 2.19 | 5.02 | .015 | .00 | 1.50 | TRAP | |
| 4500.000 | -224.000 | 3.397 | -220.603 | 2720.00 | 22.82 | 8.08 | -212.52 | .00 | 5.73 | 40.19 | 8.000 | 30.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0090 | | | | | .0112 | .33 | 3.40 | 2.33 | | .015 | .00 | 1.50 | TRAP | |
| 4530.000 | -223.730 | 4.644 | -219.086 | 2665.00 | 21.28 | 7.03 | -212.05 | .00 | 6.86 | 33.93 | 8.000 | 20.000 | 1.50 | 0 | .0 |
| 865.362 | .0090 | | | | | .0090 | 7.79 | 4.64 | 1.95 | 4.64 | .015 | .00 | 1.50 | TRAP | |
| 5395.361 | -215.942 | 4.644 | -211.298 | 2665.00 | 21.28 | 7.03 | -204.26 | .00 | 6.86 | 33.93 | 8.000 | 20.000 | 1.50 | 0 | .0 |
| 807.662 | .0090 | | | | | .0085 | 6.86 | 4.64 | 1.95 | 4.64 | .015 | .00 | 1.50 | TRAP | |
| 6203.023 | -208.673 | 4.802 | -203.870 | 2665.00 | 20.40 | 6.46 | -197.41 | .00 | 6.86 | 34.41 | 8.000 | 20.000 | 1.50 | 0 | .0 |
| 263.977 | .0090 | | | | | .0075 | 1.97 | 4.80 | 1.84 | 4.64 | .015 | .00 | 1.50 | TRAP | |
| 6467.000 | -206.297 | 4.986 | -201.311 | 2665.00 | 21.09 | 6.91 | -194.40 | .00 | 7.00 | 25.34 | 8.000 | 25.340 | .00 | 0 | .0 |
| 30.000 | .0090 | | | | | .0083 | .25 | 4.99 | 1.66 | 4.85 | .015 | .00 | .00 | RECTANG | |
| 6497.000 | -206.027 | 4.999 | -201.028 | 2665.00 | 21.04 | 6.87 | -194.15 | .00 | 7.00 | 25.34 | 8.000 | 25.340 | .00 | 0 | .0 |
| WALL | EXIT | | | | | | | | | | | | | | |
| 6497.000 | -206.027 | 5.345 | -200.682 | 2665.00 | 20.77 | 6.70 | -193.98 | .00 | 6.00 | 25.34 | 6.000 | 25.340 | .00 | 2 | .7 |
| 47.506 | .0090 | | | | | .0153 | .73 | 5.35 | 1.63 | 6.00 | .015 | .00 | .00 | BOX | |



CVWD
MDP
LINE I01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6544.506 | -205.599 | 5.164 | -200.436 | 2665.00 | 21.50 | 7.18 | -193.26 | .00 | 6.00 | 25.34 | 6.000 | 25.340 | .00 | 2 .7 |
| 59.792 | .0090 | | | | | .0170 | 1.02 | 5.16 | 1.71 | 6.00 | .015 | .00 | .00 | BOX |
| 6604.297 | -205.061 | 4.924 | -200.138 | 2665.00 | 22.55 | 7.90 | -192.24 | .00 | 6.00 | 25.34 | 6.000 | 25.340 | .00 | 2 .7 |
| 54.814 | .0090 | | | | | .0192 | 1.05 | 4.92 | 1.84 | 6.00 | .015 | .00 | .00 | BOX |
| 6659.112 | -204.568 | 4.694 | -199.874 | 2665.00 | 23.65 | 8.69 | -191.19 | .00 | 6.00 | 25.34 | 6.000 | 25.340 | .00 | 2 .7 |
| 50.888 | .0090 | | | | | .0218 | 1.11 | 4.69 | 1.98 | 6.00 | .015 | .00 | .00 | BOX |
| 6710.000 | -204.110 | 4.476 | -199.634 | 2665.00 | 24.81 | 9.56 | -190.08 | .00 | 6.00 | 25.34 | 6.000 | 25.340 | .00 | 2 .7 |

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| WALL ENTRANCE | | | | | | | | | | | | | | |
| 6710.000 | -204.110 | 3.907 | -200.203 | 2665.00 | 26.92 | 11.25 | -188.95 | .00 | 7.00 | 25.34 | 8.000 | 25.340 | .00 | 0 .0 |
| TRANS STR | .1333 | | | | | .0134 | .40 | 3.91 | 2.40 | | .015 | .00 | .00 | RECTANG |
| 6740.000 | -200.110 | 4.551 | -195.559 | 2665.00 | 21.83 | 7.40 | -188.16 | .00 | 6.86 | 33.65 | 8.000 | 20.000 | 1.50 | 0 .0 |
| 479.286 | .0099 | | | | | .0093 | 4.48 | 4.55 | 2.02 | 4.52 | .015 | .00 | 1.50 | TRAP |
| 7219.285 | -195.366 | 4.640 | -190.726 | 2665.00 | 21.30 | 7.05 | -183.68 | .00 | 6.86 | 33.92 | 8.000 | 20.000 | 1.50 | 0 .0 |
| 319.817 | .0099 | | | | | .0085 | 2.70 | 4.64 | 1.96 | 4.52 | .015 | .00 | 1.50 | TRAP |
| 7539.103 | -192.201 | 4.819 | -187.382 | 2665.00 | 20.31 | 6.41 | -180.98 | .00 | 6.86 | 34.46 | 8.000 | 20.000 | 1.50 | 0 .0 |
| 158.207 | .0099 | | | | | .0074 | 1.17 | 4.82 | 1.83 | 4.52 | .015 | .00 | 1.50 | TRAP |
| 7697.310 | -190.635 | 5.003 | -185.632 | 2665.00 | 19.37 | 5.82 | -179.81 | .00 | 6.86 | 35.01 | 8.000 | 20.000 | 1.50 | 0 .0 |
| 98.334 | .0099 | | | | | .0064 | .63 | 5.00 | 1.72 | 4.52 | .015 | .00 | 1.50 | TRAP |





| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 7795.644 | -189.662 | 5.193 | -184.469 | 2665.00 | 18.47 | 5.30 | -179.17 | .00 | 6.86 | 35.58 | 8.000 | 20.000 | 1.50 | 0 .0 |
| 66.856 | .0099 | | | | | .0056 | .38 | 5.19 | 1.62 | 4.52 | .015 | .00 | 1.50 | TRAP |
| 7862.500 | -189.000 | 5.390 | -183.610 | 2665.00 | 17.61 | 4.81 | -178.80 | .00 | 6.86 | 36.17 | 8.000 | 20.000 | 1.50 | 0 .0 |
| JUNCT STR | .0114 | | | | | .0075 | .45 | 5.39 | 1.52 | | .015 | .00 | 1.50 | TRAP |
| 7922.500 | -188.314 | 4.838 | -183.476 | 1590.00 | 20.22 | 6.35 | -177.13 | .00 | 6.86 | 23.51 | 8.000 | 9.000 | 1.50 | 0 .0 |
| 92.500 | .0114 | | | | | .0095 | .88 | 4.84 | 1.95 | 4.64 | .015 | .00 | 1.50 | TRAP |
| 8015.000 | -187.257 | 4.905 | -182.352 | 1590.00 | 19.82 | 6.10 | -176.25 | .00 | 6.86 | 23.71 | 8.000 | 9.000 | 1.50 | 0 .0 |
| TRANS STR | .0114 | | | | | .0092 | .28 | 4.90 | 1.90 | | .015 | .00 | 1.50 | TRAP |
| 8045.000 | -186.914 | 4.781 | -182.133 | 1590.00 | 19.95 | 6.18 | -175.95 | .00 | 6.56 | 16.67 | 8.000 | 16.670 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 8045.000 | -186.914 | 5.032 | -181.882 | 1590.00 | 19.75 | 6.06 | -175.83 | .00 | 6.00 | 16.67 | 6.000 | 16.670 | .00 | 1 .7 |
| 40.000 | .0114 | | | | | .0139 | .56 | 5.03 | 1.58 | 5.39 | .015 | .00 | .00 | BOX |
| 8085.000 | -186.457 | 4.964 | -181.493 | 1590.00 | 20.02 | 6.22 | -175.27 | .00 | 6.00 | 16.67 | 6.000 | 16.670 | .00 | 1 .7 |

WALL ENTRANCE

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 8085.000 | -186.457 | 4.380 | -182.077 | 1590.00 | 21.78 | 7.36 | -174.71 | .00 | 6.56 | 16.67 | 8.000 | 16.670 | .00 | 0 .0 |
| TRANS STR | .0114 | | | | | .0116 | .35 | 4.38 | 1.83 | | .015 | .00 | .00 | RECTANG |
| 8115.000 | -186.114 | 4.645 | -181.469 | 1590.00 | 21.44 | 7.14 | -174.33 | .00 | 6.86 | 22.93 | 8.000 | 9.000 | 1.50 | 0 .0 |
| 877.423 | .0114 | | | | | .0114 | 10.03 | 4.64 | 2.10 | 4.64 | .015 | .00 | 1.50 | TRAP |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11-18-2013 Time: 9:17:24

CVWD

MDP

LINE I01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 8992.423 | -176.086 | 4.645 | -171.442 | 1590.00 | 21.44 | 7.14 | -164.30 | .00 | 6.86 | 22.93 | 8.000 | 9.000 | 1.50 | 0 .0 |
| 707.577 | .0114 | | | | | .0120 | 8.47 | 4.64 | 2.10 | 4.64 | .015 | .00 | 1.50 | TRAP |
| 9700.000 | -168.000 | 4.539 | -163.461 | 1590.00 | 22.16 | 7.62 | -155.84 | .00 | 6.86 | 22.62 | 8.000 | 9.000 | 1.50 | 0 .0 |
| 42.610 | .0125 | | | | | .0125 | .53 | 4.54 | 2.19 | 4.54 | .015 | .00 | 1.50 | TRAP |
| 9742.610 | -167.467 | 4.540 | -162.927 | 1590.00 | 22.15 | 7.62 | -155.31 | .00 | 6.86 | 22.62 | 8.000 | 9.000 | 1.50 | 0 .0 |
| 703.575 | .0125 | | | | | .0117 | 8.26 | 4.54 | 2.19 | 4.54 | .015 | .00 | 1.50 | TRAP |
| 10446.190 | -158.673 | 4.693 | -153.979 | 1590.00 | 21.12 | 6.93 | -147.05 | .00 | 6.86 | 23.08 | 8.000 | 9.000 | 1.50 | 0 .0 |
| 214.883 | .0125 | | | | | .0103 | 2.21 | 4.69 | 2.06 | 4.54 | .015 | .00 | 1.50 | TRAP |
| 10661.070 | -155.987 | 4.851 | -151.136 | 1590.00 | 20.14 | 6.30 | -144.84 | .00 | 6.86 | 23.55 | 8.000 | 9.000 | 1.50 | 0 .0 |
| 118.932 | .0125 | | | | | .0090 | 1.08 | 4.85 | 1.94 | 4.54 | .015 | .00 | 1.50 | TRAP |
| 10780.000 | -154.500 | 5.013 | -149.487 | 1590.00 | 19.20 | 5.73 | -143.76 | .00 | 6.86 | 24.04 | 8.000 | 9.000 | 1.50 | 0 .0 |
| JUNCT STR | .0125 | | | | | .0102 | .31 | 5.01 | 1.82 | | .015 | .00 | 1.50 | TRAP |
| 10810.000 | -154.125 | 4.408 | -149.717 | 1352.00 | 20.99 | 6.84 | -142.87 | .00 | 6.53 | 21.22 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 490.000 | .0120 | | | | | .0120 | 5.86 | 4.41 | 2.12 | 4.41 | .015 | .00 | 1.50 | TRAP |
| 11300.000 | -148.261 | 4.408 | -143.853 | 1352.00 | 20.99 | 6.84 | -137.01 | .00 | 6.53 | 21.22 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 1279.076 | .0120 | | | | | .0120 | 15.31 | 4.41 | 2.12 | 4.41 | .015 | .00 | 1.50 | TRAP |
| 12579.080 | -132.953 | 4.408 | -128.545 | 1352.00 | 20.99 | 6.84 | -121.70 | .00 | 6.53 | 21.22 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 653.084 | .0120 | | | | | .0124 | 8.12 | 4.41 | 2.12 | 4.41 | .015 | .00 | 1.50 | TRAP |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11-18-2013 Time: 9:17:24

CVWD

MDP
LINE I01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 13232.160 | -125.137 | 4.324 | -120.813 | 1352.00 | 21.58 | 7.23 | -113.58 | .00 | 6.53 | 20.97 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 317.840 | .0120 | | | | | .0138 | 4.39 | 4.32 | 2.20 | 4.41 | .015 | .00 | 1.50 | TRAP |
| 13550.000 | -121.333 | 4.184 | -117.149 | 1352.00 | 22.63 | 7.96 | -109.19 | .00 | 6.53 | 20.55 | 8.000 | 8.000 | 1.50 | 0 .0 |
| JUNCT STR | .0871 | | | | | .0199 | .60 | 4.18 | 2.34 | | .015 | .00 | 1.50 | TRAP |
| | | | | WARNING - Junction Analysis - Change in Channel Type | | | | | | | | | | |
| 13580.000 | -118.720 | 3.619 | -115.101 | 529.00 | 22.49 | 7.85 | -107.25 | .00 | 5.90 | 6.50 | 7.000 | 6.500 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 13580.000 | -118.720 | 3.978 | -114.742 | 529.00 | 22.23 | 7.67 | -107.07 | .00 | 5.94 | 7.49 | 7.500 | .000 | .00 | 1 .0 |
| 1267.645 | .0156 | | | | | .0156 | 19.75 | 3.98 | 2.20 | 3.98 | .013 | .00 | .00 | PIPE |
| 14847.640 | -98.966 | 3.978 | -94.988 | 529.00 | 22.23 | 7.67 | -87.31 | .00 | 5.94 | 7.49 | 7.500 | .000 | .00 | 1 .0 |
| 591.418 | .0156 | | | | | .0155 | 9.16 | 3.98 | 2.20 | 3.98 | .013 | .00 | .00 | PIPE |
| 15439.060 | -89.750 | 3.991 | -85.759 | 529.00 | 22.14 | 7.61 | -78.15 | .00 | 5.94 | 7.48 | 7.500 | .000 | .00 | 1 .0 |
| 494.254 | .0156 | | | | | .0145 | 7.17 | 3.99 | 2.18 | 3.98 | .013 | .00 | .00 | PIPE |
| 15933.320 | -82.047 | 4.147 | -77.900 | 529.00 | 21.11 | 6.92 | -70.98 | .00 | 5.94 | 7.46 | 7.500 | .000 | .00 | 1 .0 |
| 166.684 | .0156 | | | | | .0128 | 2.13 | 4.15 | 2.03 | 3.98 | .013 | .00 | .00 | PIPE |
| 16100.000 | -79.450 | 4.312 | -75.138 | 529.00 | 20.12 | 6.29 | -68.85 | .00 | 5.94 | 7.42 | 7.500 | .000 | .00 | 1 .0 |
| JUNCT STR | .0900 | | | | | .0132 | .26 | 4.31 | 1.88 | | .013 | .00 | .00 | PIPE |



CVWD
MDP
LINE I01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 16120.000 | -77.650 | 4.114 | -73.536 | 415.00 | 20.08 | 6.26 | -67.27 | .00 | 5.40 | 5.57 | 6.000 | .000 | .00 | 1 .0 |
| 1626.076 | .0145 | | | | | .0145 | 23.52 | 4.11 | 1.84 | 4.11 | .013 | .00 | .00 | PIPE |
| 17746.080 | -54.125 | 4.114 | -50.011 | 415.00 | 20.08 | 6.26 | -43.75 | .00 | 5.40 | 5.57 | 6.000 | .000 | .00 | 1 .0 |
| 502.277 | .0145 | | | | | .0144 | 7.21 | 4.11 | 1.84 | 4.11 | .013 | .00 | .00 | PIPE |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18248.350 | -46.859 | 4.136 | -42.723 | 415.00 | 19.96 | 6.19 | -36.53 | .00 | 5.40 | 5.55 | 6.000 | .000 | .00 | 1 .0 |
| 388.641 | .0145 | | | | | .0135 | 5.24 | 4.14 | 1.82 | 4.11 | .013 | .00 | .00 | PIPE |
| 18636.990 | -41.236 | 4.321 | -36.915 | 415.00 | 19.03 | 5.63 | -31.29 | .00 | 5.40 | 5.39 | 6.000 | .000 | .00 | 1 .0 |
| 129.006 | .0145 | | | | | .0121 | 1.56 | 4.32 | 1.67 | 4.11 | .013 | .00 | .00 | PIPE |
| 18766.000 | -39.370 | 4.523 | -34.847 | 415.00 | 18.15 | 5.11 | -29.73 | .00 | 5.40 | 5.17 | 6.000 | .000 | .00 | 1 .0 |
| JUNCT STR | .0812 | | | | | .0140 | .21 | 4.52 | 1.52 | | .013 | .00 | .00 | PIPE |
| 18781.000 | -38.152 | 3.663 | -34.489 | 297.00 | 19.27 | 5.77 | -28.72 | .00 | 4.66 | 4.43 | 5.000 | .000 | .00 | 1 .0 |
| 56.152 | .0190 | | | | | .0161 | .91 | 3.66 | 1.82 | 3.47 | .013 | .00 | .00 | PIPE |
| 18837.150 | -37.083 | 3.737 | -33.345 | 297.00 | 18.87 | 5.53 | -27.82 | .00 | 4.66 | 4.34 | 5.000 | .000 | .00 | 1 .0 |
| 78.645 | .0190 | | | | | .0150 | 1.18 | 3.74 | 1.75 | 3.47 | .013 | .00 | .00 | PIPE |
| 18915.800 | -35.585 | 3.919 | -31.666 | 297.00 | 17.99 | 5.02 | -26.64 | .00 | 4.66 | 4.12 | 5.000 | .000 | .00 | 1 .0 |
| 45.979 | .0190 | | | | | .0135 | .62 | 3.92 | 1.58 | 3.47 | .013 | .00 | .00 | PIPE |
| 18961.780 | -34.709 | 4.122 | -30.587 | 297.00 | 17.15 | 4.57 | -26.02 | .00 | 4.66 | 3.80 | 5.000 | .000 | .00 | 1 .0 |
| 26.771 | .0190 | | | | | .0124 | .33 | 4.12 | 1.42 | 3.47 | .013 | .00 | .00 | PIPE |



CVWD
MDP
LINE I01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 18988.550 | -34.199 | 4.358 | -29.841 | 297.00 | 16.35 | 4.15 | -25.69 | .00 | 4.66 | 3.35 | 5.000 | .000 | .00 | 1 .0 |
| 10.453 | .0190 | | | | | .0115 | .12 | 4.36 | 1.24 | 3.47 | .013 | .00 | .00 | PIPE |
| 18999.000 | -34.000 | 4.658 | -29.342 | 297.00 | 15.59 | 3.77 | -25.57 | .00 | 4.66 | 2.52 | 5.000 | .000 | .00 | 1 .0 |

```
T1 CVWD                                                                    0
T2 MDP
T3 LINE I01-01
SO   1000.000-188.500  7      .015               -183.594
R    2325.000-185.681  7      .015
JX   2340.000-185.649  1  8   .015  238.000         -184.649         45.0
R    3650.000-182.862  1      .015
JX   3680.000-182.798  2  3   .015  174.000         -181.798         45.0
R    4969.000-180.055  2      .015
JX   4999.000-179.992  4  3   .015  175.000         -178.992         45.0
R    6253.000-177.323  4      .015
TS   6283.000-177.260  5      .015
WX   6283.000-177.260  6
R    6364.000-177.088  6      .015
WE   6364.000-177.088  5      .500
TS   6394.000-177.023  4      .015
R    6450.000-176.911  4      .015
SH   6450.000-176.911  4      .015
CD   1  1   0    .000   8.000   12.000 1.500 1.500   .00
CD   2  1   0    .000   8.000   10.000 1.500 1.500   .00
CD   3  4   1           3.000
CD   4  1   0    .000   8.000    6.000 1.500 1.500   .00
CD   5  2   0    .000   8.000   10.000  .000  .000   .00
CD   6  3   0    .000   6.000   10.000  .000  .000   .00
CD   7  1   0    .000   8.000   16.000 1.500 1.500   .00
CD   8  4               4.000
Q          608.000   .0
```

FILE: I01-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 8- 5-2013 Time: 8:55:59

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 8.000 | 12.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 1 | 0 | .000 | 8.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 3 | 4 | 1 | | 3.000 | | | | | | | | | | | | | | |
| CD | 4 | 1 | 0 | .000 | 8.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 5 | 2 | 0 | .000 | 8.000 | 10.000 | | | .00 | | | | | | | | | | |
| CD | 6 | 3 | 0 | .000 | 6.000 | 10.000 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 7 | 1 | 0 | .000 | 8.000 | 16.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 8 | 4 | 0 | | 4.000 | | | | | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE I01-01

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1000.000 | -188.500 | 7 | -183.594 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2325.000 | -185.681 | 7 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2340.000 | -185.649 | 1 | 8 | 0 | .015 | 238.000 | .000 | -184.649 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 4 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3650.000 | -182.862 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 5 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3680.000 | -182.798 | 2 | 3 | 0 | .015 | 174.000 | .000 | -181.798 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 6 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 4969.000 | -180.055 | 2 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 7 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4999.000 | -179.992 | 4 | 3 | 0 | .015 | 175.000 | .000 | -178.992 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

