ALBERT A. WEBB ASSOCIATES

OASIS/VALLEY FLOOR AREA STORMWATER MASTER PLAN

Prepared for

WATER DISTRICT

April 2015

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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 phases - the Oasis/Valley Floor Region and the Mecca/North Shore Region. This portion of the SMP addresses the Oasis/Valley Floor Region.

WEBB initially prepared an alternative analysis report entitled *"Preliminary Alternative Development Study for Oasis/Valley Region"* dated March 2014 (Ref. 7). The purpose of that study was to investigate several alternative channel types and alignments for the Oasis/Valley Floor Region in order to determine a preferred alternative. 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 the least RIGHT-OF-WAY, the least costly Operations and Maintenance (O & M), and the least risk of groundwater intrusion. Regarding alignments, Alternative 2 was selected as the recommended alternative due to a more reasonable distribution of the drainage areas, as compared with the Alternative 1 alignment and because it is more consistent with currently entitled projects. The results of the alternative development study were reviewed by CVWD and WEBB was authorized to proceed with the recommended alternative (Alternative 2A in the study).

A refined Stormwater Master Plan (SMP) level hydrologic analysis was prepared for each drainage system of Alternative 2A. Synthetic unit hydrographs were developed for the 100-year storm event following the methodologies in the CVWD Development Design Manual (Ref.1) and the Riverside County Flood Control and Water Conservation District (RCFC&WCD) Hydrology Manual (Ref.2). 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 peak discharge with 3-feet of freeboard when the 100-year water surface elevations are below the 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 a levee condition.

Underground pipes were limited to a maximum diameter of 96" (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 generally limited to 7-feet with a

minimum cover of 2-feet. However there were a few crossings where a higher box height was needed due to high backwater conditions.

A planning level capital cost analysis was prepared for the construction of the proposed SMP facilities. An Operation and Maintenance (O&M) cost analysis was also performed. O&M costs were based on a 40- year life cycle using an annual interest rate of 2%, converted to a net present value.

An overall SMP facility map was prepared showing facility locations, sizes, and flow rates (see Exhibit 5). In addition, detailed SMP plan and profile sheets were prepared for each facility. The sheets were laid out on 11" X 17" sheets at a scale of 1" = 500'.

Project Description

The Oasis/Valley Floor Region consists of areas west of the Coachella Valley Stormwater Channel (CVSC) within the eastern portion of the Coachella Valley and within Riverside County, California. The project study area is bound by Avenue 50 on the north, Coachella Canal and Santa Rosa Mountains to the west, Avenue 82 to the south, and the CVSC to the east (see Figure 1).

The Oasis/Valley Floor Region has an arid desert climate, averaging less than three inches of rain per year. However the surrounding mountains (Santa Rosa) are subject to much greater rainfall, which can produce unpredictable and damaging flash flood events throughout the Oasis/Valley Floor Region. Land use and topography consist mostly of agriculture lands, with some scattered urban areas, sloping southeast toward the CVSC and the Salton Sea.

Existing Stormwater Facilities

The backbone stormwater protection system for the Coachella Valley area is the Whitewater River Stormwater Channel/CVSC. It is a 50-mile long channel that runs from the Whitewater area north of Palm Springs to the Salton Sea. Valley Floor areas north of Avenue 65 are protected from regional flooding by the United States Bureau of Reclamation (USBR) Dikes No. 2 and No. 4, which are FEMA certified levees. Dike No. 2 extends from about Avenue 58 to the north end of Coral Mountain near Avenue 59. Dike No. 4 extends from the south end of Coral Mountain below Avenue 59 to south of Avenue 65. These dikes protect the valley floor from floodwaters discharged from the upstream canyons and provide detention reservoirs to store the floodwaters. These excess flows (maximum outflow of 400 cfs) are released through the Avenue 64 Evacuation Channel, which extends about six miles to the CVSC. The terminal reservoir of the Coachella Canal, Lake Cahuilla, provides regulatory storage of irrigation water and impounds storm waters from the mountains to the west. It also serves as a temporary reservoir for La Quinta area floodwaters.

In addition, there are numerous non-engineered stormwater/agricultural channels throughout the region that provide some level of flow conveyance to the CVSC.