W S P G W PAGE NO 3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 8 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 6253.000 | -177.323 | 4 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 9 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|

```
                                6283.000 -177.260    5          .015                        .000     .000
ELEMENT NO  10 IS A  WALL  EXIT                                  *
                    U/S DATA   STATION    INVERT  SECT
                                6283.000 -177.260    6
ELEMENT NO  11 IS A REACH                        *         *     *
                    U/S DATA   STATION    INVERT  SECT          N                        RADIUS    ANGLE     ANG PT  MAN H
                                6364.000 -177.088    6          .015                        .000     .000      .000     0
ELEMENT NO  12 IS A  WALL  ENTRANCE                              *
                    U/S DATA   STATION    INVERT  SECT         FP
                                6364.000 -177.088    5          .500
ELEMENT NO  13 IS A TRANSITION                   *         *     *
                    U/S DATA   STATION    INVERT  SECT          N                        RADIUS   ANGLE
                                6394.000 -177.023    4          .015                        .000     .000
ELEMENT NO  14 IS A REACH                        *         *     *
                    U/S DATA   STATION    INVERT  SECT          N                        RADIUS    ANGLE     ANG PT  MAN H
                                6450.000 -176.911    4          .015                        .000     .000      .000     0
ELEMENT NO  15 IS A SYSTEM HEADWORKS                             *                   *
                    U/S DATA   STATION    INVERT  SECT                          W S ELEV
                                6450.000 -176.911    4                             .000
```

CVWD
MDP
LINE I01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 1000.000 | -188.500 | 4.906 | -183.594 | 1195.00 | 10.43 | 1.69 | -181.91 | .00 | 4.77 | 30.72 | 8.000 | 16.000 | 1.50 | 0 .0 |
| 137.448 | .0021 | | | | | .0021 | .29 | 4.91 | .95 | 4.93 | .015 | .00 | 1.50 | TRAP |
| 1137.448 | -188.208 | 4.930 | -183.278 | 1195.00 | 10.36 | 1.67 | -181.61 | .00 | 4.77 | 30.79 | 8.000 | 16.000 | 1.50 | 0 .0 |
| 1187.552 | .0021 | | | | | .0021 | 2.52 | 4.93 | .94 | 4.93 | .015 | .00 | 1.50 | TRAP |
| 2325.000 | -185.681 | 4.930 | -180.751 | 1195.00 | 10.36 | 1.67 | -179.08 | .00 | 4.77 | 30.79 | 8.000 | 16.000 | 1.50 | 0 .0 |
| JUNCT STR | .0021 | | | | | | | 4.93 | .94 | | .015 | .00 | 1.50 | TRAP |
| 2340.000 | -185.649 | 4.744 | -180.905 | 957.00 | 10.55 | 1.73 | -179.18 | .00 | 4.74 | 26.23 | 8.000 | 12.000 | 1.50 | 0 .0 |
| 46.832 | .0021 | | | | | .0023 | .11 | 4.74 | 1.00 | 4.95 | .015 | .00 | 1.50 | TRAP |
| 2386.832 | -185.549 | 4.911 | -180.638 | 957.00 | 10.06 | 1.57 | -179.07 | .00 | 4.74 | 26.73 | 8.000 | 12.000 | 1.50 | 0 .0 |
| 162.000 | .0021 | | | | | .0022 | .35 | 4.91 | .94 | 4.95 | .015 | .00 | 1.50 | TRAP |
| 2548.831 | -185.205 | 4.946 | -180.258 | 957.00 | 9.96 | 1.54 | -178.72 | .00 | 4.74 | 26.84 | 8.000 | 12.000 | 1.50 | 0 .0 |
| 1101.169 | .0021 | | | | | .0021 | 2.34 | 4.95 | .93 | 4.95 | .015 | .00 | 1.50 | TRAP |
| 3650.000 | -182.862 | 4.946 | -177.916 | 957.00 | 9.96 | 1.54 | -176.37 | .00 | 4.74 | 26.84 | 8.000 | 12.000 | 1.50 | 0 .0 |
| JUNCT STR | .0021 | | | | | | | 4.95 | .93 | | .015 | .00 | 1.50 | TRAP |
| 3680.000 | -182.798 | 4.554 | -178.244 | 783.00 | 10.22 | 1.62 | -176.62 | .00 | 4.55 | 23.66 | 8.000 | 10.000 | 1.50 | 0 .0 |
| 32.567 | .0021 | | | | | .0024 | .08 | 4.55 | 1.00 | 4.78 | .015 | .00 | 1.50 | TRAP |
| 3712.567 | -182.729 | 4.711 | -178.018 | 783.00 | 9.74 | 1.47 | -176.55 | .00 | 4.55 | 24.13 | 8.000 | 10.000 | 1.50 | 0 .0 |
| 160.232 | .0021 | | | | | .0022 | .35 | 4.71 | .94 | 4.78 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE I01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3872.799 | -182.388 | 4.781 | -177.606 | 783.00 | 9.54 | 1.41 | -176.19 | .00 | 4.55 | 24.34 | 8.000 | 10.000 | 1.50 | 0 .0 |
| 1090.289 | .0021 | | | | | .0021 | 2.32 | 4.78 | .92 | 4.78 | .015 | .00 | 1.50 | TRAP |
| 4963.088 | -180.068 | 4.781 | -175.286 | 783.00 | 9.54 | 1.41 | -173.87 | .00 | 4.55 | 24.34 | 8.000 | 10.000 | 1.50 | 0 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |
| 4963.088 | -180.068 | 4.334 | -175.734 | 783.00 | 10.95 | 1.86 | -173.87 | .00 | 4.55 | 23.00 | 8.000 | 10.000 | 1.50 | 0 .0 |
| 5.912 | .0021 | | | | | .0031 | .02 | 4.33 | 1.09 | 4.78 | .015 | .00 | 1.50 | TRAP |
| 4969.000 | -180.055 | 4.310 | -175.745 | 783.00 | 11.04 | 1.89 | -173.85 | .00 | 4.55 | 22.93 | 8.000 | 10.000 | 1.50 | 0 .0 |
| JUNCT STR | .0021 | | | | | .0029 | .09 | 4.31 | 1.11 | | .015 | .00 | 1.50 | TRAP |
| 4999.000 | -179.992 | 4.700 | -175.292 | 608.00 | 9.91 | 1.53 | -173.77 | .00 | 4.70 | 20.10 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 21.182 | .0021 | | | | | .0025 | .05 | 4.70 | 1.00 | 4.98 | .015 | .00 | 1.50 | TRAP |
| 5020.182 | -179.947 | 4.848 | -175.099 | 608.00 | 9.45 | 1.39 | -173.71 | .00 | 4.70 | 20.54 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 168.697 | .0021 | | | | | .0022 | .38 | 4.85 | .94 | 4.98 | .015 | .00 | 1.50 | TRAP |
| 5188.879 | -179.588 | 4.976 | -174.612 | 608.00 | 9.08 | 1.28 | -173.33 | .00 | 4.70 | 20.93 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 831.694 | .0021 | | | | | .0021 | 1.77 | 4.98 | .89 | 4.98 | .015 | .00 | 1.50 | TRAP |
| 6020.573 | -177.818 | 4.976 | -172.842 | 608.00 | 9.08 | 1.28 | -171.56 | .00 | 4.70 | 20.93 | 8.000 | 6.000 | 1.50 | 0 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |
| 6020.573 | -177.818 | 4.432 | -173.385 | 608.00 | 10.84 | 1.83 | -171.56 | .00 | 4.70 | 19.30 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 22.857 | .0021 | | | | | .0036 | .08 | 4.43 | 1.12 | 4.98 | .015 | .00 | 1.50 | TRAP |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 5-2013 Time: 8:56: 5

CVWD
MDP
LINE I01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6043.431 | -177.769 | 4.329 | -173.440 | 608.00 | 11.24 | 1.96 | -171.48 | .00 | 4.70 | 18.99 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 32.405 | .0021 | | | | | .0040 | .13 | 4.33 | 1.17 | 4.98 | .015 | .00 | 1.50 | TRAP |
| 6075.836 | -177.700 | 4.195 | -173.505 | 608.00 | 11.79 | 2.16 | -171.35 | .00 | 4.70 | 18.59 | 8.000 | 6.000 | 1.50 | 0 .0 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | |
| 34.453 | .0021 | | | | | | .0046 | .16 | 4.20 | 1.25 | 4.98 | .015 | .00 | 1.50 | TRAP | | | | |
| 6110.289 | -177.627 | 4.065 | -173.562 | 608.00 | 12.37 | 2.37 | -171.19 | .00 | 4.70 | 18.19 | 8.000 | 6.000 | 1.50 | 0 | .0 | | | | |
| 35.469 | .0021 | | | | | | .0052 | .19 | 4.06 | 1.33 | 4.98 | .015 | .00 | 1.50 | TRAP | | | | |
| 6145.757 | -177.551 | 3.938 | -173.614 | 608.00 | 12.97 | 2.61 | -171.00 | .00 | 4.70 | 17.81 | 8.000 | 6.000 | 1.50 | 0 | .0 | | | | |
| 35.856 | .0021 | | | | | | .0060 | .21 | 3.94 | 1.41 | 4.98 | .015 | .00 | 1.50 | TRAP | | | | |
| 6181.614 | -177.475 | 3.814 | -173.661 | 608.00 | 13.60 | 2.87 | -170.79 | .00 | 4.70 | 17.44 | 8.000 | 6.000 | 1.50 | 0 | .0 | | | | |
| 35.838 | .0021 | | | | | | .0068 | .24 | 3.81 | 1.50 | 4.98 | .015 | .00 | 1.50 | TRAP | | | | |
| 6217.452 | -177.399 | 3.693 | -173.705 | 608.00 | 14.27 | 3.16 | -170.55 | .00 | 4.70 | 17.08 | 8.000 | 6.000 | 1.50 | 0 | .0 | | | | |
| 35.548 | .0021 | | | | | | .0077 | .27 | 3.69 | 1.59 | 4.98 | .015 | .00 | 1.50 | TRAP | | | | |
| 6253.000 | -177.323 | 3.576 | -173.747 | 608.00 | 14.96 | 3.48 | -170.27 | .00 | 4.70 | 16.73 | 8.000 | 6.000 | 1.50 | 0 | .0 | | | | |
| TRANS STR | .0021 | | | | | | .0065 | .20 | 3.58 | 1.69 | | .015 | .00 | 1.50 | TRAP | | | | |
| 6283.000 | -177.260 | 4.860 | -172.400 | 608.00 | 12.51 | 2.43 | -169.97 | .00 | 4.86 | 10.00 | 8.000 | 10.000 | .00 | 0 | .0 | | | | |
| WALL EXIT | | | | | | | | | | | | | | | | | | | |
| 6283.000 | -177.260 | 4.860 | -172.400 | 608.00 | 12.51 | 2.43 | -169.97 | .00 | 4.86 | 10.00 | 6.000 | 10.000 | .00 | 0 | .0 | | | | |
| 6.838 | .0021 | | | | | | .0042 | .03 | 4.86 | 1.00 | 6.00 | .015 | .00 | .00 | BOX | | | | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 5-2013 Time: 8:56: 5

CVWD
MDP
LINE I01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6289.838 | -177.245 | 5.097 | -172.148 | 608.00 | 11.93 | 2.21 | -169.94 | .00 | 4.86 | 10.00 | 6.000 | 10.000 | .00 | 0 .0 |
| 25.992 | .0021 | | | | | .0037 | .10 | 5.10 | .93 | 6.00 | .015 | .00 | .00 | BOX |
| 6315.831 | -177.190 | 5.346 | -171.844 | 608.00 | 11.37 | 2.01 | -169.84 | .00 | 4.86 | 10.00 | 6.000 | 10.000 | .00 | 0 .0 |
| 48.169 | .0021 | | | | | .0033 | .16 | 5.35 | .87 | 6.00 | .015 | .00 | .00 | BOX |
| WALL ENTRANCE | | | | | | | | | | | | | | |
| ---------- WARNING - Flow depth near top of box conduit ---------- | | | | | | | | | | | | | | |
| 6364.000 | -177.088 | 5.577 | -171.511 | 608.00 | 10.90 | 1.85 | -169.67 | .00 | 4.86 | 10.00 | 8.000 | 10.000 | .00 | 0 .0 |
| TRANS STR | .0022 | | | | | .0019 | .06 | 5.58 | .81 | | .015 | .00 | .00 | RECTANG |

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T1 CVWD                                                                    0
T2 MDP
T3 LINE I01-02
SO   1000.000-119.000  1      .015               -114.729
R    1300.000-108.000  1      .015
R    3650.000-092.000  1      .015
JX   3665.000-091.000  1  3   .015  226.000         -090.000         45.0
R    5000.000-088.000  1      .015
JX   5015.000-085.850  1  3   .015  229.000         -084.850         45.0
R    6242.000-075.406  1      .015
JX   6272.000-075.127  4  3   .015  244.000         -074.127         45.0
WX   6272.000-075.127  5
R    6312.000-074.753  5      .015
WE   6312.000-074.753  4      .500
TS   6342.000-073.374  1      .015
R    6500.000-073.000  1      .015
SH   6500.000-073.000  1      .015
CD   1  1   0    .000   8.000    6.000 1.500 1.500   .00
CD   2  2   0    .000  10.000   62.680  .000  .000   .00
CD   3  4   1    .000   4.000
CD   4  2   0    .000   8.000    4.000 0.000 0.000   .00
CD   5  3   0    .000   4.000    4.000 0.000 0.000   .00
CD   6  1   0    .000  10.000   17.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   15.000 1.500 1.500   .00
CD   8  1   0    .000  10.000   10.000 1.500 1.500   .00
CD   9  2   0    .000  10.000   20.670  .000  .000   .00
CD  10  3   1    .670   6.000   20.670  .000  .000   .00
CD  11  4   1           6.000
CD  12  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  13  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  14  2   0    .000  10.000   24.670  .000  .000   .00
CD  15  3   1    .670   6.000   24.670  .000  .000   .00

Q          133.000   .0
```

FILE: I01-02.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 8- 5-2013 Time: 9:33:41

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 8.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 2 | 0 | .000 | 10.000 | 62.680 | | | .00 | | | | | | | | | | |
| CD | 3 | 4 | 1 | | 4.000 | | | | | | | | | | | | | | |
| CD | 4 | 2 | 0 | .000 | 8.000 | 4.000 | | | .00 | | | | | | | | | | |
| CD | 5 | 3 | 0 | .000 | 4.000 | 4.000 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 6 | 1 | 0 | .000 | 10.000 | 17.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 7 | 1 | 0 | .000 | 10.000 | 15.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 8 | 1 | 0 | .000 | 10.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 9 | 2 | 0 | .000 | 10.000 | 20.670 | | | .00 | | | | | | | | | | |
| CD | 10 | 3 | 1 | .670 | 6.000 | 20.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 11 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 12 | 1 | 0 | .000 | 10.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 13 | 1 | 0 | .000 | 10.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 14 | 2 | 0 | .000 | 10.000 | 24.670 | | | .00 | | | | | | | | | | |
| CD | 15 | 3 | 1 | .670 | 6.000 | 24.670 | .000 | .000 | .00 | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE I01-02

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1000.000 | -119.000 | 1 | -114.729 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1300.000 | -108.000 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3650.000 | -92.000 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 4 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3665.000 | -91.000 | 1 | 3 | 0 | .015 | 226.000 | .000 | -90.000 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 5 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 5000.000 | -88.000 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 6 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5015.000 | -85.850 | 1 | 3 | 0 | .015 | 229.000 | .000 | -84.850 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 7 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 6242.000 | -75.406 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 8 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6272.000 | -75.127 | 4 | 3 | 0 | .015 | 244.000 | .000 | -74.127 | .000 | 45.000 | .000 |

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                                                                                                                RADIUS     ANGLE
                                                                                                                  .000      .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
                                                    W S P G W                                                                    PAGE NO   3
                                WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO   9 IS A  WALL  EXIT                          *
                     U/S DATA   STATION    INVERT  SECT
                                6272.000  -75.127    5
 ELEMENT NO  10 IS A REACH                 *         *     *
                     U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                                6312.000  -74.753    5             .015                          .000      .000      .000     0
 ELEMENT NO  11 IS A  WALL  ENTRANCE                      *
                     U/S DATA   STATION    INVERT  SECT             FP
                                6312.000  -74.753    4             .500
 ELEMENT NO  12 IS A TRANSITION            *         *     *
                     U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                                6342.000  -73.374    1             .015                          .000     .000
 ELEMENT NO  13 IS A REACH                 *         *     *
                     U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                                6500.000  -73.000    1             .015                          .000      .000      .000     0
 ELEMENT NO  14 IS A SYSTEM HEADWORKS                     *                        *
                     U/S DATA   STATION    INVERT  SECT                                W S ELEV
                                6500.000  -73.000    1                                   .000
```

CVWD
MDP
LINE I01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 1000.000 | -119.000 | 3.077 | -115.923 | 832.00 | 25.47 | 10.07 | -105.85 | .00 | 5.51 | 15.23 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 71.295 | .0367 | | | | | .0263 | 1.88 | 3.08 | 3.06 | 2.87 | .015 | .00 | 1.50 | TRAP |
| 1071.295 | -116.386 | 3.170 | -113.215 | 832.00 | 24.40 | 9.24 | -103.97 | .00 | 5.51 | 15.51 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 54.856 | .0367 | | | | | .0233 | 1.28 | 3.17 | 2.90 | 2.87 | .015 | .00 | 1.50 | TRAP |
| 1126.151 | -114.374 | 3.277 | -111.098 | 832.00 | 23.26 | 8.40 | -102.69 | .00 | 5.51 | 15.83 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 40.377 | .0367 | | | | | .0204 | .83 | 3.28 | 2.73 | 2.87 | .015 | .00 | 1.50 | TRAP |
| 1166.528 | -112.894 | 3.386 | -109.508 | 832.00 | 22.18 | 7.64 | -101.87 | .00 | 5.51 | 16.16 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 31.136 | .0367 | | | | | .0180 | .56 | 3.39 | 2.57 | 2.87 | .015 | .00 | 1.50 | TRAP |
| 1197.665 | -111.752 | 3.498 | -108.254 | 832.00 | 21.15 | 6.95 | -101.31 | .00 | 5.51 | 16.49 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 24.714 | .0367 | | | | | .0158 | .39 | 3.50 | 2.41 | 2.87 | .015 | .00 | 1.50 | TRAP |
| 1222.379 | -110.846 | 3.613 | -107.233 | 832.00 | 20.16 | 6.31 | -100.92 | .00 | 5.51 | 16.84 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 19.984 | .0367 | | | | | .0139 | .28 | 3.61 | 2.27 | 2.87 | .015 | .00 | 1.50 | TRAP |
| 1242.362 | -110.113 | 3.731 | -106.382 | 832.00 | 19.23 | 5.74 | -100.64 | .00 | 5.51 | 17.19 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 16.349 | .0367 | | | | | .0122 | .20 | 3.73 | 2.14 | 2.87 | .015 | .00 | 1.50 | TRAP |
| 1258.711 | -109.514 | 3.853 | -105.661 | 832.00 | 18.33 | 5.22 | -100.44 | .00 | 5.51 | 17.56 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 13.466 | .0367 | | | | | .0107 | .14 | 3.85 | 2.01 | 2.87 | .015 | .00 | 1.50 | TRAP |
| 1272.177 | -109.020 | 3.978 | -105.042 | 832.00 | 17.48 | 4.74 | -100.30 | .00 | 5.51 | 17.93 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 11.120 | .0367 | | | | | .0094 | .10 | 3.98 | 1.89 | 2.87 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE I01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 1283.298 | -108.612 | 4.106 | -104.506 | 832.00 | 16.66 | 4.31 | -100.19 | .00 | 5.51 | 18.32 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 9.173 | .0367 | | | | | .0083 | .08 | 4.11 | 1.78 | 2.87 | .015 | .00 | 1.50 | TRAP |
| 1292.471 | -108.276 | 4.238 | -104.038 | 832.00 | 15.89 | 3.92 | -100.12 | .00 | 5.51 | 18.71 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 7.529 | .0367 | | | | | .0073 | .05 | 4.24 | 1.67 | 2.87 | .015 | .00 | 1.50 | TRAP |
| 1300.000 | -108.000 | 4.373 | -103.627 | 832.00 | 15.15 | 3.56 | -100.06 | .00 | 5.51 | 19.12 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 1485.598 | .0068 | | | | | .0068 | 10.11 | 4.37 | 1.58 | 4.37 | .015 | .00 | 1.50 | TRAP |
| 2785.599 | -97.885 | 4.373 | -93.513 | 832.00 | 15.15 | 3.56 | -89.95 | .00 | 5.51 | 19.12 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 457.782 | .0068 | | | | | .0066 | 3.02 | 4.37 | 1.58 | 4.37 | .015 | .00 | 1.50 | TRAP |
| 3243.381 | -94.768 | 4.441 | -90.328 | 832.00 | 14.80 | 3.40 | -86.93 | .00 | 5.51 | 19.32 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 209.451 | .0068 | | | | | .0060 | 1.26 | 4.44 | 1.53 | 4.37 | .015 | .00 | 1.50 | TRAP |
| 3452.832 | -93.342 | 4.581 | -88.761 | 832.00 | 14.11 | 3.09 | -85.67 | .00 | 5.51 | 19.74 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 89.474 | .0068 | | | | | .0053 | .47 | 4.58 | 1.44 | 4.37 | .015 | .00 | 1.50 | TRAP |
| 3542.306 | -92.733 | 4.726 | -88.008 | 832.00 | 13.45 | 2.81 | -85.20 | .00 | 5.51 | 20.18 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 49.633 | .0068 | | | | | .0046 | .23 | 4.73 | 1.35 | 4.37 | .015 | .00 | 1.50 | TRAP |
| 3591.939 | -92.395 | 4.874 | -87.522 | 832.00 | 12.83 | 2.55 | -84.97 | .00 | 5.51 | 20.62 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 29.498 | .0068 | | | | | .0041 | .12 | 4.87 | 1.27 | 4.37 | .015 | .00 | 1.50 | TRAP |
| 3621.437 | -92.194 | 5.025 | -87.169 | 832.00 | 12.23 | 2.32 | -84.85 | .00 | 5.51 | 21.08 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 17.191 | .0068 | | | | | .0036 | .06 | 5.03 | 1.20 | 4.37 | .015 | .00 | 1.50 | TRAP |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 5-2013 Time: 9:33:49

CVWD
MDP
LINE I01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 3638.627 | -92.077 | 5.181 | -86.896 | 832.00 | 11.66 | 2.11 | -84.79 | .00 | 5.51 | 21.54 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 8.781 | .0068 | | | | | .0032 | .03 | 5.18 | 1.13 | 4.37 | .015 | .00 | 1.50 | TRAP |
| 3647.408 | -92.018 | 5.341 | -86.676 | 832.00 | 11.12 | 1.92 | -84.76 | .00 | 5.51 | 22.02 | 8.000 | 6.000 | 1.50 | 0 .0 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.592 | .0068 | | | | | | .0028 | .01 | 5.34 | 1.06 | 4.37 | .015 | .00 | 1.50 | TRAP | | | |
| 3650.000 | -92.000 | 5.506 | -86.494 | 832.00 | 10.60 | 1.74 | -84.75 | .00 | 5.51 | | 22.52 | 8.000 | 6.000 | 1.50 | 0 | .0 | | |
| JUNCT STR | .0667 | | | | | | | | 5.51 | 1.00 | | .015 | .00 | 1.50 | TRAP | | | |
| 3665.000 | -91.000 | 4.692 | -86.308 | 606.00 | 9.91 | 1.52 | -84.78 | .00 | 4.69 | | 20.08 | 8.000 | 6.000 | 1.50 | 0 | .0 | | |
| 29.562 | .0022 | | | | | | .0025 | .08 | 4.69 | 1.00 | 4.90 | .015 | .00 | 1.50 | TRAP | | | |
| 3694.562 | -90.934 | 4.839 | -86.094 | 606.00 | 9.45 | 1.39 | -84.71 | .00 | 4.69 | | 20.52 | 8.000 | 6.000 | 1.50 | 0 | .0 | | |
| 143.378 | .0022 | | | | | | .0023 | .33 | 4.84 | .94 | 4.90 | .015 | .00 | 1.50 | TRAP | | | |
| 3837.941 | -90.611 | 4.904 | -85.708 | 606.00 | 9.25 | 1.33 | -84.38 | .00 | 4.69 | | 20.71 | 8.000 | 6.000 | 1.50 | 0 | .0 | | |
| 836.547 | .0022 | | | | | | .0022 | 1.88 | 4.90 | .92 | 4.90 | .015 | .00 | 1.50 | TRAP | | | |
| 4674.488 | -88.731 | 4.904 | -83.828 | 606.00 | 9.25 | 1.33 | -82.50 | .00 | 4.69 | | 20.71 | 8.000 | 6.000 | 1.50 | 0 | .0 | | |
| HYDRAULIC JUMP | | | | | | | | | | | | | | | | | | |
| 4674.488 | -88.731 | 4.485 | -84.246 | 606.00 | 10.61 | 1.75 | -82.50 | .00 | 4.69 | | 19.46 | 8.000 | 6.000 | 1.50 | 0 | .0 | | |
| 6.590 | .0022 | | | | | | .0033 | .02 | 4.49 | 1.09 | 4.90 | .015 | .00 | 1.50 | TRAP | | | |
| 4681.078 | -88.717 | 4.457 | -84.260 | 606.00 | 10.72 | 1.78 | -82.48 | .00 | 4.69 | | 19.37 | 8.000 | 6.000 | 1.50 | 0 | .0 | | |
| 31.099 | .0022 | | | | | | .0036 | .11 | 4.46 | 1.11 | 4.90 | .015 | .00 | 1.50 | TRAP | | | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 5-2013 Time: 9:33:49

CVWD
MDP
LINE I01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 4712.177 | -88.647 | 4.320 | -84.327 | 606.00 | 11.24 | 1.96 | -82.36 | .00 | 4.69 | 18.96 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 34.497 | .0022 | | | | | .0041 | .14 | 4.32 | 1.17 | 4.90 | .015 | .00 | 1.50 | TRAP |
| 4746.673 | -88.569 | 4.186 | -84.383 | 606.00 | 11.79 | 2.16 | -82.22 | .00 | 4.69 | 18.56 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 36.125 | .0022 | | | | | .0046 | .17 | 4.19 | 1.25 | 4.90 | .015 | .00 | 1.50 | TRAP |
| 4782.798 | -88.488 | 4.056 | -84.432 | 606.00 | 12.37 | 2.37 | -82.06 | .00 | 4.69 | 18.17 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 36.805 | .0022 | | | | | .0053 | .19 | 4.06 | 1.33 | 4.90 | .015 | .00 | 1.50 | TRAP |
| 4819.604 | -88.405 | 3.929 | -84.476 | 606.00 | 12.97 | 2.61 | -81.86 | .00 | 4.69 | 17.79 | 8.000 | 6.000 | 1.50 | 0 .0 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 36.926 | .0022 | | | | | .0060 | .22 | 3.93 | 1.41 | 4.90 | .015 | .00 | 1.50 | TRAP |
| 4856.530 | -88.322 | 3.805 | -84.517 | 606.00 | 13.60 | 2.87 | -81.64 | .00 | 4.69 | 17.42 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 36.698 | .0022 | | | | | .0068 | .25 | 3.81 | 1.50 | 4.90 | .015 | .00 | 1.50 | TRAP |
| 4893.228 | -88.240 | 3.685 | -84.555 | 606.00 | 14.27 | 3.16 | -81.39 | .00 | 4.69 | 17.06 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 36.239 | .0022 | | | | | .0077 | .28 | 3.69 | 1.59 | 4.90 | .015 | .00 | 1.50 | TRAP |
| 4929.466 | -88.159 | 3.568 | -84.591 | 606.00 | 14.96 | 3.48 | -81.11 | .00 | 4.69 | 16.70 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 35.626 | .0022 | | | | | .0088 | .31 | 3.57 | 1.69 | 4.90 | .015 | .00 | 1.50 | TRAP |
| 4965.092 | -88.078 | 3.454 | -84.625 | 606.00 | 15.69 | 3.82 | -80.80 | .00 | 4.69 | 16.36 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 34.908 | .0022 | | | | | .0100 | .35 | 3.45 | 1.80 | 4.90 | .015 | .00 | 1.50 | TRAP |
| 5000.000 | -88.000 | 3.343 | -84.657 | 606.00 | 16.46 | 4.21 | -80.45 | .00 | 4.69 | 16.03 | 8.000 | 6.000 | 1.50 | 0 .0 |
| JUNCT STR | .1433 | | | | | .0096 | .14 | 3.34 | 1.91 | | .015 | .00 | 1.50 | TRAP |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 5-2013 Time: 9:33:49

CVWD
MDP
LINE I01-02

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5015.000 | -85.850 | 2.779 | -83.071 | 377.00 | 13.34 | 2.76 | -80.31 | .00 | 3.67 | 14.34 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 671.648 | .0085 | | | | | .0085 | 5.72 | 2.78 | 1.67 | 2.78 | .015 | .00 | 1.50 | TRAP |
| 5686.648 | -80.133 | 2.779 | -77.354 | 377.00 | 13.34 | 2.76 | -74.59 | .00 | 3.67 | 14.34 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 302.473 | .0085 | | | | | .0082 | 2.48 | 2.78 | 1.67 | 2.78 | .015 | .00 | 1.50 | TRAP |
| 5989.122 | -77.558 | 2.834 | -74.724 | 377.00 | 12.98 | 2.61 | -72.11 | .00 | 3.67 | 14.50 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 127.236 | .0085 | | | | | .0074 | .94 | 2.83 | 1.62 | 2.78 | .015 | .00 | 1.50 | TRAP |
| 6116.358 | -76.475 | 2.931 | -73.545 | 377.00 | 12.37 | 2.38 | -71.17 | .00 | 3.67 | 14.79 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 57.922 | .0085 | | | | | .0065 | .38 | 2.93 | 1.52 | 2.78 | .015 | .00 | 1.50 | TRAP |
| 6174.280 | -75.982 | 3.030 | -72.952 | 377.00 | 11.80 | 2.16 | -70.79 | .00 | 3.67 | 15.09 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 33.549 | .0085 | | | | | .0057 | .19 | 3.03 | 1.43 | 2.78 | .015 | .00 | 1.50 | TRAP |
| 6207.829 | -75.697 | 3.133 | -72.564 | 377.00 | 11.25 | 1.96 | -70.60 | .00 | 3.67 | 15.40 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 20.970 | .0085 | | | | | .0050 | .11 | 3.13 | 1.34 | 2.78 | .015 | .00 | 1.50 | TRAP |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6228.798 | -75.518 | 3.238 | -72.280 | 377.00 | 10.72 | 1.79 | -70.49 | .00 | 3.67 | 15.71 | 8.000 | 6.000 | 1.50 | 0 | .0 |
| 13.202 | .0085 | | | | | .0044 | .06 | 3.24 | 1.26 | 2.78 | .015 | .00 | 1.50 | TRAP | |
| 6242.000 | -75.406 | 3.346 | -72.060 | 377.00 | 10.23 | 1.62 | -70.44 | .00 | 3.67 | 16.04 | 8.000 | 6.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0093 | | | | | .0067 | .20 | 3.35 | 1.19 | | .015 | .00 | 1.50 | TRAP | |

---------- WARNING - Junction Analysis - Change in Channel Type ----------



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 5-2013 Time: 9:33:49

CVWD
MDP
LINE I01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6272.000 | -75.127 | 3.070 | -72.057 | 133.00 | 10.83 | 1.82 | -70.24 | .00 | 3.25 | 4.00 | 8.000 | 4.000 | .00 | 0 | .0 |
| WALL | EXIT | | | | | | | | | | | | | | |
| 6272.000 | -75.127 | 3.069 | -72.058 | 133.00 | 10.83 | 1.82 | -70.24 | .00 | 3.25 | 4.00 | 4.000 | 4.000 | .00 | 0 | .0 |
| 26.047 | .0094 | | | | | .0092 | .24 | 3.07 | 1.09 | 3.06 | .015 | .00 | .00 | BOX | |
| 6298.047 | -74.883 | 3.098 | -71.785 | 133.00 | 10.73 | 1.79 | -70.00 | .00 | 3.25 | 4.00 | 4.000 | 4.000 | .00 | 0 | .0 |
| 13.953 | .0094 | | | | | .0085 | .12 | 3.10 | 1.07 | 3.06 | .015 | .00 | .00 | BOX | |
| WALL | ENTRANCE | | | | | | | | | | | | | | |
| 6312.000 | -74.753 | 3.252 | -71.501 | 133.00 | 10.23 | 1.62 | -69.88 | .00 | 3.25 | 4.00 | 8.000 | 4.000 | .00 | 0 | .0 |
| TRANS STR | .0460 | | | | | .0042 | .13 | 3.25 | 1.00 | | .015 | .00 | .00 | RECTANG | |
| 6342.000 | -73.374 | 3.607 | -69.767 | 133.00 | 3.23 | .16 | -69.60 | .00 | 2.07 | 16.82 | 8.000 | 6.000 | 1.50 | 0 | .0 |
| 50.397 | .0024 | | | | | .0004 | .02 | 3.61 | .36 | 2.25 | .015 | .00 | 1.50 | TRAP | |
| 6392.397 | -73.255 | 3.492 | -69.763 | 133.00 | 3.39 | .18 | -69.58 | .00 | 2.07 | 16.48 | 8.000 | 6.000 | 1.50 | 0 | .0 |
| 49.423 | .0024 | | | | | .0005 | .02 | 3.49 | .39 | 2.25 | .015 | .00 | 1.50 | TRAP | |
| 6441.820 | -73.138 | 3.380 | -69.758 | 133.00 | 3.55 | .20 | -69.56 | .00 | 2.07 | 16.14 | 8.000 | 6.000 | 1.50 | 0 | .0 |
| 48.544 | .0024 | | | | | .0005 | .03 | 3.38 | .41 | 2.25 | .015 | .00 | 1.50 | TRAP | |
| 6490.364 | -73.023 | 3.271 | -69.752 | 133.00 | 3.73 | .22 | -69.54 | .00 | 2.07 | 15.81 | 8.000 | 6.000 | 1.50 | 0 | .0 |
| 9.636 | .0024 | | | | | .0006 | .01 | 3.27 | .44 | 2.25 | .015 | .00 | 1.50 | TRAP | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 5-2013 Time: 9:33:49

CVWD
MDP
LINE I01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6500.000 | -73.000 | 3.250 | -69.750 | 133.00 | 3.76 | .22 | -69.53 | .00 | 2.07 | 15.75 | 8.000 | 6.000 | 1.50 | 0 .0 |

```
T1 CVWD                                                                                                  0
T2 MDP
T3 LINE J01-01
SO   1000.000-176.340  1      .015                -170.340
R    2400.000-174.940  1      .015
JX   2415.000-174.625  2  3   .015  378.000         -173.925         45.0
R    3610.000-173.430  2      .015
SH   3610.000-173.430  2      .015
CD   1  1   0    .000   9.000   10.000 1.500 1.500   .00
CD   2  1   0    .000   9.000    6.000 1.500 1.500   .00
CD   3  4   1    .000   5.000
CD   4  2   0    .000   8.000    4.000 0.000 0.000   .00
CD   5  3   0    .000   4.000    4.000 0.000 0.000   .00
CD   6  1   0    .000  10.000   17.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   15.000 1.500 1.500   .00
CD   8  1   0    .000  10.000   10.000 1.500 1.500   .00
CD   9  2   0    .000  10.000   20.670  .000  .000   .00
CD  10  3   1    .670   6.000   20.670  .000  .000   .00
CD  11  4   1           6.000
CD  12  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  13  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  14  2   0    .000  10.000   24.670  .000  .000   .00
CD  15  3   1    .670   6.000   24.670  .000  .000   .00

Q          379.000   .0
```

FILE: J01-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 8- 5-2013 Time: 9:41:16

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 9.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 1 | 0 | .000 | 9.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 3 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |
| CD | 4 | 2 | 0 | .000 | 8.000 | 4.000 | | | .00 | | | | | | | | | | |
| CD | 5 | 3 | 0 | .000 | 4.000 | 4.000 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 6 | 1 | 0 | .000 | 10.000 | 17.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 7 | 1 | 0 | .000 | 10.000 | 15.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 8 | 1 | 0 | .000 | 10.000 | 10.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 9 | 2 | 0 | .000 | 10.000 | 20.670 | | | .00 | | | | | | | | | | |
| CD | 10 | 3 | 1 | .670 | 6.000 | 20.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 11 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 12 | 1 | 0 | .000 | 10.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 13 | 1 | 0 | .000 | 10.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 14 | 2 | 0 | .000 | 10.000 | 24.670 | | | .00 | | | | | | | | | | |
| CD | 15 | 3 | 1 | .670 | 6.000 | 24.670 | .000 | .000 | .00 | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE J01-01

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1000.000 | -176.340 | 1 | -170.340 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2400.000 | -174.940 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2415.000 | -174.625 | 2 | 3 | 0 | .015 | 378.000 | .000 | -173.925 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 4 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3610.000 | -173.430 | 2 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 3610.000 | -173.430 | 2 | .000 |

CVWD
MDP
LINE J01-01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000.000 | -176.340 | 6.000 | -170.340 | 757.00 | 6.64 | .68 | -169.66 | .00 | 4.47 | 28.00 | 9.000 | 10.000 | 1.50 | 0 .0 |
| 941.240 | .0010 | | | | | .0009 | .82 | 6.00 | .58 | 5.70 | .015 | .00 | 1.50 | TRAP |
| 1941.240 | -175.399 | 5.809 | -169.590 | 757.00 | 6.96 | .75 | -168.84 | .00 | 4.47 | 27.43 | 9.000 | 10.000 | 1.50 | 0 .0 |
| 458.760 | .0010 | | | | | .0009 | .43 | 5.81 | .62 | 5.70 | .015 | .00 | 1.50 | TRAP |
| 2400.000 | -174.940 | 5.764 | -169.176 | 757.00 | 7.04 | .77 | -168.41 | .00 | 4.47 | 27.29 | 9.000 | 10.000 | 1.50 | 0 .0 |
| JUNCT STR | .0210 | | | | | .0007 | .01 | 5.76 | .63 | | .015 | .00 | 1.50 | TRAP |
| 2415.000 | -174.625 | 5.946 | -168.679 | 379.00 | 4.27 | .28 | -168.40 | .00 | 3.68 | 23.84 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 251.129 | .0010 | | | | | .0004 | .10 | 5.95 | .39 | 4.75 | .015 | .00 | 1.50 | TRAP |
| 2666.129 | -174.374 | 5.771 | -168.603 | 379.00 | 4.48 | .31 | -168.29 | .00 | 3.68 | 23.31 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 264.405 | .0010 | | | | | .0005 | .12 | 5.77 | .41 | 4.75 | .015 | .00 | 1.50 | TRAP |
| 2930.533 | -174.109 | 5.600 | -168.509 | 379.00 | 4.70 | .34 | -168.17 | .00 | 3.68 | 22.80 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 285.183 | .0010 | | | | | .0005 | .15 | 5.60 | .44 | 4.75 | .015 | .00 | 1.50 | TRAP |
| 3215.716 | -173.824 | 5.434 | -168.391 | 379.00 | 4.93 | .38 | -168.01 | .00 | 3.68 | 22.30 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 319.207 | .0010 | | | | | .0006 | .19 | 5.43 | .47 | 4.75 | .015 | .00 | 1.50 | TRAP |
| 3534.923 | -173.505 | 5.272 | -168.234 | 379.00 | 5.17 | .41 | -167.82 | .00 | 3.68 | 21.81 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 75.077 | .0010 | | | | | .0007 | .05 | 5.27 | .50 | 4.75 | .015 | .00 | 1.50 | TRAP |
| 3610.000 | -173.430 | 5.237 | -168.193 | 379.00 | 5.22 | .42 | -167.77 | .00 | 3.68 | 21.71 | 9.000 | 6.000 | 1.50 | 0 .0 |

```
T1 CVWD                                                                    0
T2 MDP
T3 LINE J01-02
SO   1000.000-179.400  1      .015                -173.400
R    4250.000-174.000  1      .015
JX   4280.000-173.718  2  3   .015  885.000         -173.718        45.0
R    7550.000-143.000  2      .015
JX   7565.000-142.926  4  5   .015  417.000         -141.926        45.0
R   11600.000-123.000  4      .015
JX  11630.000-122.416  6  3   .015  880.000         -122.416        45.0
R   11795.000-119.203  6      .015
TS  11810.000-118.911  7      .015
WX  11810.000-118.911  8
R   11850.000-118.132  8      .015
WE  11850.000-118.132  7      .500
TS  11865.000-117.840  6      .015
R   13500.000-086.000  6      .015
R   14150.000-66.0000  6      .015
SH  14150.000-66.0000  6      .015
CD   1  1   0    .000   9.000   34.000 1.500 1.500   .00
CD   2  1   0    .000   8.000   14.000 1.500 1.500   .00
CD   3  1   0    .000   5.000    6.000 0.000 0.000   .00
CD   4  1   0    .000   8.000    9.000 1.500 1.500   .00
CD   5  4   1           6.000
CD   6  1   0    .000   6.000    6.000 1.500 1.500   .00
CD   7  2   0    .000   6.000   10.000 0.000 0.000   .00
CD   8  3   0    .000   5.000   10.000  .000  .000   .00
CD   9  3   1    .670   6.000   16.670  .000  .000   .00
CD  10  4   1           6.500
CD  11  2   0    .000   9.000    7.500  .000  .000   .00
CD  12  4   1           7.500
CD  13  1   0    .000   8.000    8.000 1.500 1.500   .00
CD  14  4   1           6.000
CD  15  4   1           3.000
CD  16  4   1           5.000
Q           497.000   .0
```

FILE: J01-02.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 8- 5-2013 Time: 9:47:29