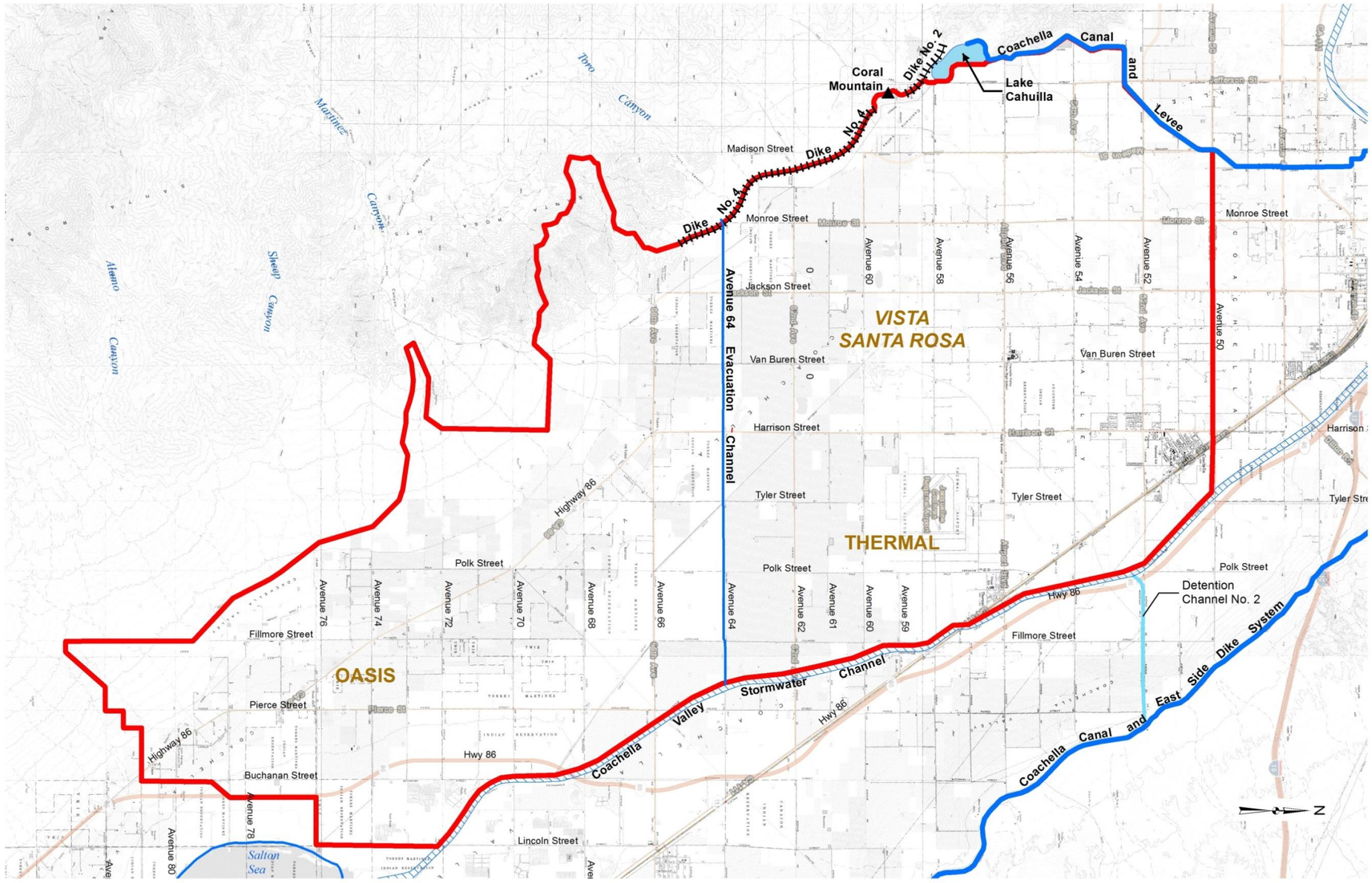
Flood Hazards

The major flood risk to the Oasis/Valley Floor Region is alluvial fan flooding from the Santa Rosa Mountains. Flash flood waters from nine canyons between Avenue 62 and the Riverside/Imperial County Line pass through the Oasis/Valley Floor region, crossing coalescing alluvial fan surfaces and discharging to the CVSC or the Salton Sea.