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING 

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 9.000 | 34.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 1 | 0 | .000 | 8.000 | 14.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 3 | 1 | 0 | .000 | 5.000 | 6.000 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 4 | 1 | 0 | .000 | 8.000 | 9.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 5 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 6 | 1 | 0 | .000 | 6.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 7 | 2 | 0 | .000 | 6.000 | 10.000 | | | .00 | | | | | | | | | | |
| CD | 8 | 3 | 0 | .000 | 5.000 | 10.000 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 9 | 3 | 1 | .670 | 6.000 | 16.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 10 | 4 | 1 | | 6.500 | | | | | | | | | | | | | | |
| CD | 11 | 2 | 0 | .000 | 9.000 | 7.500 | | | .00 | | | | | | | | | | |
| CD | 12 | 4 | 1 | | 7.500 | | | | | | | | | | | | | | |
| CD | 13 | 1 | 0 | .000 | 8.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 14 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 15 | 4 | 1 | | 3.000 | | | | | | | | | | | | | | |
| CD | 16 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |

W S P G W 

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE J01-02

W S P G W 

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1000.000 | -179.400 | 1 | -173.400 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 4250.000 | -174.000 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4280.000 | -173.718 | 2 | 3 | 0 | .015 | 885.000 | .000 | -173.718 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 4 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 7550.000 | -143.000 | 2 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 5 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7565.000 | -142.926 | 4 | 5 | 0 | .015 | 417.000 | .000 | -141.926 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 6 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 11600.000 | -123.000 | 4 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 7 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 11630.000 | -122.416 | 6 | 3 | 0 | .015 | 880.000 | .000 | -122.416 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING



WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 8 IS A REACH

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 11795.000 | -119.203 | 6 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 9 IS A TRANSITION

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 11810.000 | -118.911 | 7 | .015 | .000 | .000 |

ELEMENT NO 10 IS A WALL EXIT

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 11810.000 | -118.911 | 8 |

ELEMENT NO 11 IS A REACH

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 11850.000 | -118.132 | 8 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 12 IS A WALL ENTRANCE

| U/S DATA | STATION | INVERT | SECT | |
|---|---|---|---|---|
| | 11850.000 | -118.132 | 7 | FP .500 |

ELEMENT NO 13 IS A TRANSITION

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 11865.000 | -117.840 | 6 | .015 | .000 | .000 |

ELEMENT NO 14 IS A REACH

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 13500.000 | -86.000 | 6 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 15 IS A REACH

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 14150.000 | -66.000 | 6 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 16 IS A SYSTEM HEADWORKS

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 14150.000 | -66.000 | 6 | .000 |

CVWD
MDP
LINE J01-02

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000.000 | -179.400 | 6.000 | -173.400 | 2679.00 | 10.38 | 1.67 | -171.73 | .00 | 5.32 | 52.00 | 9.000 | 34.000 | 1.50 | 0 .0 |
| 480.519 | .0017 | | | | | .0015 | .73 | 6.00 | .82 | 5.74 | .015 | .00 | 1.50 | TRAP |
| 1480.519 | -178.602 | 5.768 | -172.834 | 2679.00 | 10.89 | 1.84 | -170.99 | .00 | 5.32 | 51.30 | 9.000 | 34.000 | 1.50 | 0 .0 |
| 430.168 | .0017 | | | | | .0016 | .71 | 5.77 | .88 | 5.74 | .015 | .00 | 1.50 | TRAP |
| 1910.687 | -177.887 | 5.738 | -172.149 | 2679.00 | 10.96 | 1.86 | -170.28 | .00 | 5.32 | 51.21 | 9.000 | 34.000 | 1.50 | 0 .0 |
| 1734.859 | .0017 | | | | | .0017 | 2.88 | 5.74 | .88 | 5.74 | .015 | .00 | 1.50 | TRAP |
| 3645.546 | -175.004 | 5.738 | -169.266 | 2679.00 | 10.96 | 1.86 | -167.40 | .00 | 5.32 | 51.21 | 9.000 | 34.000 | 1.50 | 0 .0 |
| HYDRAULIC JUMP | | | | | | | | | | | | | | |
| 3645.546 | -175.004 | 4.919 | -170.086 | 2679.00 | 13.16 | 2.69 | -167.40 | .00 | 5.32 | 48.76 | 9.000 | 34.000 | 1.50 | 0 .0 |
| 30.978 | .0017 | | | | | .0030 | .09 | 4.92 | 1.14 | 5.74 | .015 | .00 | 1.50 | TRAP |
| 3676.524 | -174.953 | 4.807 | -170.146 | 2679.00 | 13.52 | 2.84 | -167.31 | .00 | 5.32 | 48.42 | 9.000 | 34.000 | 1.50 | 0 .0 |
| 56.040 | .0017 | | | | | .0033 | .19 | 4.81 | 1.18 | 5.74 | .015 | .00 | 1.50 | TRAP |
| 3732.564 | -174.860 | 4.616 | -170.244 | 2679.00 | 14.18 | 3.12 | -167.12 | .00 | 5.32 | 47.85 | 9.000 | 34.000 | 1.50 | 0 .0 |
| 59.317 | .0017 | | | | | .0038 | .23 | 4.62 | 1.26 | 5.74 | .015 | .00 | 1.50 | TRAP |
| 3791.882 | -174.761 | 4.431 | -170.330 | 2679.00 | 14.87 | 3.44 | -166.89 | .00 | 5.32 | 47.29 | 9.000 | 34.000 | 1.50 | 0 .0 |
| 60.581 | .0017 | | | | | .0044 | .27 | 4.43 | 1.34 | 5.74 | .015 | .00 | 1.50 | TRAP |
| 3852.463 | -174.661 | 4.253 | -170.408 | 2679.00 | 15.60 | 3.78 | -166.63 | .00 | 5.32 | 46.76 | 9.000 | 34.000 | 1.50 | 0 .0 |
| 60.642 | .0017 | | | | | .0051 | .31 | 4.25 | 1.43 | 5.74 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE J01-02

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3913.105 | -174.560 | 4.081 | -170.479 | 2679.00 | 16.36 | 4.16 | -166.32 | .00 | 5.32 | 46.24 | 9.000 | 34.000 | 1.50 | 0 | .0 |
| 59.946 | .0017 | | | | | .0058 | .35 | 4.08 | 1.53 | 5.74 | .015 | .00 | 1.50 | TRAP | |
| 3973.051 | -174.460 | 3.915 | -170.545 | 2679.00 | 17.16 | 4.57 | -165.97 | .00 | 5.32 | 45.75 | 9.000 | 34.000 | 1.50 | 0 | .0 |
| 58.759 | .0017 | | | | | .0067 | .40 | 3.92 | 1.64 | 5.74 | .015 | .00 | 1.50 | TRAP | |
| 4031.810 | -174.363 | 3.756 | -170.607 | 2679.00 | 18.00 | 5.03 | -165.58 | .00 | 5.32 | 45.27 | 9.000 | 34.000 | 1.50 | 0 | .0 |
| 57.250 | .0017 | | | | | .0078 | .44 | 3.76 | 1.75 | 5.74 | .015 | .00 | 1.50 | TRAP | |
| 4089.060 | -174.267 | 3.602 | -170.666 | 2679.00 | 18.88 | 5.53 | -165.13 | .00 | 5.32 | 44.81 | 9.000 | 34.000 | 1.50 | 0 | .0 |
| 55.530 | .0017 | | | | | .0090 | .50 | 3.60 | 1.87 | 5.74 | .015 | .00 | 1.50 | TRAP | |
| 4144.590 | -174.175 | 3.454 | -170.722 | 2679.00 | 19.80 | 6.09 | -164.63 | .00 | 5.32 | 44.36 | 9.000 | 34.000 | 1.50 | 0 | .0 |
| 53.674 | .0017 | | | | | .0103 | .56 | 3.45 | 2.00 | 5.74 | .015 | .00 | 1.50 | TRAP | |
| 4198.264 | -174.086 | 3.311 | -170.775 | 2679.00 | 20.76 | 6.70 | -164.08 | .00 | 5.32 | 43.93 | 9.000 | 34.000 | 1.50 | 0 | .0 |
| 51.736 | .0017 | | | | | .0119 | .62 | 3.31 | 2.14 | 5.74 | .015 | .00 | 1.50 | TRAP | |
| 4250.000 | -174.000 | 3.174 | -170.826 | 2679.00 | 21.78 | 7.36 | -163.46 | .00 | 5.32 | 43.52 | 9.000 | 34.000 | 1.50 | 0 | .0 |
| JUNCT STR | .0094 | | | | | .0111 | .33 | 3.17 | 2.28 | | .015 | .00 | 1.50 | TRAP | |
| 4280.000 | -173.718 | 4.360 | -169.358 | 1794.00 | 20.03 | 6.23 | -163.13 | .00 | 6.33 | 27.08 | 8.000 | 14.000 | 1.50 | 0 | .0 |
| 1855.160 | .0094 | | | | | .0094 | 17.43 | 4.36 | 1.94 | 4.36 | .015 | .00 | 1.50 | TRAP | |
| 6135.160 | -156.291 | 4.360 | -151.931 | 1794.00 | 20.03 | 6.23 | -145.70 | .00 | 6.33 | 27.08 | 8.000 | 14.000 | 1.50 | 0 | .0 |
| 695.841 | .0094 | | | | | .0091 | 6.33 | 4.36 | 1.94 | 4.36 | .015 | .00 | 1.50 | TRAP | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 5-2013 Time: 9:47:36

CVWD
MDP
LINE J01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6831.001 | -149.754 | 4.438 | -145.316 | 1794.00 | 19.57 | 5.95 | -139.37 | .00 | 6.33 | 27.31 | 8.000 | 14.000 | 1.50 | 0 | .0 |
| 331.213 | .0094 | | | | | .0083 | 2.73 | 4.44 | 1.88 | 4.36 | .015 | .00 | 1.50 | TRAP | |
| 7162.214 | -146.643 | 4.600 | -142.043 | 1794.00 | 18.66 | 5.41 | -136.64 | .00 | 6.33 | 27.80 | 8.000 | 14.000 | 1.50 | 0 | .0 |
| 149.433 | .0094 | | | | | .0072 | 1.08 | 4.60 | 1.77 | 4.36 | .015 | .00 | 1.50 | TRAP | |
| 7311.646 | -145.239 | 4.768 | -140.471 | 1794.00 | 17.79 | 4.91 | -135.56 | .00 | 6.33 | 28.30 | 8.000 | 14.000 | 1.50 | 0 | .0 |
| 89.483 | .0094 | | | | | .0063 | .57 | 4.77 | 1.66 | 4.36 | .015 | .00 | 1.50 | TRAP | |
| 7401.130 | -144.398 | 4.940 | -139.459 | 1794.00 | 16.96 | 4.47 | -134.99 | .00 | 6.33 | 28.82 | 8.000 | 14.000 | 1.50 | 0 | .0 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 59.370 | .0094 | | | | .0055 | .33 | 4.94 | 1.56 | 4.36 | .015 | .00 | 1.50 | TRAP | |
| 7460.500 | -143.841 | 5.117 | -138.723 | 1794.00 | 16.17 | 4.06 | -134.66 | .00 | 6.33 | 29.35 | 8.000 | 14.000 | 1.50 | 0 .0 |
| 41.096 | .0094 | | | | .0049 | .20 | 5.12 | 1.47 | 4.36 | .015 | .00 | 1.50 | TRAP | |
| 7501.596 | -143.455 | 5.300 | -138.155 | 1794.00 | 15.42 | 3.69 | -134.46 | .00 | 6.33 | 29.90 | 8.000 | 14.000 | 1.50 | 0 .0 |
| 28.714 | .0094 | | | | .0043 | .12 | 5.30 | 1.38 | 4.36 | .015 | .00 | 1.50 | TRAP | |
| 7530.310 | -143.185 | 5.488 | -137.697 | 1794.00 | 14.70 | 3.36 | -134.34 | .00 | 6.33 | 30.46 | 8.000 | 14.000 | 1.50 | 0 .0 |
| 19.690 | .0094 | | | | .0037 | .07 | 5.49 | 1.29 | 4.36 | .015 | .00 | 1.50 | TRAP | |
| 7550.000 | -143.000 | 5.682 | -137.318 | 1794.00 | 14.02 | 3.05 | -134.27 | .00 | 6.33 | 31.05 | 8.000 | 14.000 | 1.50 | 0 .0 |
| JUNCT STR | .0049 | | | | .0042 | .06 | 5.68 | 1.22 | | .015 | .00 | 1.50 | TRAP | |
| 7565.000 | -142.926 | 5.339 | -137.587 | 1377.00 | 15.16 | 3.57 | -134.02 | .00 | 6.37 | 25.02 | 8.000 | 9.000 | 1.50 | 0 .0 |
| 3342.421 | .0049 | | | | .0049 | 16.51 | 5.34 | 1.40 | 5.34 | .015 | .00 | 1.50 | TRAP | |



CVWD
MDP
LINE J01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 10907.420 | -126.420 | 5.339 | -121.081 | 1377.00 | 15.16 | 3.57 | -117.51 | .00 | 6.37 | 25.02 | 8.000 | 9.000 | 1.50 | 0 .0 |
| 507.066 | .0049 | | | | .0047 | 2.40 | 5.34 | 1.40 | 5.34 | .015 | .00 | 1.50 | TRAP | |
| 11414.490 | -123.916 | 5.455 | -118.461 | 1377.00 | 14.69 | 3.35 | -115.11 | .00 | 6.37 | 25.36 | 8.000 | 9.000 | 1.50 | 0 .0 |
| 185.513 | .0049 | | | | .0043 | .79 | 5.45 | 1.35 | 5.34 | .015 | .00 | 1.50 | TRAP | |
| 11600.000 | -123.000 | 5.633 | -117.367 | 1377.00 | 14.01 | 3.05 | -114.32 | .00 | 6.37 | 25.90 | 8.000 | 9.000 | 1.50 | 0 .0 |
| JUNCT STR | .0195 | | | | .0117 | .35 | 5.63 | 1.27 | | .015 | .00 | 1.50 | TRAP | |
| 11630.000 | -122.416 | 2.589 | -119.827 | 497.00 | 19.42 | 5.86 | -113.97 | .00 | 4.24 | 13.77 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 165.000 | .0195 | | | | .0194 | 3.20 | 2.59 | 2.51 | 2.59 | .015 | .00 | 1.50 | TRAP | |
| 11795.000 | -119.203 | 2.591 | -116.612 | 497.00 | 19.40 | 5.84 | -110.77 | .00 | 4.24 | 13.77 | 6.000 | 6.000 | 1.50 | 0 .0 |
| TRANS STR | .0195 | | | | .0193 | .29 | 2.59 | 2.51 | | .015 | .00 | 1.50 | TRAP | |
| 11810.000 | -118.911 | 2.548 | -116.363 | 497.00 | 19.50 | 5.91 | -110.46 | .00 | 4.25 | 10.00 | 6.000 | 10.000 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 11810.000 | -118.911 | 2.547 | -116.364 | 497.00 | 19.51 | 5.91 | -110.45 | .00 | 4.25 | 10.00 | 5.000 | 10.000 | .00 | 0 .0 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40.000 | .0195 | | | | .0193 | .77 | 2.55 | 2.15 | 2.54 | .015 | .00 | .00 | BOX | |
| 11850.000 | -118.132 | 2.549 | -115.583 | 497.00 | 19.49 | 5.90 | -109.68 | .00 | 4.25 | 10.00 | 6.000 | 10.000 | .00 | 0 .0 |
| TRANS STR | .0195 | | | | .0194 | .29 | 2.55 | 2.15 | | .015 | .00 | .00 | RECTANG | |
| 11865.000 | -117.840 | 2.587 | -115.253 | 497.00 | 19.44 | 5.87 | -109.38 | .00 | 4.24 | 13.76 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 863.027 | .0195 | | | | .0195 | 16.81 | 2.59 | 2.51 | 2.59 | .015 | .00 | 1.50 | TRAP | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 5-2013 Time: 9:47:36

CVWD

MDP

LINE J01-02

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 12728.030 | -101.033 | 2.587 | -98.446 | 497.00 | 19.44 | 5.87 | -92.58 | .00 | 4.24 | 13.76 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 366.803 | .0195 | | | | .0199 | 7.31 | 2.59 | 2.51 | 2.59 | .015 | .00 | 1.50 | TRAP | |
| 13094.830 | -93.890 | 2.557 | -91.333 | 497.00 | 19.76 | 6.06 | -85.27 | .00 | 4.24 | 13.67 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 223.520 | .0195 | | | | .0218 | 4.87 | 2.56 | 2.57 | 2.59 | .015 | .00 | 1.50 | TRAP | |
| 13318.350 | -89.537 | 2.470 | -87.067 | 497.00 | 20.73 | 6.67 | -80.40 | .00 | 4.24 | 13.41 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 108.238 | .0195 | | | | .0249 | 2.69 | 2.47 | 2.73 | 2.59 | .015 | .00 | 1.50 | TRAP | |
| 13426.590 | -87.430 | 2.386 | -85.043 | 497.00 | 21.74 | 7.34 | -77.70 | .00 | 4.24 | 13.16 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 73.412 | .0195 | | | | .0284 | 2.08 | 2.39 | 2.91 | 2.59 | .015 | .00 | 1.50 | TRAP | |
| 13500.000 | -86.000 | 2.305 | -83.695 | 497.00 | 22.80 | 8.07 | -75.62 | .00 | 4.24 | 12.91 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 202.014 | .0308 | | | | .0295 | 5.95 | 2.30 | 3.09 | 2.29 | .015 | .00 | 1.50 | TRAP | |
| 13702.010 | -79.784 | 2.336 | -77.448 | 497.00 | 22.39 | 7.78 | -69.67 | .00 | 4.24 | 13.01 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 163.920 | .0308 | | | | .0270 | 4.42 | 2.34 | 3.02 | 2.29 | .015 | .00 | 1.50 | TRAP | |
| 13865.930 | -74.741 | 2.419 | -72.322 | 497.00 | 21.34 | 7.07 | -65.25 | .00 | 4.24 | 13.26 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 78.238 | .0308 | | | | .0236 | 1.85 | 2.42 | 2.84 | 2.29 | .015 | .00 | 1.50 | TRAP | |
| 13944.170 | -72.333 | 2.503 | -69.830 | 497.00 | 20.35 | 6.43 | -63.40 | .00 | 4.24 | 13.51 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 49.516 | .0308 | | | | .0207 | 1.03 | 2.50 | 2.67 | 2.29 | .015 | .00 | 1.50 | TRAP | |
| 13993.690 | -70.810 | 2.591 | -68.219 | 497.00 | 19.40 | 5.85 | -62.37 | .00 | 4.24 | 13.77 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 35.078 | .0308 | | | | .0182 | .64 | 2.59 | 2.51 | 2.29 | .015 | .00 | 1.50 | TRAP | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 8- 5-2013 Time: 9:47:36

CVWD

MDP
LINE J01-02

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14028.770 | -69.730 | 2.681 | -67.050 | 497.00 | 18.50 | 5.31 | -61.73 | .00 | 4.24 | 14.04 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 26.365 | .0308 | | | | | .0159 | .42 | 2.68 | 2.36 | 2.29 | .015 | .00 | 1.50 | TRAP |
| 14055.130 | -68.919 | 2.773 | -66.146 | 497.00 | 17.64 | 4.83 | -61.31 | .00 | 4.24 | 14.32 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 20.519 | .0308 | | | | | .0140 | .29 | 2.77 | 2.22 | 2.29 | .015 | .00 | 1.50 | TRAP |
| 14075.650 | -68.288 | 2.868 | -65.419 | 497.00 | 16.82 | 4.39 | -61.03 | .00 | 4.24 | 14.60 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 16.313 | .0308 | | | | | .0123 | .20 | 2.87 | 2.08 | 2.29 | .015 | .00 | 1.50 | TRAP |
| 14091.960 | -67.786 | 2.966 | -64.820 | 497.00 | 16.04 | 3.99 | -60.83 | .00 | 4.24 | 14.90 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 13.134 | .0308 | | | | | .0108 | .14 | 2.97 | 1.96 | 2.29 | .015 | .00 | 1.50 | TRAP |
| 14105.100 | -67.382 | 3.067 | -64.315 | 497.00 | 15.29 | 3.63 | -60.68 | .00 | 4.24 | 15.20 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 10.642 | .0308 | | | | | .0095 | .10 | 3.07 | 1.84 | 2.29 | .015 | .00 | 1.50 | TRAP |
| 14115.740 | -67.054 | 3.170 | -63.884 | 497.00 | 14.58 | 3.30 | -60.58 | .00 | 4.24 | 15.51 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 8.631 | .0308 | | | | | .0083 | .07 | 3.17 | 1.73 | 2.29 | .015 | .00 | 1.50 | TRAP |
| 14124.370 | -66.789 | 3.276 | -63.513 | 497.00 | 13.90 | 3.00 | -60.51 | .00 | 4.24 | 15.83 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 6.972 | .0308 | | | | | .0073 | .05 | 3.28 | 1.63 | 2.29 | .015 | .00 | 1.50 | TRAP |
| 14131.340 | -66.574 | 3.385 | -63.189 | 497.00 | 13.25 | 2.73 | -60.46 | .00 | 4.24 | 16.16 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 5.576 | .0308 | | | | | .0064 | .04 | 3.39 | 1.53 | 2.29 | .015 | .00 | 1.50 | TRAP |
| 14136.920 | -66.403 | 3.497 | -62.905 | 497.00 | 12.64 | 2.48 | -60.43 | .00 | 4.24 | 16.49 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 4.385 | .0308 | | | | | .0056 | .02 | 3.50 | 1.44 | 2.29 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE J01-02

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14141.300 | -66.268 | 3.613 | -62.655 | 497.00 | 12.05 | 2.25 | -60.40 | .00 | 4.24 | 16.84 | 6.000 | 6.000 | 1.50 | 0 .0 |
| 3.354 | .0308 | | | | | .0050 | .02 | 3.61 | 1.36 | 2.29 | .015 | .00 | 1.50 | TRAP |

J01-02

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14144.650 | -66.164 | 3.731 | -62.434 | 497.00 | 11.49 | 2.05 | -60.38 | .00 | 4.24 | 17.19 | 6.000 | 6.000 | 1.50 | 0 | .0 |
| 2.451 | .0308 | | | | | .0044 | .01 | 3.73 | 1.28 | 2.29 | .015 | .00 | 1.50 | TRAP | |
| 14147.110 | -66.089 | 3.852 | -62.237 | 497.00 | 10.95 | 1.86 | -60.37 | .00 | 4.24 | 17.56 | 6.000 | 6.000 | 1.50 | 0 | .0 |
| 1.652 | .0308 | | | | | .0038 | .01 | 3.85 | 1.20 | 2.29 | .015 | .00 | 1.50 | TRAP | |
| 14148.760 | -66.038 | 3.977 | -62.061 | 497.00 | 10.44 | 1.69 | -60.37 | .00 | 4.24 | 17.93 | 6.000 | 6.000 | 1.50 | 0 | .0 |
| .941 | .0308 | | | | | .0034 | .00 | 3.98 | 1.13 | 2.29 | .015 | .00 | 1.50 | TRAP | |
| 14149.700 | -66.009 | 4.105 | -61.904 | 497.00 | 9.96 | 1.54 | -60.36 | .00 | 4.24 | 18.32 | 6.000 | 6.000 | 1.50 | 0 | .0 |
| .301 | .0308 | | | | | .0030 | .00 | 4.11 | 1.06 | 2.29 | .015 | .00 | 1.50 | TRAP | |
| 14150.000 | -66.000 | 4.238 | -61.762 | 497.00 | 9.49 | 1.40 | -60.36 | .00 | 4.24 | 18.71 | 6.000 | 6.000 | 1.50 | 0 | .0 |

```
                                                                                                                K01
T1 CVWD                                                                                                                    0
T2 MDP
T3 LINE K01
SO   1026.000-238.000  1      .015                -230.000
R    2805.000-205.268  1      .015
TS   2835.000-204.716  6      .015
WX   2835.000-204.716  7
R    3140.000-199.104  7      .015
WE   3140.000-199.104  6      .500
TS   3170.000-198.552  2      .015
R    3200.000-198.000  2      .015
JX   3215.000-197.681  2  3   .015  165.000          -196.681         45.0
R    4750.000-165.000  2      .015
R    5447.000-131.000  2      .015
JX   5477.000-130.366  5  4   .015  759.000          -130.366         45.0
R    8000.000-077.000  5      .015
R   11750.000 041.000  5      .015
SH  11750.000 041.000  5      .013                    46.150
CD   1  1   0    .000   8.000   20.000 1.500 1.500   .00
CD   2  1   0    .000   8.000   17.000 1.500 1.500   .00
CD   3  4   1           4.000
CD   4  1   0    .000   8.000    6.000 1.500 1.500   .00
CD   5  1   0    .000   9.000    6.000 1.500 1.500   .00
CD   6  2   0    .000   8.000   24.670 0.000 0.000   .00
CD   7  3   1    .670   6.000   24.670 0.000 0.000   .00
CD   8  2   0    .000   8.000   16.670  .000  .000   .00
CD   9  3   1    .670   6.000   16.670  .000  .000   .00
CD  10  4   1           4.000
CD  11  2   0    .000   7.000    6.500  .000  .000   .00
CD  12  4   1           7.500
CD  13  1   0    .000   8.000    8.000 1.500 1.500   .00
CD  14  4   1           6.000
CD  15  4   1           3.000
CD  16  4   1           5.000
Q          2509.000   .0
```

FILE: k01.WSW W S P G W - EDIT LISTING - Version 14.06 Date:11-18-2013 Time: 9:50:46

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 8.000 | 20.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 1 | 0 | .000 | 8.000 | 17.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 3 | 4 | 1 | | 4.000 | | | | | | | | | | | | | | |
| CD | 4 | 1 | 0 | .000 | 8.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 5 | 1 | 0 | .000 | 9.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 6 | 2 | 0 | .000 | 8.000 | 24.670 | | | .00 | | | | | | | | | | |
| CD | 7 | 3 | 1 | .670 | 6.000 | 24.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 8 | 2 | 0 | .000 | 8.000 | 16.670 | | | .00 | | | | | | | | | | |
| CD | 9 | 3 | 1 | .670 | 6.000 | 16.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 10 | 4 | 1 | | 4.000 | | | | | | | | | | | | | | |
| CD | 11 | 2 | 0 | .000 | 7.000 | 6.500 | | | .00 | | | | | | | | | | |
| CD | 12 | 4 | 1 | | 7.500 | | | | | | | | | | | | | | |
| CD | 13 | 1 | 0 | .000 | 8.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 14 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 15 | 4 | 1 | | 3.000 | | | | | | | | | | | | | | |
| CD | 16 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE K01

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1026.000 | -238.000 | 1 | -230.000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 2805.000 | -205.268 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 2835.000 | -204.716 | 6 | .015 | .000 | .000 |

ELEMENT NO 4 IS A WALL EXIT *

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 2835.000 | -204.716 | 7 |

ELEMENT NO 5 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3140.000 | -199.104 | 7 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 6 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | FP |
|---|---|---|---|---|
| | 3140.000 | -199.104 | 6 | .500 |

ELEMENT NO 7 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 3170.000 | -198.552 | 2 | .015 | .000 | .000 |

ELEMENT NO 8 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 3200.000 | -198.000 | 2 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 9 IS A JUNCTION * * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3215.000 | -197.681 | 2 | 3 | 0 | .015 | 165.000 | .000 | -196.681 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 10 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 4750.000 | -165.000 | 2 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 11 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 5447.000 | -131.000 | 2 | .015 | .000 | .000 | .000 | 0 |



WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 12 IS A JUNCTION * * * * * * *

| U/S DATA | STATION | INVERT | SECT | LAT-1 | LAT-2 | N | Q3 | Q4 | INVERT-3 | INVERT-4 | PHI 3 | PHI 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5477.000 | -130.366 | 5 | 4 | 0 | .015 | 759.000 | .000 | -130.366 | .000 | 45.000 | .000 |

| RADIUS | ANGLE |
|---|---|
| .000 | .000 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 13 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 8000.000 | -77.000 | 5 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 14 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 11750.000 | 41.000 | 5 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 15 IS A SYSTEM HEADWORKS * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 11750.000 | 41.000 | 5 | 46.150 |

CVWD
MDP
LINE K01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1026.000 | -238.000 | 4.381 | -233.619 | 3433.00 | 29.49 | 13.51 | -220.11 | .00 | 7.91 | 33.14 | 8.000 | 20.000 | 1.50 | 0 .0 |
| 877.384 | .0184 | | | | | .0184 | 16.14 | 4.38 | 2.77 | 4.38 | .015 | .00 | 1.50 | TRAP |
| 1903.384 | -221.857 | 4.381 | -217.476 | 3433.00 | 29.49 | 13.51 | -203.97 | .00 | 7.91 | 33.14 | 8.000 | 20.000 | 1.50 | 0 .0 |
| 901.616 | .0184 | | | | | .0174 | 15.72 | 4.38 | 2.77 | 4.38 | .015 | .00 | 1.50 | TRAP |
| 2805.000 | -205.268 | 4.518 | -200.750 | 3433.00 | 28.38 | 12.50 | -188.25 | .00 | 7.91 | 33.55 | 8.000 | 20.000 | 1.50 | 0 .0 |
| TRANS STR | .0184 | | | | | .0155 | .46 | 4.52 | 2.63 | | .015 | .00 | 1.50 | TRAP |
| 2835.000 | -204.716 | 5.011 | -199.705 | 3433.00 | 27.77 | 11.98 | -187.73 | .00 | 8.44 | 24.67 | 8.000 | 24.670 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 2835.000 | -204.716 | 5.167 | -199.549 | 3433.00 | 27.68 | 11.90 | -187.65 | .00 | 6.00 | 24.67 | 6.000 | 24.670 | .00 | 1 .7 |
| 305.000 | .0184 | | | | | .0213 | 6.50 | 5.17 | 2.18 | 5.33 | .015 | .00 | .00 | BOX |
| 3140.000 | -199.104 | 4.941 | -194.163 | 3433.00 | 28.95 | 13.01 | -181.15 | .00 | 6.00 | 24.67 | 6.000 | 24.670 | .00 | 1 .7 |
| WALL ENTRANCE | | | | | | | | | | | | | | |
| 3140.000 | -199.104 | 4.622 | -194.482 | 3433.00 | 30.11 | 14.08 | -180.41 | .00 | 8.44 | 24.67 | 8.000 | 24.670 | .00 | 0 .0 |
| TRANS STR | .0184 | | | | | .0183 | .55 | 4.62 | 2.47 | | .015 | .00 | .00 | RECTANG |
| 3170.000 | -198.552 | 4.746 | -193.806 | 3433.00 | 29.99 | 13.97 | -179.84 | .00 | 8.41 | 31.24 | 8.000 | 17.000 | 1.50 | 0 .0 |
| 30.000 | .0184 | | | | | .0182 | .55 | 4.75 | 2.76 | 4.73 | .015 | .00 | 1.50 | TRAP |
| 3200.000 | -198.000 | 4.746 | -193.254 | 3433.00 | 29.99 | 13.96 | -179.29 | .00 | 8.41 | 31.24 | 8.000 | 17.000 | 1.50 | 0 .0 |
| JUNCT STR | .0213 | | | | | .0199 | .30 | 4.75 | 2.76 | | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE K01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3215.000 | -197.681 | 4.417 | -193.264 | 3268.00 | 31.32 | 15.23 | -178.03 | .00 | 8.19 | 30.25 | 8.000 | 17.000 | 1.50 | 0 | .0 |
| 785.609 | .0213 | | | | | .0230 | 18.07 | 4.42 | 2.97 | 4.43 | .015 | .00 | 1.50 | TRAP | |
| 4000.609 | -180.955 | 4.257 | -176.698 | 3268.00 | 32.83 | 16.73 | -159.96 | .00 | 8.19 | 29.77 | 8.000 | 17.000 | 1.50 | 0 | .0 |
| 302.102 | .0213 | | | | | .0263 | 7.95 | 4.26 | 3.16 | 4.43 | .015 | .00 | 1.50 | TRAP | |
| 4302.711 | -174.523 | 4.100 | -170.423 | 3268.00 | 34.43 | 18.41 | -152.01 | .00 | 8.19 | 29.30 | 8.000 | 17.000 | 1.50 | 0 | .0 |
| 191.083 | .0213 | | | | | .0301 | 5.76 | 4.10 | 3.37 | 4.43 | .015 | .00 | 1.50 | TRAP | |
| 4493.795 | -170.455 | 3.948 | -166.507 | 3268.00 | 36.11 | 20.25 | -146.26 | .00 | 8.19 | 28.84 | 8.000 | 17.000 | 1.50 | 0 | .0 |
| 142.013 | .0213 | | | | | .0345 | 4.90 | 3.95 | 3.59 | 4.43 | .015 | .00 | 1.50 | TRAP | |
| 4635.808 | -167.431 | 3.801 | -163.630 | 3268.00 | 37.87 | 22.27 | -141.36 | .00 | 8.19 | 28.40 | 8.000 | 17.000 | 1.50 | 0 | .0 |
| 114.192 | .0213 | | | | | .0395 | 4.52 | 3.80 | 3.83 | 4.43 | .015 | .00 | 1.50 | TRAP | |
| 4750.000 | -165.000 | 3.658 | -161.342 | 3268.00 | 39.72 | 24.50 | -136.84 | .00 | 8.19 | 27.98 | 8.000 | 17.000 | 1.50 | 0 | .0 |
| 202.533 | .0488 | | | | | .0399 | 8.09 | 3.66 | 4.08 | 3.51 | .015 | .00 | 1.50 | TRAP | |
| 4952.533 | -155.120 | 3.780 | -151.341 | 3268.00 | 38.14 | 22.59 | -128.75 | .00 | 8.19 | 28.34 | 8.000 | 17.000 | 1.50 | 0 | .0 |
| 140.603 | .0488 | | | | | .0352 | 4.95 | 3.78 | 3.87 | 3.51 | .015 | .00 | 1.50 | TRAP | |
| 5093.136 | -148.262 | 3.926 | -144.336 | 3268.00 | 36.37 | 20.54 | -123.80 | .00 | 8.19 | 28.78 | 8.000 | 17.000 | 1.50 | 0 | .0 |
| 95.111 | .0488 | | | | | .0307 | 2.92 | 3.93 | 3.63 | 3.51 | .015 | .00 | 1.50 | TRAP | |
| 5188.247 | -143.622 | 4.077 | -139.545 | 3268.00 | 34.67 | 18.67 | -120.87 | .00 | 8.19 | 29.23 | 8.000 | 17.000 | 1.50 | 0 | .0 |
| 70.254 | .0488 | | | | | .0268 | 1.89 | 4.08 | 3.40 | 3.51 | .015 | .00 | 1.50 | TRAP | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11-18-2013 Time: 9:50:58

CVWD
MDP
LINE K01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch | |
| 5258.500 | -140.195 | 4.233 | -135.962 | 3268.00 | 33.06 | 16.97 | -118.99 | .00 | 8.19 | 29.70 | 8.000 | 17.000 | 1.50 | 0 | .0 |
| 54.549 | .0488 | | | | | .0234 | 1.28 | 4.23 | 3.19 | 3.51 | .015 | .00 | 1.50 | TRAP | |
| 5313.049 | -137.534 | 4.394 | -133.140 | 3268.00 | 31.52 | 15.43 | -117.71 | .00 | 8.19 | 30.18 | 8.000 | 17.000 | 1.50 | 0 | .0 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | |
| 43.704 | .0488 | | | | | .0205 | .90 | 4.39 | 3.00 | 3.51 | .015 | .00 | 1.50 | TRAP | | | | | |
| 5356.753 | -135.402 | 4.561 | -130.842 | 3268.00 | 30.06 | 14.03 | -116.81 | .00 | 8.19 | 30.68 | 8.000 | 17.000 | 1.50 | 0 | .0 | | | | |
| 35.750 | .0488 | | | | | .0179 | .64 | 4.56 | 2.81 | 3.51 | .015 | .00 | 1.50 | TRAP | | | | | |
| 5392.503 | -133.658 | 4.732 | -128.926 | 3268.00 | 28.66 | 12.75 | -116.17 | .00 | 8.19 | 31.20 | 8.000 | 17.000 | 1.50 | 0 | .0 | | | | |
| 29.659 | .0488 | | | | | .0157 | .46 | 4.73 | 2.64 | 3.51 | .015 | .00 | 1.50 | TRAP | | | | | |
| 5422.162 | -132.212 | 4.909 | -127.302 | 3268.00 | 27.32 | 11.59 | -115.71 | .00 | 8.19 | 31.73 | 8.000 | 17.000 | 1.50 | 0 | .0 | | | | |
| 24.838 | .0488 | | | | | .0137 | .34 | 4.91 | 2.48 | 3.51 | .015 | .00 | 1.50 | TRAP | | | | | |
| 5447.000 | -131.000 | 5.092 | -125.908 | 3268.00 | 26.05 | 10.54 | -115.37 | .00 | 8.19 | 32.27 | 8.000 | 17.000 | 1.50 | 0 | .0 | | | | |
| JUNCT STR | .0211 | | | | | .0170 | .51 | 5.09 | 2.33 | | .015 | .00 | 1.50 | TRAP | | | | | |
| 5477.000 | -130.366 | 5.653 | -124.713 | 2509.00 | 30.65 | 14.59 | -110.13 | .00 | 9.38 | 22.96 | 9.000 | 6.000 | 1.50 | 0 | .0 | | | | |
| 380.274 | .0212 | | | | | .0212 | 8.04 | 5.65 | 2.86 | 5.65 | .015 | .00 | 1.50 | TRAP | | | | | |
| 5857.274 | -122.323 | 5.653 | -116.669 | 2509.00 | 30.65 | 14.59 | -102.08 | .00 | 9.38 | 22.96 | 9.000 | 6.000 | 1.50 | 0 | .0 | | | | |
| 901.604 | .0212 | | | | | .0213 | 19.20 | 5.65 | 2.86 | 5.65 | .015 | .00 | 1.50 | TRAP | | | | | |
| 6758.878 | -103.252 | 5.636 | -97.616 | 2509.00 | 30.80 | 14.73 | -82.88 | .00 | 9.38 | 22.91 | 9.000 | 6.000 | 1.50 | 0 | .0 | | | | |
| 749.073 | .0212 | | | | | .0229 | 17.15 | 5.64 | 2.88 | 5.65 | .015 | .00 | 1.50 | TRAP | | | | | |



Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11-18-2013 Time: 9:50:58

CVWD
MDP
LINE K01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 7507.951 | -87.408 | 5.469 | -81.939 | 2509.00 | 32.30 | 16.20 | -65.73 | .00 | 9.38 | 22.41 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 299.314 | .0212 | | | | | .0260 | 7.79 | 5.47 | 3.06 | 5.65 | .015 | .00 | 1.50 | TRAP |
| 7807.266 | -81.077 | 5.305 | -75.771 | 2509.00 | 33.88 | 17.82 | -57.95 | .00 | 9.38 | 21.92 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 192.734 | .0212 | | | | | .0296 | 5.70 | 5.31 | 3.25 | 5.65 | .015 | .00 | 1.50 | TRAP |
| 8000.000 | -77.000 | 5.146 | -71.854 | 2509.00 | 35.53 | 19.61 | -52.25 | .00 | 9.38 | 21.44 | 9.000 | 6.000 | 1.50 | 0 .0 |
| 2897.795 | .0315 | | | | | .0315 | 91.18 | 5.15 | 3.45 | 5.15 | .015 | .00 | 1.50 | TRAP |
| 10897.790 | 14.184 | 5.146 | 19.330 | 2509.00 | 35.53 | 19.61 | 38.94 | .00 | 9.38 | 21.44 | 9.000 | 6.000 | 1.50 | 0 .0 |

```
                                                
```

```
T1 CVWD                                                                                                  0
T2 MDP
T3 LINE K01-01
SO   1000.000-131.000  1      .015                -124.713
R    1048.060-130.248  1      .015
R    1178.830-128.204  1      .015                                      59.940
R    1183.000-128.139  1      .015
TS   1213.000-127.670  3      .015
WX   1213.000-127.670  4
R    1253.000-127.044  4      .015
WE   1253.000-127.044  3      .500
TS   1280.000-126.575  1      .015
R    3750.000-088.000  1      .015
TS   3765.000-087.846  2      .015
R    6485.000-060.000  2      .015
SH   6485.000-060.000  2      .013                -055.000
CD   1  1   0    .000   8.000    8.000 1.500 1.500   .00
CD   2  1   0    .000   8.000    6.000 1.500 1.500   .00
CD   3  2   0    .000   8.000   12.000 0.000 0.000   .00
CD   4  3   0    .000   5.000   12.000 0.000 0.000   .00
CD   5  1   0    .000   9.000    6.000 1.500 1.500   .00
CD   6  2   0    .000   8.000   24.670 0.000 0.000   .00
CD   7  3   1    .670   6.000   24.670 0.000 0.000   .00
CD   8  2   0    .000   8.000   16.670  .000  .000   .00
CD   9  3   1    .670   6.000   16.670  .000  .000   .00
CD  10  4   1           4.000
CD  11  2   0    .000   7.000    6.500  .000  .000   .00
CD  12  4   1           7.500
CD  13  1   0    .000   8.000    8.000 1.500 1.500   .00
CD  14  4   1           6.000
CD  15  4   1           3.000
CD  16  4   1           5.000
Q          1060.000   .0
```

FILE: K01-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 7-25-2013 Time: 8:26:55

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

| CARD CODE | SECT NO | CHN TYPE | NO OF PIER/PIP | AVE PIER WIDTH | HEIGHT 1 DIAMETER | BASE WIDTH | ZL | ZR | INV DROP | Y(1) | Y(2) | Y(3) | Y(4) | Y(5) | Y(6) | Y(7) | Y(8) | Y(9) | Y(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD | 1 | 1 | 0 | .000 | 8.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 2 | 1 | 0 | .000 | 8.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 3 | 2 | 0 | .000 | 8.000 | 12.000 | | | .00 | | | | | | | | | | |
| CD | 4 | 3 | 0 | .000 | 5.000 | 12.000 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 5 | 1 | 0 | .000 | 9.000 | 6.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 6 | 2 | 0 | .000 | 8.000 | 24.670 | | | .00 | | | | | | | | | | |
| CD | 7 | 3 | 1 | .670 | 6.000 | 24.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 8 | 2 | 0 | .000 | 8.000 | 16.670 | | | .00 | | | | | | | | | | |
| CD | 9 | 3 | 1 | .670 | 6.000 | 16.670 | .000 | .000 | .00 | | | | | | | | | | |
| CD | 10 | 4 | 1 | | 4.000 | | | | | | | | | | | | | | |
| CD | 11 | 2 | 0 | .000 | 7.000 | 6.500 | | | .00 | | | | | | | | | | |
| CD | 12 | 4 | 1 | | 7.500 | | | | | | | | | | | | | | |
| CD | 13 | 1 | 0 | .000 | 8.000 | 8.000 | 1.500 | 1.500 | .00 | | | | | | | | | | |
| CD | 14 | 4 | 1 | | 6.000 | | | | | | | | | | | | | | |
| CD | 15 | 4 | 1 | | 3.000 | | | | | | | | | | | | | | |
| CD | 16 | 4 | 1 | | 5.000 | | | | | | | | | | | | | | |