Local drainage area flooding is another concern for the Oasis/Valley Floor Region. Numerous unimproved open channels exist in the area with limited flow capacities and undersized culverts 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 are an unlined earthen channel. Because of the limited channel capacity of the CVSC and the unstable/unlined channel banks, the CVSC poses a riverine flooding hazard.

As a result of the potential flood hazards, the majority of the areas within the Oasis\Valley Floor Region are designated as flood Zone A, Zone X, and Zone D, as shown on the Flood Insurance Rate Maps (FIRMs) published by the Federal Emergency Management Agency (FEMA). Zone A designates areas within the Special Flood Hazard Area (SFHA) subject to inundation by the 1% annual chance flood (also known as the base flood). No base flood elevations are determined for Zone A. Zone X designates areas subject to inundation by the 0.2% annual chance flood and\or areas of 1% annual chance flood with average depths of less than one foot and\or areas protected by levees from the 1% annual chance flood. Zone D designates areas in which flood hazards are undetermined, but possible.

Figure 1 - Vicinity Map



Design Criteria

The design criteria for this SMP were developed by WEBB in conjunction with CVWD. Webb Associates collaborated closely with CVWD personnel 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.

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 were to conduct the hydrology analysis for the study area.

Precipitation Intensity Pattern

Input hyetograph for calculation of the 100-year peak flows were constructed by nesting the 100-year amounts 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' (for cost estimating purposes)
RCP shall have at least 2-feet of cover and contain its hydraulic grade line at least 2' 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 contain its hydraulic grade line 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 Oasis/Valley Floor SMP consists of nine drainage systems (see Figure 2). Four of these systems (Lines L, M, N, and O1) drain to the CVSC, Line O2 and O3 drain to 68TH Avenue Channel (proposed facility -Tetra Tech), Lines P and Q drain directly into the Salton Sea, and Line R drains to Kings Road Channel (proposed facility - Tetra Tech design).

Line L Storm Drain System consists of a mainline and one lateral. Line L01 begins at Jackson Street and runs along the north side of Avenue 54 east direction and turns 90 degrees south along the west side of Van Buren Street. Then the channel crosses to the east side of Van Buren Street near Avenue 55. The channel continues south and turns 90 degrees at Avenue 56/Airport Blvd., then continues east, crossing Harrison Street, Shady Lane, and Tyler Street. The channel turns 90 degrees along the east side of the Thermal Airport south then turns 90 degrees easterly on Avenue 56 street extension and outlets to the CVSC. The overall distance is approximately 6.9 miles. Lateral L01-01 begins at Jackson Street on the north side and runs east along Avenue 56. At approximately 1,000 feet west of Van Buren Street, the channel crosses onto the south side of Avenue 56/Airport Blvd. The channel then confluences with Line L01 near the intersection of Van Buren Street and Avenue 56/Airport Blvd. The overall distance is approximately 1.1 miles.

Line M Storm Drain System consists of a mainline and two laterals. Line M01 starts at Avenue 58 and runs along the west side of Jackson Street south direction, turning 90 degrees east at Avenue 60. The channel continues on the north side of Avenue 60 crossing Van Buren Street, Harrison Street, Polk Street, and Fillmore Street, then outlets to the CVSC. The overall distance is approximately 6.3 miles. Lateral M01-01 begins at Avenue 58 and conveys flows south along the west side of Harrison Street and confluences with Line L01 near the intersection of Avenue 60 and Harrison Street. The overall distance is approximately 1-mile. Lateral M01-02 begins at Avenue 58 and conveys flows south along the east side of Van Buren Street and confluences with Line M01 near the intersection of Avenue 60 and Van Buren Street. The overall distance is approximately 1-mile.