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
LINE K01-01

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

| U/S DATA | STATION | INVERT | SECT | W S ELEV |
|---|---|---|---|---|
| | 1000.000 | -131.000 | 1 | -124.713 |

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 2 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1048.060 | -130.248 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 3 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1178.830 | -128.204 | 1 | .015 | 125.001 | 59.940 | .000 | 0 |

ELEMENT NO 4 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1183.000 | -128.139 | 1 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 5 IS A TRANSITION * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE |
|---|---|---|---|---|---|---|
| | 1213.000 | -127.670 | 3 | .015 | .000 | .000 |

ELEMENT NO 6 IS A WALL EXIT *

| U/S DATA | STATION | INVERT | SECT |
|---|---|---|---|
| | 1213.000 | -127.670 | 4 |

ELEMENT NO 7 IS A REACH * * *

| U/S DATA | STATION | INVERT | SECT | N | RADIUS | ANGLE | ANG PT | MAN H |
|---|---|---|---|---|---|---|---|---|
| | 1253.000 | -127.044 | 4 | .015 | .000 | .000 | .000 | 0 |

ELEMENT NO 8 IS A WALL ENTRANCE *

| U/S DATA | STATION | INVERT | SECT | |
|---|---|---|---|---|
| | 1253.000 | -127.044 | 3 | FP .500 |

ELEMENT NO 9 IS A TRANSITION * * *

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | U/S DATA | STATION | INVERT | SECT | N | | RADIUS | ANGLE | | |
| | | 1280.000 | -126.575 | 1 | .015 | | .000 | .000 | | |
| ELEMENT NO 10 IS A REACH | | * | * | * | | | | | | |
| | U/S DATA | STATION | INVERT | SECT | N | | RADIUS | ANGLE | ANG PT | MAN H |
| | | 3750.000 | -88.000 | 1 | .015 | | .000 | .000 | .000 | 0 |
| ELEMENT NO 11 IS A TRANSITION | | * | * | * | | | | | | |
| | U/S DATA | STATION | INVERT | SECT | N | | RADIUS | ANGLE | | |
| | | 3765.000 | -87.846 | 2 | .015 | | .000 | .000 | | |
| ELEMENT NO 12 IS A REACH | | * | * | * | | | | | | |
| | U/S DATA | STATION | INVERT | SECT | N | | RADIUS | ANGLE | ANG PT | MAN H |
| | | 6485.000 | -60.000 | 2 | .015 | | .000 | .000 | .000 | 0 |
| ELEMENT NO 13 IS A SYSTEM HEADWORKS | | | | * | | * | | | | |
| | U/S DATA | STATION | INVERT | SECT | | | W S ELEV | | | |
| | | 6485.000 | -60.000 | 2 | | | -55.000 | | | |

CVWD
MDP
LINE K01-01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000.000 | -131.000 | 3.632 | -127.368 | 1060.00 | 21.70 | 7.31 | -120.06 | .00 | 5.76 | 18.90 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 48.060 | .0156 | | | | | .0157 | .75 | 3.63 | 2.38 | 3.63 | .015 | .00 | 1.50 | TRAP |
| 1048.060 | -130.248 | 3.632 | -126.616 | 1060.00 | 21.70 | 7.31 | -119.30 | 2.87 | 5.76 | 18.90 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 130.770 | .0156 | | | | | .0157 | 2.05 | 6.51 | 2.38 | 3.63 | .015 | .00 | 1.50 | TRAP |
| 1178.830 | -128.204 | 3.631 | -124.573 | 1060.00 | 21.71 | 7.32 | -117.25 | .00 | 5.76 | 18.89 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 4.170 | .0156 | | | | | .0157 | .07 | 3.63 | 2.38 | 3.64 | .015 | .00 | 1.50 | TRAP |
| 1183.000 | -128.139 | 3.630 | -124.509 | 1060.00 | 21.72 | 7.33 | -117.18 | .00 | 5.76 | 18.89 | 8.000 | 8.000 | 1.50 | 0 .0 |
| TRANS STR | .0156 | | | | | .0144 | .43 | 3.63 | 2.38 | | .015 | .00 | 1.50 | TRAP |
| 1213.000 | -127.670 | 4.239 | -123.431 | 1060.00 | 20.84 | 6.74 | -116.69 | .00 | 6.23 | 12.00 | 8.000 | 12.000 | .00 | 0 .0 |
| WALL EXIT | | | | | | | | | | | | | | |
| 1213.000 | -127.670 | 4.237 | -123.433 | 1060.00 | 20.85 | 6.75 | -116.68 | .00 | 5.00 | 12.00 | 5.000 | 12.000 | .00 | 0 .0 |
| 40.000 | .0156 | | | | | .0130 | .52 | 4.24 | 1.78 | 3.98 | .015 | .00 | .00 | BOX |
| 1253.000 | -127.044 | 4.289 | -122.755 | 1060.00 | 20.60 | 6.59 | -116.17 | .00 | 6.23 | 12.00 | 8.000 | 12.000 | .00 | 0 .0 |
| TRANS STR | .0174 | | | | | .0142 | .38 | 4.29 | 1.75 | | .015 | .00 | .00 | RECTANG |
| 1280.000 | -126.575 | 3.635 | -122.940 | 1060.00 | 21.68 | 7.30 | -115.64 | .00 | 5.76 | 18.90 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 1309.062 | .0156 | | | | | .0156 | 20.45 | 3.63 | 2.38 | 3.63 | .015 | .00 | 1.50 | TRAP |
| 2589.062 | -106.131 | 3.635 | -102.496 | 1060.00 | 21.68 | 7.30 | -95.20 | .00 | 5.76 | 18.90 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 566.031 | .0156 | | | | | .0155 | 8.76 | 3.63 | 2.38 | 3.63 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE K01-01

| Station / L/Elem | Invert Elev / Ch Slope | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head / SF Ave | Energy Grd.El. / HF | Super Elev / SE Dpth | Critical Depth / Froude N | Flow Top Width / Norm Dp | Height/ Dia.-FT / "N" | Base Wt or I.D. / X-Fall | ZL / ZR | No Wth Prs/Pip / Type Ch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3155.093 | -97.291 | 3.651 | -93.639 | 1060.00 | 21.54 | 7.20 | -86.43 | .00 | 5.76 | 18.95 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 438.001 | .0156 | | | | | .0144 | 6.31 | 3.65 | 2.36 | 3.63 | .015 | .00 | 1.50 | TRAP |
| 3593.094 | -90.450 | 3.777 | -86.674 | 1060.00 | 20.54 | 6.55 | -80.12 | .00 | 5.76 | 19.33 | 8.000 | 8.000 | 1.50 | 0 .0 |
| 156.906 | .0156 | | | | | .0126 | 1.98 | 3.78 | 2.21 | 3.63 | .015 | .00 | 1.50 | TRAP |
| 3750.000 | -88.000 | 3.906 | -84.094 | 1060.00 | 19.58 | 5.95 | -78.14 | .00 | 5.76 | 19.72 | 8.000 | 8.000 | 1.50 | 0 .0 |
| TRANS STR | .0103 | | | | | .0110 | .17 | 3.91 | 2.08 | | .015 | .00 | 1.50 | TRAP |
| 3765.000 | -87.846 | 4.455 | -83.391 | 1060.00 | 18.76 | 5.47 | -77.93 | .00 | 6.21 | 19.36 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 1677.849 | .0102 | | | | | .0102 | 17.18 | 4.45 | 1.94 | 4.45 | .015 | .00 | 1.50 | TRAP |
| 5442.850 | -70.669 | 4.455 | -66.214 | 1060.00 | 18.76 | 5.47 | -60.75 | .00 | 6.21 | 19.36 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 577.157 | .0102 | | | | | .0097 | 5.58 | 4.45 | 1.94 | 4.45 | .015 | .00 | 1.50 | TRAP |
| 6020.006 | -64.760 | 4.585 | -60.176 | 1060.00 | 17.96 | 5.01 | -55.17 | .00 | 6.21 | 19.75 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 183.789 | .0102 | | | | | .0085 | 1.57 | 4.58 | 1.83 | 4.45 | .015 | .00 | 1.50 | TRAP |
| 6203.795 | -62.879 | 4.729 | -58.150 | 1060.00 | 17.12 | 4.55 | -53.60 | .00 | 6.21 | 20.19 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 97.644 | .0102 | | | | | .0075 | .73 | 4.73 | 1.72 | 4.45 | .015 | .00 | 1.50 | TRAP |
| 6301.439 | -61.879 | 4.877 | -57.002 | 1060.00 | 16.32 | 4.14 | -52.86 | .00 | 6.21 | 20.63 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 61.831 | .0102 | | | | | .0066 | .41 | 4.88 | 1.62 | 4.45 | .015 | .00 | 1.50 | TRAP |
| 6363.270 | -61.246 | 5.029 | -56.217 | 1060.00 | 15.56 | 3.76 | -52.46 | .00 | 6.21 | 21.09 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 42.075 | .0102 | | | | | .0058 | .24 | 5.03 | 1.53 | 4.45 | .015 | .00 | 1.50 | TRAP |



CVWD
MDP
LINE K01-01

| Station | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/ Dia.-FT | Base Wt or I.D. | ZL | No Wth Prs/Pip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch |
| 6405.345 | -60.815 | 5.185 | -55.631 | 1060.00 | 14.84 | 3.42 | -52.21 | .00 | 6.21 | 21.55 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 29.466 | .0102 | | | | | .0051 | .15 | 5.18 | 1.44 | 4.45 | .015 | .00 | 1.50 | TRAP |
| 6434.811 | -60.514 | 5.345 | -55.169 | 1060.00 | 14.15 | 3.11 | -52.06 | .00 | 6.21 | 22.03 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 20.657 | .0102 | | | | | .0045 | .09 | 5.34 | 1.35 | 4.45 | .015 | .00 | 1.50 | TRAP |
| 6455.468 | -60.302 | 5.509 | -54.793 | 1060.00 | 13.49 | 2.83 | -51.97 | .00 | 6.21 | 22.53 | 8.000 | 6.000 | 1.50 | 0 .0 |
| 14.108 | .0102 | | | | | .0040 | .06 | 5.51 | 1.27 | 4.45 | .015 | .00 | 1.50 | TRAP |
| 6469.576 | -60.158 | 5.677 | -54.481 | 1060.00 | 12.86 | 2.57 | -51.91 | .00 | 6.21 | 23.03 | 8.000 | 6.000 | 1.50 | 0 .0 |

K01-01

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.013 | .0102 | | | | .0035 | .03 | 5.68 | 1.20 | 4.45 | .015 | .00 | 1.50 | TRAP | | | | |
| 6478.589 | -60.066 | 5.850 | -54.216 | 1060.00 | 12.26 | 2.34 | -51.88 | .00 | 6.21 | 23.55 | 8.000 | 6.000 | 1.50 | 0 | .0 | | |
| 4.907 | .0102 | | | | .0031 | .02 | 5.85 | 1.13 | 4.45 | .015 | .00 | 1.50 | TRAP | | | | |
| 6483.496 | -60.015 | 6.027 | -53.988 | 1060.00 | 11.69 | 2.12 | -51.87 | .00 | 6.21 | 24.08 | 8.000 | 6.000 | 1.50 | 0 | .0 | | |
| 1.504 | .0102 | | | | .0027 | .00 | 6.03 | 1.06 | 4.45 | .015 | .00 | 1.50 | TRAP | | | | |
| 6485.000 | -60.000 | 6.210 | -53.790 | 1060.00 | 11.15 | 1.93 | -51.86 | .00 | 6.21 | 24.63 | 8.000 | 6.000 | 1.50 | 0 | .0 | | |

# Appendix I

# CVSC HEC-RAS Summary Output (March 2014)

| Coachella Valley Stormwater Channel Water Surface Elevations | | | |
|---|---|---|---|
| Line | Upstream/ Downstream | Coachella Valley Stormwater Channel Station | HEC-RAS WS Elev., (ft) |
| A | U/S | 686+87.89 | -110.4 |
| | Confluence | 674+44 | -112.4 |
| | D/S | 661+12.20 | -114.5 |
| B | U/S | 617+16.25 | -128.1 |
| | Confluence | 616+92 | -129.6 |
| | D/S | 616+64.25 | -131.3 |
| C | U/S | 550+77.03 | -142.9 |
| | Confluence | 539+32 | -144.8 |
| | D/S | 530+41.26 | -146.4 |
| D | U/S | 267+68.6 | -190.1 |
| | Confluence | 263+26 | -190.6 |
| | D/S | 261+95.44 | -190.8 |
| E | U/S | 176+88.2 | -200.5 |
| | Confluence | 143+37 | -202.7 |
| | D/S | 142+22.44 | -202.8 |

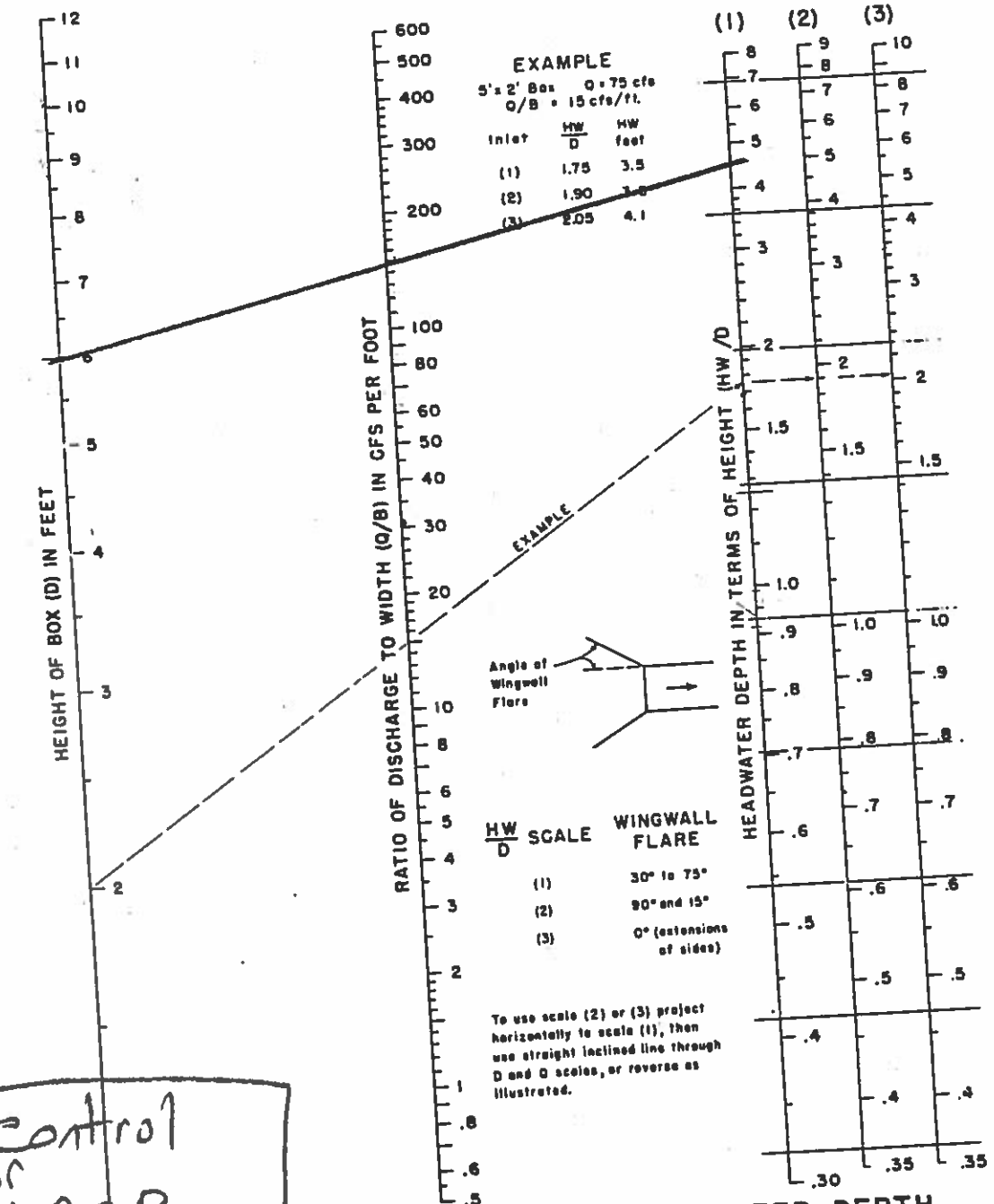
-112.4 - WATER SURFACE VALUES ARE LINEARLY INTERPOLATED FROM CVSC HEC-RAS PROVIDED BY TETRA TECH (03/10/2014)

HEC-RAS Plan: G4a14s River: CVSC Reach: Main Profile: 100-Yr

| Reach | River Sta | Q Total | LOB Elev | ROB Elev | Min El | W.S. Elev | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chnl | Hydr Depth C | Flow Area | Top Width | Froude # Chl |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (cfs) | (ft) | (ft) | (ft) | (ft) | (ft) | (ft) | (ft/ft) | (ft/s) | (ft) | (sq ft) | (ft) | |
| Main | 88965.21 | 39000.00 | -42.00 | -42.00 | -77.52 | -62.41 | -65.54 | -60.96 | 0.002507 | 9.67 | 9.41 | 4031.52 | 428.64 | 0.56 |
| Main | 87175.49 | 39000.00 | -44.99 | -45.02 | -82.01 | -66.71 | -70.03 | -65.32 | 0.002349 | 9.48 | 9.58 | 4112.19 | 429.21 | 0.54 |
| Main | 84511.14 | 39000.00 | -52.01 | -56.24 | -88.62 | -73.28 | -76.46 | -71.78 | 0.002497 | 9.83 | 9.64 | 3968.48 | 411.85 | 0.56 |
| Main | 81466.81 | 39000.00 | -58.73 | -61.62 | -96.22 | -80.88 | -84.07 | -79.38 | 0.002497 | 9.83 | 9.64 | 3968.48 | 411.85 | 0.56 |
| Main | 79437.17 | 39000.00 | -67.71 | -63.94 | -101.30 | -86.01 | -89.15 | -84.50 | 0.002544 | 9.88 | 9.59 | 3946.18 | 411.68 | 0.56 |
| Main | 77078.31 | 39000.00 | -69.62 | -75.21 | -107.14 | -92.41 | -95.17 | -90.84 | 0.002845 | 10.04 | 9.05 | 3885.73 | 429.13 | 0.59 |
| Main | 74060.29 | 39000.00 | -76.93 | -79.56 | -114.81 | -98.84 | -102.93 | -97.68 | 0.001788 | 8.64 | 10.20 | 4513.40 | 442.31 | 0.48 |
| Main | 73730.11 | 39000.00 | -80.00 | -82.00 | -115.63 | -99.37 | -103.73 | -98.26 | 0.001655 | 8.47 | 10.47 | 4607.13 | 439.99 | 0.46 |
| Main | 73618.48 | Bridge | | | | | | | | | | | | |
| Main | 73481.52 | 39000.00 | -83.96 | -80.00 | -116.14 | -100.78 | -104.23 | -99.45 | 0.002211 | 9.24 | 9.64 | 4222.31 | 438.01 | 0.52 |
| Main | 73072.07 | 39000.00 | -82.00 | -84.00 | -117.22 | -101.58 | -105.32 | -100.34 | 0.002001 | 8.95 | 9.90 | 4358.05 | 440.36 | 0.50 |
| Main | 71960.63 | 39000.00 | -85.99 | -84.68 | -119.46 | -103.83 | -107.57 | -102.57 | 0.002024 | 9.00 | 9.89 | 4335.41 | 438.49 | 0.50 |
| Main | 71724.59 | 39000.00 | -81.41 | -85.16 | -119.94 | -104.31 | -108.04 | -103.05 | 0.002022 | 8.99 | 9.89 | 4336.75 | 438.51 | 0.50 |
| Main | 71331.89 | 39000.00 | -85.04 | -85.53 | -120.73 | -105.10 | -108.83 | -103.85 | 0.002024 | 8.99 | 9.89 | 4336.62 | 438.68 | 0.50 |
| Main | 68687.89 | 39000.00 | -88.47 | -91.62 | -126.06 | -110.41 | -114.17 | -109.17 | 0.001996 | 8.94 | 9.90 | 4361.53 | 440.36 | 0.50 |
| Main | 66112.2 | 39000.00 | -95.10 | -96.85 | -131.25 | -114.50 | -119.38 | -113.50 | 0.001393 | 8.00 | 10.93 | 4875.71 | 446.08 | 0.43 |
| Main | 63050.54 | 39000.00 | -105.79 | -107.60 | -137.42 | -121.81 | -124.46 | -119.79 | 0.003187 | 11.42 | 9.87 | 3415.74 | 345.93 | 0.64 |
| Main | 62327.93 | 39000.00 | -114.38 | -108.41 | -138.88 | -127.29 | -127.29 | -123.55 | 0.008780 | 15.52 | 7.48 | 2512.24 | 335.75 | 1.00 |
| Main | 61903.74 | 39000.00 | -116.00 | -112.41 | -139.73 | -127.94 | -129.88 | -125.22 | 0.001086 | 13.24 | 10.08 | 2946.37 | 292.36 | 0.73 |
| Main | 61716.25 | 39000.00 | -115.36 | -115.77 | -140.11 | -128.07 | -130.28 | -125.48 | 0.001005 | 12.92 | 10.30 | 3019.48 | 293.11 | 0.71 |
| Main | 61690.25 | Bridge | | | | | | | | | | | | |
| Main | 61664.25 | 39000.00 | -114.89 | -115.00 | -140.21 | -131.34 | -130.40 | -126.01 | 0.003172 | 18.52 | 7.43 | 2105.91 | 283.61 | 1.20 |
| Main | 61540.41 | 39000.00 | -116.12 | -114.00 | -140.46 | -130.44 | -130.63 | -126.45 | 0.001993 | 16.02 | 8.48 | 2434.75 | 287.07 | 0.97 |
| Main | 61195.57 | 39000.00 | -116.21 | -112.00 | -141.16 | -131.10 | -131.32 | -127.15 | 0.001968 | 15.95 | 8.51 | 2444.63 | 287.17 | 0.96 |
| Main | 60078.08 | 39000.00 | -113.77 | -115.21 | -143.41 | -132.48 | -133.57 | -129.23 | 0.001440 | 14.47 | 9.30 | 2696.06 | 289.78 | 0.84 |
| Main | 58987.99 | 39000.00 | -117.16 | -114.25 | -145.61 | -133.04 | -135.77 | -130.70 | 0.000856 | 12.28 | 10.78 | 3177.09 | 294.72 | 0.66 |
| Main | 58360.36 | 39000.00 | -122.53 | -122.53 | -146.87 | -133.21 | -137.02 | -131.28 | 0.000630 | 11.14 | 11.75 | 3500.14 | 297.99 | 0.57 |
| Main | 58332.13 | Bridge | | | | | | | | | | | | |
| Main | 58312.54 | 39000.00 | -122.63 | -122.63 | -146.97 | -134.12 | -137.13 | -131.89 | 0.000789 | 11.96 | 11.03 | 3259.58 | 295.56 | 0.63 |
| Main | 58296.59 | 39000.00 | -122.66 | -122.66 | -147.00 | -134.13 | -137.18 | -131.91 | 0.000785 | 11.94 | 11.05 | 3265.46 | 295.62 | 0.63 |
| Main | 58282.21 | Bridge | | | | | | | | | | | | |
| Main | 58229.67 | 39000.00 | -122.80 | -122.80 | -147.14 | -135.23 | | -132.57 | 0.001044 | 13.07 | 10.19 | 2983.39 | 292.74 | 0.72 |
| Main | 58186.58 | 39000.00 | -119.59 | -119.69 | -147.22 | -135.26 | -137.38 | -132.63 | 0.001029 | 13.01 | 10.23 | 2997.12 | 292.88 | 0.72 |
| Main | 58118.19 | Bridge | | | | | | | | | | | | |
| Main | 58072.58 | 39000.00 | -120.14 | -119.70 | -147.45 | -138.33 | -137.63 | -133.35 | 0.002850 | 17.91 | 7.66 | 2177.42 | 284.37 | 1.14 |
| Main | 57582.44 | 39000.00 | -120.45 | -120.00 | -148.44 | -142.60 | -140.63 | -136.00 | 0.007776 | 20.62 | 4.40 | 1891.80 | 429.52 | 1.73 |
| Main | 56947.59 | 39000.00 | -123.64 | -120.87 | -149.46 | -142.14 | -142.14 | -139.26 | 0.002375 | 13.62 | 5.76 | 2863.23 | 496.96 | 1.00 |
| Main | 56913.19 | 39000.00 | -120.87 | -120.92 | -155.40 | -141.51 | -148.08 | -140.89 | 0.000193 | 6.30 | 11.99 | 6194.87 | 516.68 | 0.32 |
| Main | 55077.03 | 39000.00 | -123.53 | -124.58 | -158.67 | -142.86 | -147.01 | -141.74 | 0.001733 | 8.49 | 10.18 | 4594.57 | 451.12 | 0.47 |
| Main | 53041.26 | 39000.00 | -130.31 | -129.64 | -162.20 | -146.38 | -150.54 | -145.26 | 0.001729 | 8.48 | 10.19 | 4597.88 | 451.14 | 0.47 |
| Main | 50067.15 | 39000.00 | -137.17 | -137.83 | -167.37 | -151.83 | -155.71 | -150.65 | 0.001894 | 8.72 | 9.93 | 4472.41 | 450.31 | 0.49 |
| Main | 48201.42 | 39000.00 | -142.00 | -142.45 | -170.97 | -155.15 | -159.32 | -154.03 | 0.001721 | 8.46 | 10.19 | 4607.33 | 451.99 | 0.47 |
| Main | 46371.1 | 39000.00 | -146.03 | -146.11 | -174.17 | -158.20 | -162.52 | -157.12 | 0.001645 | 8.35 | 10.33 | 4671.60 | 452.42 | 0.46 |
| Main | 45192.42 | 39000.00 | -148.90 | -148.52 | -176.20 | -160.07 | -164.55 | -159.02 | 0.001560 | 8.22 | 10.48 | 4746.75 | 452.91 | 0.45 |
| Main | 44850.94 | 39000.00 | -146.59 | -147.40 | -176.90 | -160.65 | -165.16 | -159.56 | 0.001590 | 8.36 | 10.59 | 4667.20 | 440.89 | 0.45 |
| Main | 44786.35 | Bridge | | | | | | | | | | | | |
| Main | 44702.98 | 39000.00 | -146.59 | -147.40 | -177.00 | -161.27 | | -160.07 | 0.001876 | 8.79 | 10.10 | 4438.35 | 439.33 | 0.49 |
| Main | 43584.21 | 39000.00 | -152.68 | -152.68 | -179.04 | -163.21 | -167.39 | -162.10 | 0.001720 | 8.46 | 10.20 | 4608.64 | 452.00 | 0.47 |
| Main | 40769.16 | 39000.00 | -157.52 | -157.52 | -183.88 | -168.08 | -172.23 | -166.96 | 0.001733 | 8.48 | 10.17 | 4597.94 | 451.93 | 0.47 |
| Main | 39187.78 | 39000.00 | -160.28 | -160.28 | -186.64 | -170.78 | -174.98 | -169.68 | 0.001704 | 8.44 | 10.22 | 4621.81 | 452.09 | 0.47 |
| Main | 38458.03 | 39000.00 | -161.57 | -161.57 | -187.93 | -172.00 | -176.28 | -170.91 | 0.001665 | 8.38 | 10.29 | 4654.29 | 452.30 | 0.46 |
| Main | 37896.77 | 39000.00 | -162.46 | -162.46 | -188.82 | -172.97 | -177.17 | -171.86 | 0.001704 | 8.44 | 10.22 | 4621.60 | 452.08 | 0.47 |
| Main | 36228.63 | 39000.00 | -165.19 | -165.19 | -191.55 | -176.11 | -179.90 | -174.91 | 0.001951 | 8.79 | 9.84 | 4435.35 | 450.85 | 0.49 |
| Main | 33975.91 | 39000.00 | -168.88 | -168.88 | -195.95 | -180.04 | -184.34 | -178.97 | 0.001641 | 8.31 | 10.27 | 4695.88 | 457.23 | 0.46 |
| Main | 32151.73 | 39000.00 | -171.57 | -171.57 | -199.02 | -182.85 | -187.43 | -181.84 | 0.001496 | 8.06 | 10.51 | 4839.92 | 460.59 | 0.44 |
| Main | 29918.4 | 39000.00 | -174.64 | -174.64 | -202.36 | -186.14 | -190.78 | -185.15 | 0.001461 | 7.99 | 10.55 | 4883.28 | 462.70 | 0.43 |
| Main | 26768.6 | 39000.00 | -178.97 | -178.97 | -207.08 | -190.14 | -195.52 | -189.28 | 0.001161 | 7.43 | 11.23 | 5249.41 | 467.64 | 0.39 |
| Main | 26195.44 | 39000.00 | -179.77 | -179.77 | -207.84 | -190.78 | -196.29 | -189.94 | 0.001123 | 7.36 | 11.33 | 5301.32 | 467.73 | 0.39 |
| Main | 26183.79 | Bridge | | | | | | | | | | | | |
| Main | 26133.01 | 39000.00 | -179.85 | -179.85 | -207.92 | -191.04 | -196.36 | -190.17 | 0.001185 | 7.48 | 11.17 | 5215.72 | 467.14 | 0.39 |
| Main | 26003.54 | 39000.00 | -180.08 | -180.08 | -208.14 | -191.19 | -196.58 | -190.33 | 0.001159 | 7.43 | 11.24 | 5250.04 | 467.24 | 0.39 |
| Main | 25993.77 | Bridge | | | | | | | | | | | | |
| Main | 25939.63 | 39000.00 | -180.08 | -180.08 | -208.14 | -191.38 | -196.58 | -190.49 | 0.001227 | 7.56 | 11.06 | 5160.63 | 466.67 | 0.40 |
| Main | 25120.53 | 39000.00 | -181.21 | -181.21 | -209.18 | -192.37 | -197.62 | -191.49 | 0.001213 | 7.54 | 11.10 | 5175.44 | 466.26 | 0.40 |
| Main | 22808.83 | 39000.00 | -184.27 | -184.27 | -212.03 | -195.15 | -200.46 | -194.28 | 0.001195 | 7.51 | 11.17 | 5192.00 | 464.98 | 0.40 |
| Main | 20283.21 | 39000.00 | -187.69 | -187.69 | -215.21 | -198.01 | -203.63 | -197.18 | 0.001096 | 7.33 | 11.46 | 5322.03 | 464.26 | 0.38 |
| Main | 17688.2 | 39000.00 | -191.36 | -191.36 | -218.47 | -200.52 | -206.86 | -199.78 | 0.000899 | 6.92 | 12.16 | 5638.21 | 463.66 | 0.35 |
| Main | 14222.44 | 39000.00 | -196.83 | -196.83 | -222.79 | -202.82 | -211.12 | -202.26 | 0.000560 | 6.03 | 14.01 | 6467.27 | 461.62 | 0.28 |
| Main | 13355.07 | 39000.00 | -202.11 | -204.33 | -221.81 | -203.88 | -209.48 | -203.00 | 0.001318 | 7.51 | 10.88 | 5192.24 | 477.05 | 0.40 |
| Main | 10930.12 | 39000.00 | -203.82 | -207.50 | -224.72 | -209.95 | -211.97 | -208.24 | 0.003992 | 10.49 | 7.83 | 3717.57 | 474.67 | 0.66 |
| Main | 9954.95 | 39000.00 | -206.00 | -210.00 | -224.00 | -213.93 | -215.36 | -212.51 | 0.004624 | 9.54 | 6.02 | 4089.90 | 679.94 | 0.69 |
| Main | 9179.07 | 39000.00 | -208.00 | -214.00 | -224.00 | -216.82 | -218.28 | -215.93 | 0.003841 | 7.55 | 4.86 | 5166.34 | 1062.11 | 0.60 |
| Main | 7187.19 | 39000.00 | -212.00 | -220.00 | -225.92 | -218.97 | -222.18 | -218.80 | 0.000668 | 3.29 | 5.20 | 11850.84 | 2280.89 | 0.25 |
| Main | 7087.19 | 39000.00 | -212.00 | -220.00 | -225.92 | -219.04 | -222.18 | -218.87 | 0.000700 | 3.34 | 5.13 | 11682.62 | 2279.50 | 0.26 |

# Appendix J
# Detention Channel No. 1
# Inlet Control Calculations

# CHART 8




HEADWATER DEPTH FOR BOX CULVERTS WITH INLET CONTROL

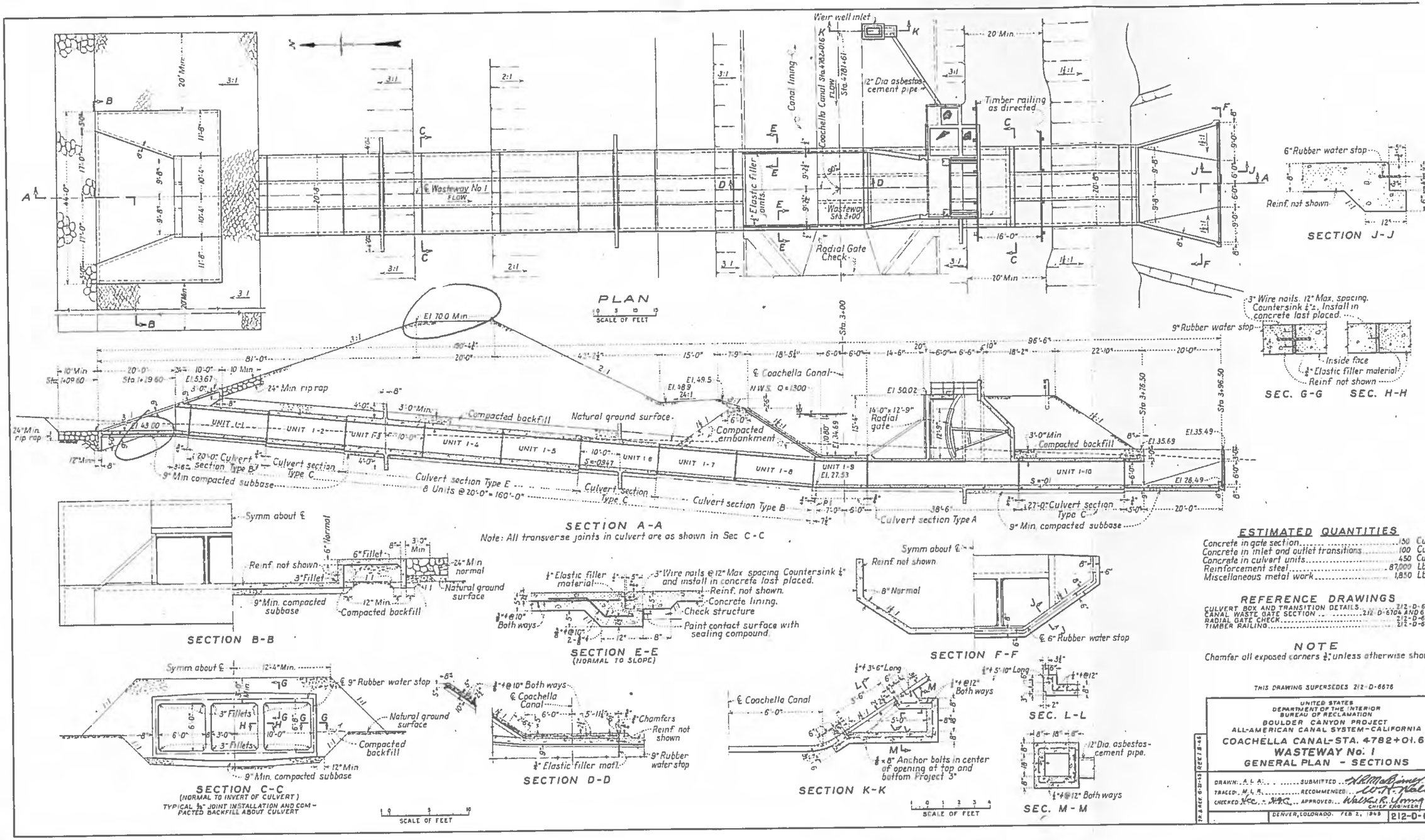
BUREAU OF PUBLIC ROADS JAN. 1963

Inlet control for 3-6'x6' RCB

$B = 6'$

$D = 6'$, $Hw = 70 - 43 = 27'$, $\frac{Q}{B} = 150$

$Hw/D = \frac{27}{6} = 4.5'$ $\frac{Q}{B} \times B \times 3 = 2700$ cfs




## ESTIMATED QUANTITIES

| | |
|---|---|
| Concrete in gate section | 150 Cu.Yds. |
| Concrete in inlet and outlet transitions | 100 Cu.Yds. |
| Concrete in culvert units | 450 Cu.Yds. |
| Reinforcement steel | 87,000 Lbs. |
| Miscellaneous metal work | 1,850 Lbs. |

## REFERENCE DRAWINGS

| | |
|---|---|
| CULVERT BOX AND TRANSITION DETAILS | 212-D-6703 |
| CANAL WASTE GATE SECTION | 212-D-6704 AND 6705 |
| RADIAL GATE CHECK | 212-D-6686 |
| TIMBER RAILING | 212-D-6714 |

## NOTE

Chamfer all exposed corners ¾" unless otherwise shown

THIS DRAWING SUPERSEDES 212-D-6678

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
BOULDER CANYON PROJECT
ALL-AMERICAN CANAL SYSTEM-CALIFORNIA

COACHELLA CANAL-STA. 4782+01.60
WASTEWAY No. 1
GENERAL PLAN - SECTIONS

DRAWN: A. L. A. SUBMITTED: H. M. McBirney
TRACED: M. L. R. RECOMMENDED: W. W. Holden
CHECKED: H.C. J. N.C. APPROVED: Walker R. Young, CHIEF ENGINEER

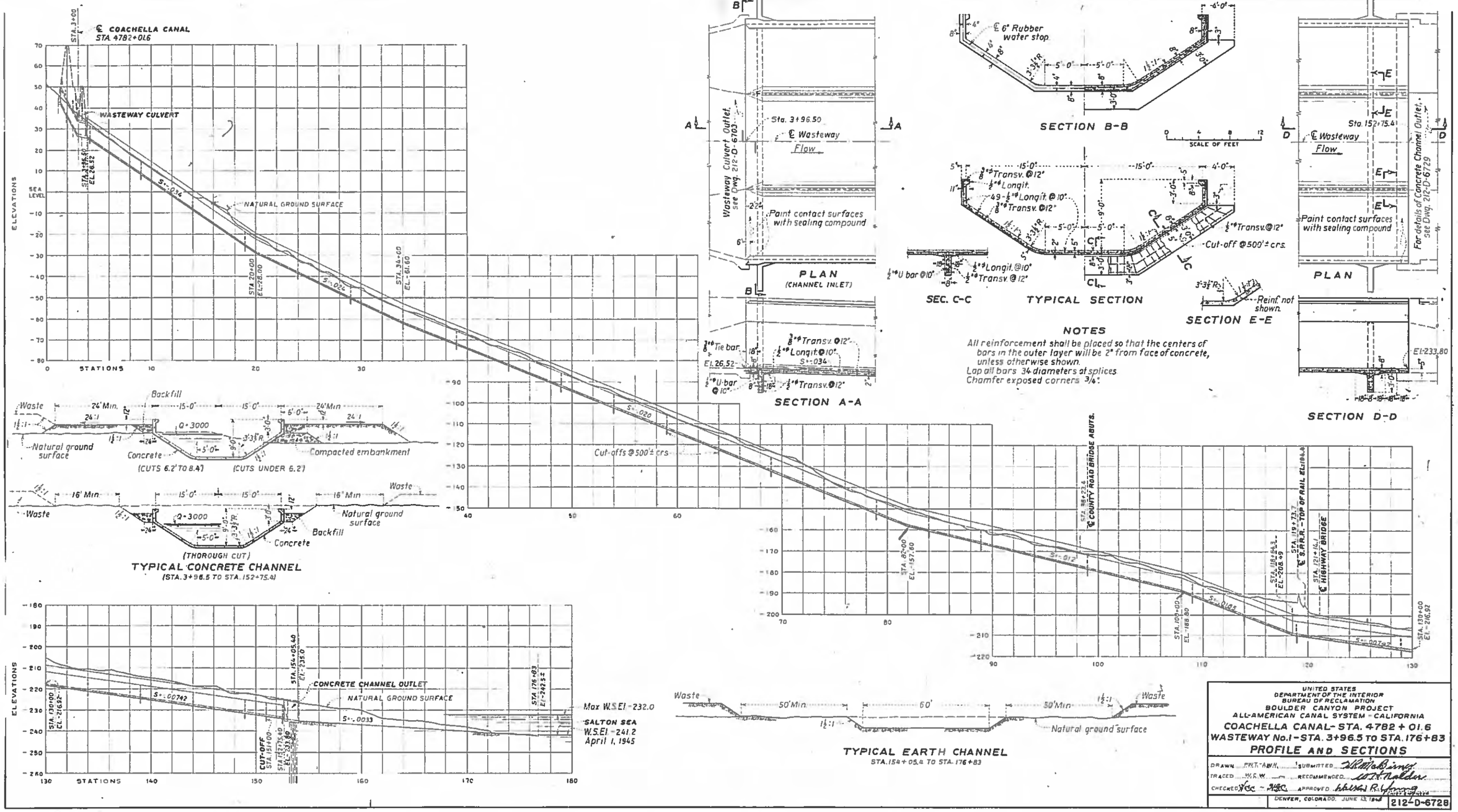
DENVER, COLORADO. FEB 2, 1945

212-D-6685

Job No. 212-7-4

Hw = 70 - 43 = 27'