Line N Storm Drain System consists of a mainline and three laterals. Line N01 starts at Avenue 62 and runs along the west side of Jackson Street south turning 90 degrees to the east then crosses Jackson Street. The channel continues east along the north side of Avenue 64, crossing Van Buren Street, Harrison Street, Tyler Street, Polk Street, and Fillmore Street, then outlets to the CVSC. The overall distance is approximately 6.7 miles. Lateral N01-01 begins at Avenue 62 and conveys flows southerly along the west side of Fillmore Street and confluences with Line N01 at the intersection of Avenue 64 and Fillmore Street. The overall distance is approximately 1-mile. Lateral N01-02 begins at Avenue 62 and conveys flows south along the west side of Harrison Street and confluences with Line N01 at the intersection of Avenue 64 and Harrison Street. The overall distance is approximately 1-mile. Lateral N01-03 begins at Avenue 62 and conveys flows south along the west side of Van Buren Street and confluences with Line N01 at the intersection of Avenue 64 and Van Buren Street. The overall distance is approximately 1-mile.

Line O1 Storm Drain System consists of a mainline and one lateral. Line O01 begins at approximately 1,000 feet east of Jackson Street and runs along the north side of Avenue 66 east, crossing Van Buren Street and Harrison Street. At the Tyler Street crossing, the channel alignment then changes to the south side of Avenue 66 and continues east crossing Polk Street and Fillmore Street, then outlets to the CVSC. Line O01-01 begins at Harrison Street (Hwy 86) and conveys the flow northeast following an existing channel alignment, the channel turns north, and then makes the confluence with Line O01 at the intersection of Tyler Street and Avenue 66. The overall distance is approximately 0.86 miles.

Line O2 Storm Drain System consists of a single mainline. Line O02 begins at Avenue 70 and runs along the west side of Fillmore Street north and outlets to the Avenue 68 Channel. The overall distance is approximately 1.1 miles.

Line O3 Storm Drain System consists of a mainline and one lateral. Line O03 begins at the intersection of the Tyler Street extension and Avenue 72 and runs along the north side of Avenue 72 east. The channel turns 90 degrees to the north at Polk Street and runs along the west side of Polk Street. The channel continues north, crossing Harrison Street (Hwy 86)/Avenue 70 intersection, continues for another 3,000 feet, then crosses to the east side of Polk Street. The channel then runs north along the east side of Polk Street then confluences with the Avenue 68 Channel. The overall distance is approximately 3-miles. Line O03-01 starts at the intersection of the Tyler Street extension and Avenue 70. The channel runs east along the north side of Avenue 70, crosses Harrison Street (Hwy86) then confluences with Line O03 near the intersection of Polk Street and Harrison Street. The overall distance is approximately 1-mile.