# Appendix K
# Detention Channel No. 1 Design Plan







UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
BOULDER CANYON PROJECT
ALL-AMERICAN CANAL SYSTEM - CALIFORNIA

COACHELLA CANAL - STA. 4782 + 01.6
WASTEWAY No. 1 - STA. 3+96.5 TO STA. 176+83

**PROFILE AND SECTIONS**

DRAWN PKT-AWH. SUBMITTED
TRACED W.F.W. RECOMMENDED
CHECKED APPROVED

DENVER, COLORADO, JUNE 13, 1945

212-D-6728

Connections for J01-01

10+00 Line J01-01 = 97+62.1 Det ch. 1

Invert = (9762.1 − 8200) × .012 + 157.60 = −176.345

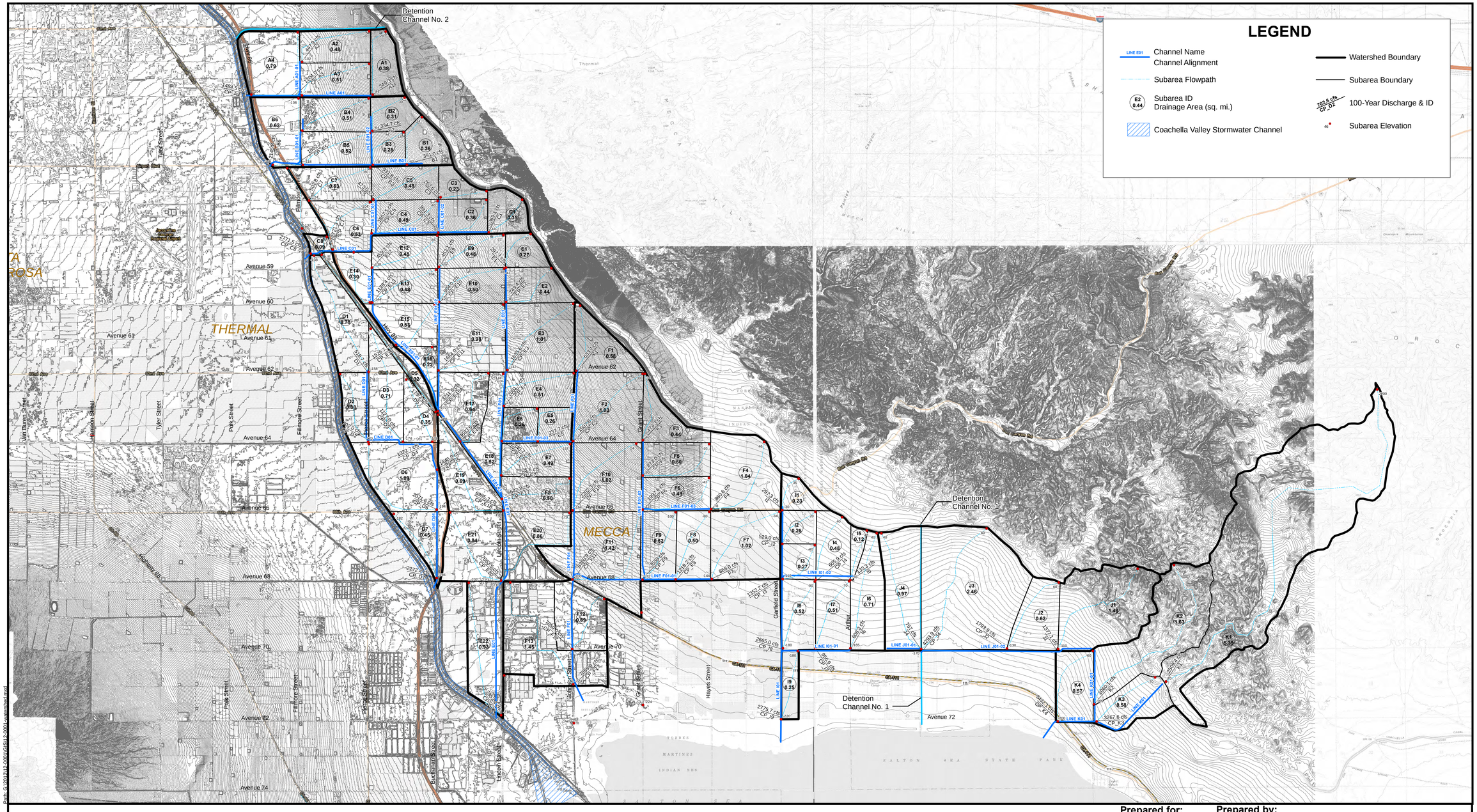
Water Surface = −176.34 + 6' = −170.34

J01-02

10+00 Line J01-02 = 100+17 Det ch. 1

Invert = (10017 − 8200) × .012 + 157.60 = −179.404

Water Surface = −179.40 + 6' = −173.40




0 3,500 7,000 14,000 Feet

**Exhibit 1**
**Watershed Map**
**Mecca/North Shore SMP**

**Prepared for:**
Coachella Valley Water District

**Prepared by:**
Albert A. Webb Associates
In association with
Tetra Tech
Olson Engineering, Since 1976

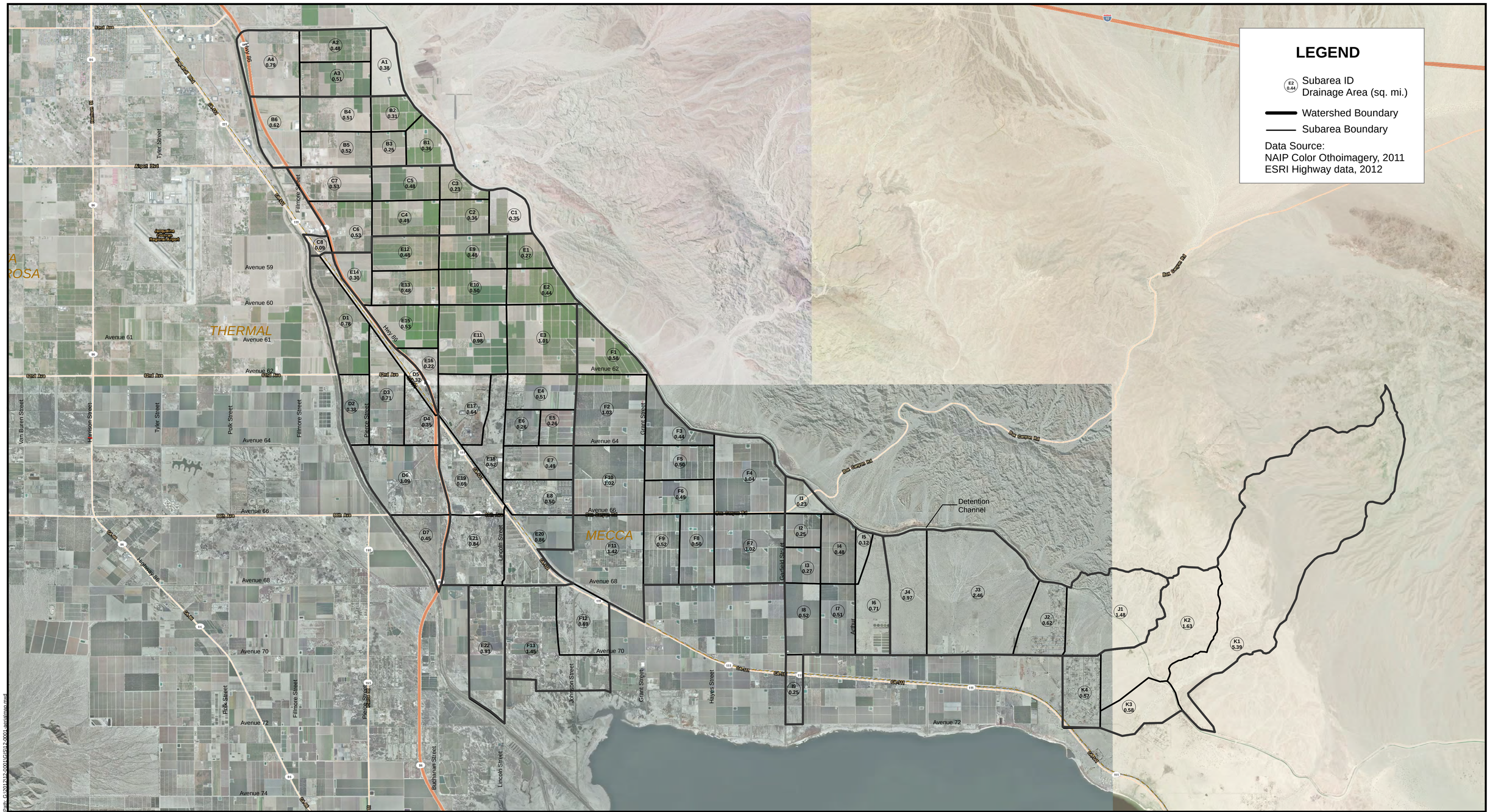



**Exhibit 2**
**Aerial Map**
**Mecca/North Shore Region SMP**

**Prepared for:**
Coachella Valley Water District

**Prepared by:**
Albert A. Webb Associates
In association with
Tetra Tech
Olson Engineering, Since 1976

Plotted: 6/30/2014 2:00:00 PM by GIS V2-2001 Elevations.mxd

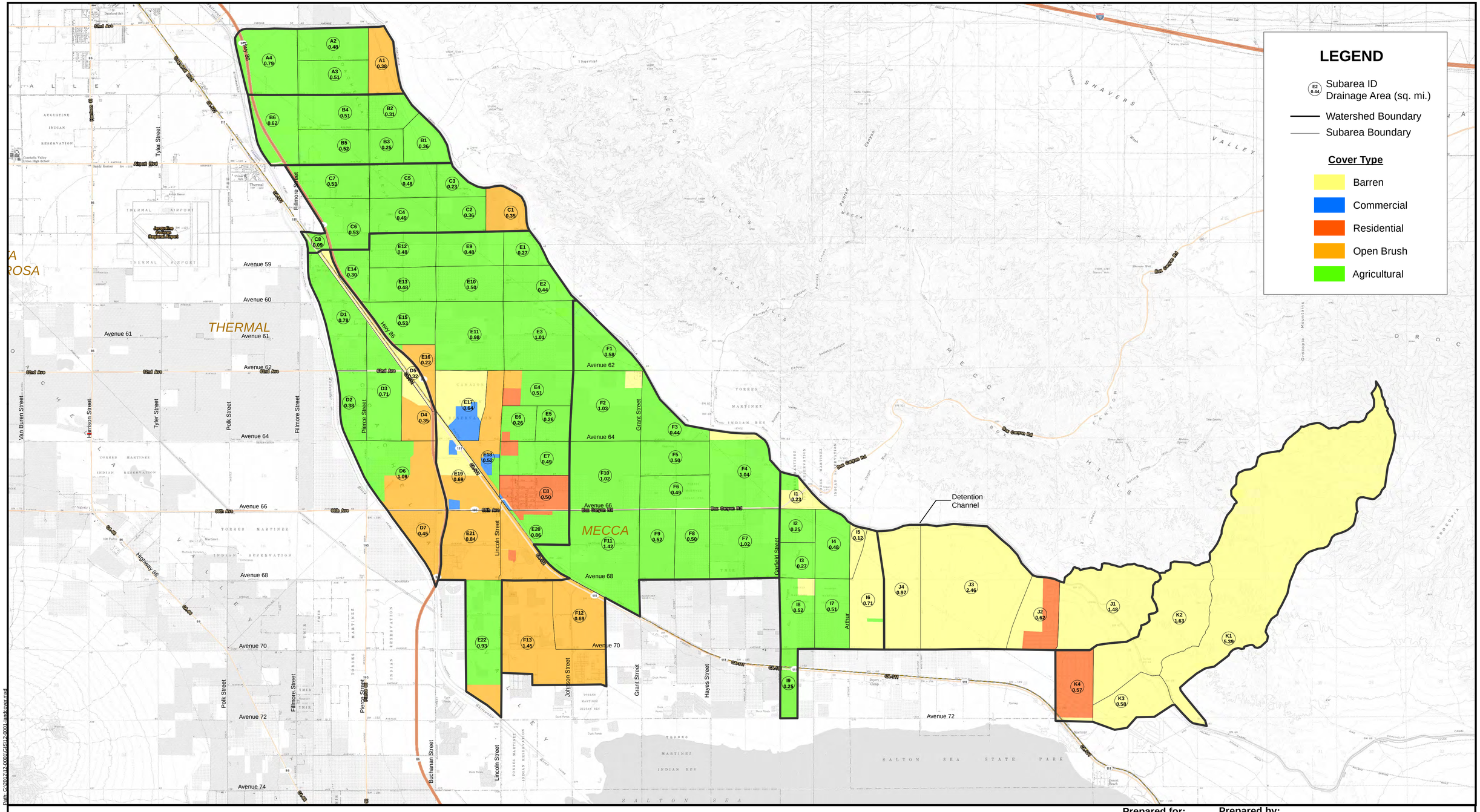
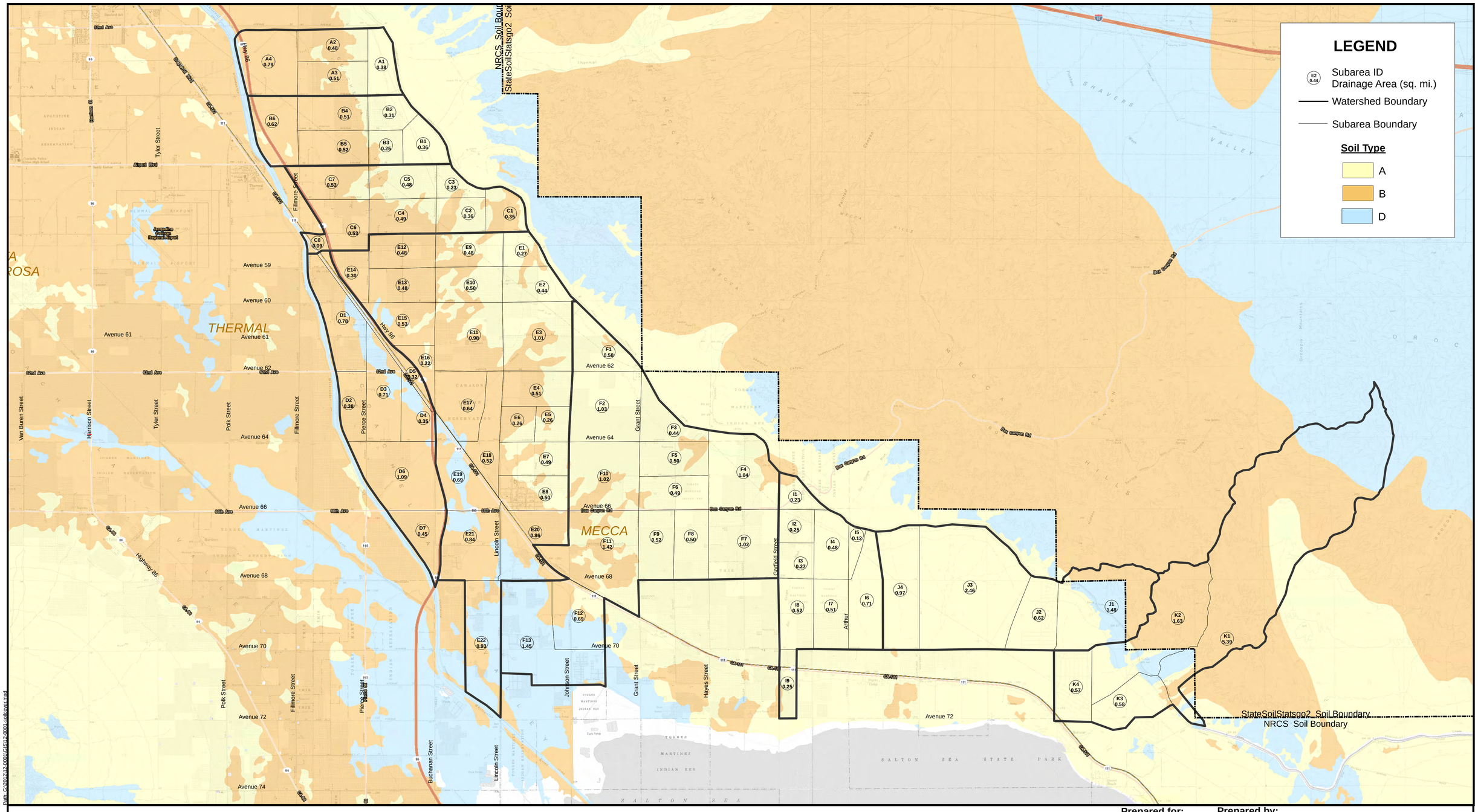



**Exhibit 3**
**Land Cover Map**
**Mecca/North Shore SMP**

**Prepared for:**
Coachella Valley Water District

**Prepared by:**
Albert A. Webb Associates
In association with Tetra Tech
Olson Engineering, Since 1976

Path: G:\2021\2412\2001\GIS\v2-2001-landcover.mxd




Path: G:\2012\2012-2001\GIS\12-2001-soilcover.mxd

0 3,500 7,000 14,000 Feet

# Exhibit 4
# Hydrologic Soil Group Map
# Mecca/North Shore Region SMP

**Prepared for:**
Coachella Valley Water District

**Prepared by:**
Albert A. Webb Associates
In association with
Tetra Tech
Olson Engineering, Since 1976

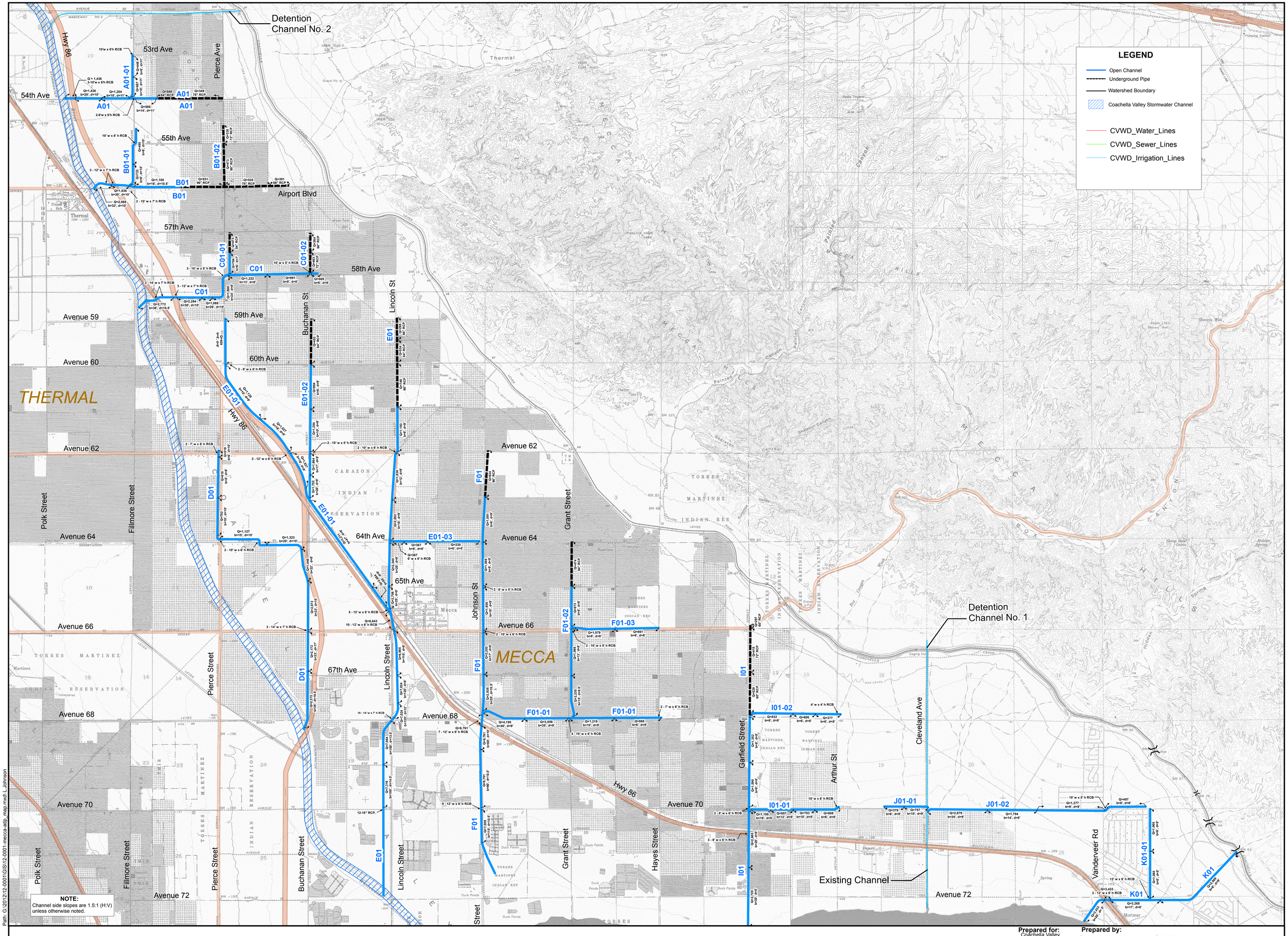



**Exhibit 5**
**SMP Facility Map**
**Mecca/North Shore Region**

Prepared for:
Coachella Valley Water District

Prepared by:
Albert A. Webb Associates
In association with
Tetra Tech
Olson Engineering

ALBERT A.
WEBB
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