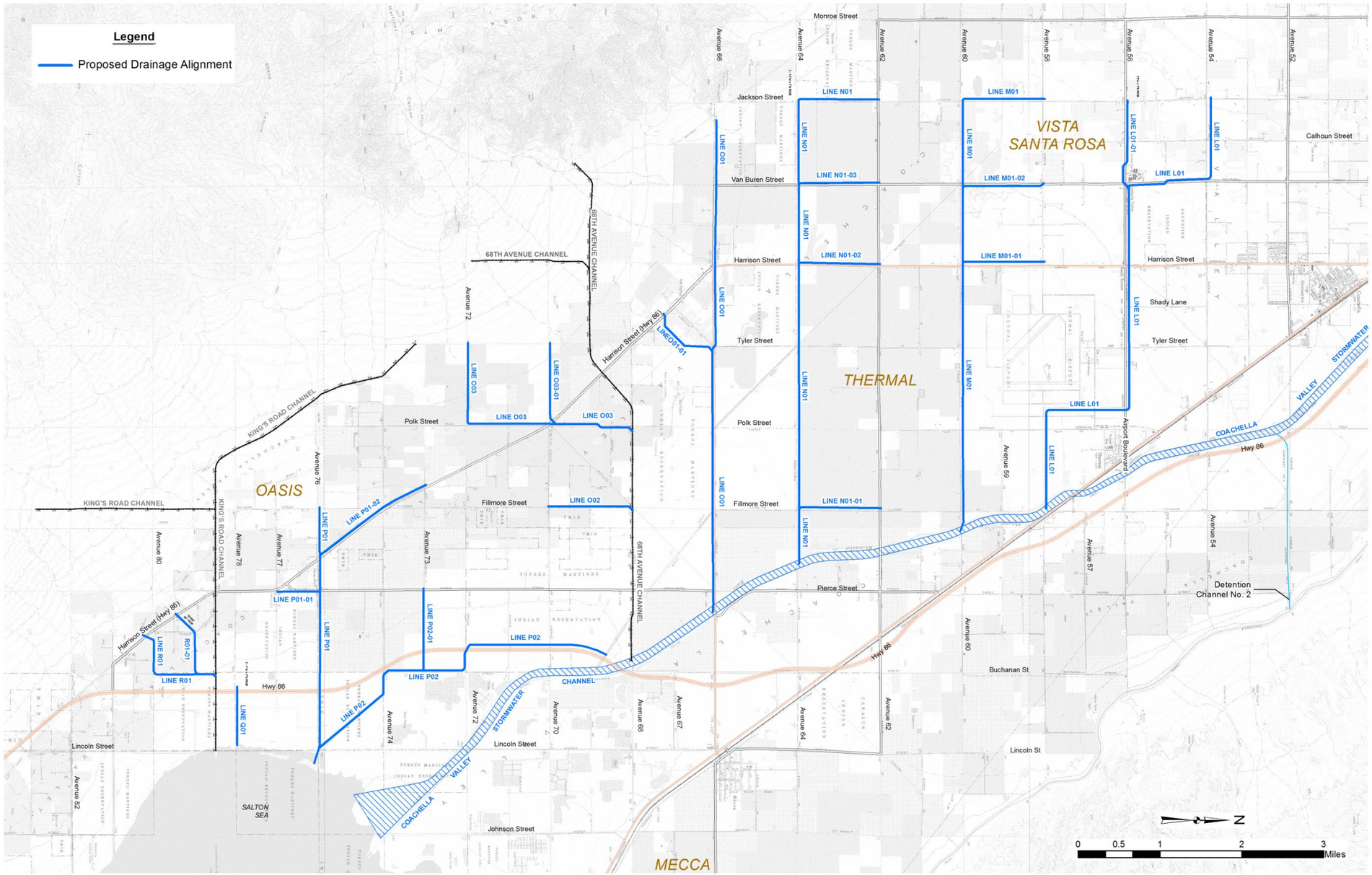
Line P Storm Drain System consists of two mainlines and three laterals. Line P01 begins at Fillmore Street and runs along the north side of Avenue 76 in an easterly direction, crossing Harrison Street, Pierce Street, Highway 86 and outlets to the Salton Sea. The overall distance is approximately 3.1 miles. Lateral P01-01 starts at Avenue 77 and runs along the east side of Pierce Street north and confluences with Line P01 at the intersection of Avenue 76 and Pierce Street. The overall distance is approximately 0.53 miles. Lateral P01-02 begins at Avenue 73 and runs along the west side of Harrison Street southeast. The channel crosses Avenue 74 and continues until it confluences with Line P01 near the intersection of Avenue 76 and Harrison Street. The overall distance is approximately 1.6 miles. Line P02 begins at approximately 0.7 miles north of Avenue 70 along the west side of Highway 86. The channel runs in a south direction, crossing Avenue 70, then crosses diagonally at the intersection of Highway 86 and Avenue 72. The channel then runs easterly and turns 90 degrees to the south at Buchanan Street. The channel runs along the west side of Buchanan Street, then follows an existing channel alignment,

crosses Buchanan Street, runs westerly for a short distance, then turns in a south easterly direction following an existing channel alignment and confluences with Line P01. The overall distance is approximately 4.3 miles. Lateral P02-01 starts at Pierce Street and runs along the north side of Avenue 73 extension in an easterly direction, crossing Highway 86 and confluences with lateral P02 at the intersection of Buchanan Street and Avenue 73. The overall distance is approximately 1-mile.

Line Q Storm Drain System consists of a single mainline storm drain. Line Q01 begins at Highway 86 follows an existing channel alignment in an easterly direction and outlets at the Salton Sea. The overall distance is approximately 0.72 miles.

Line R Storm Drain System consists of a mainline and one lateral. Line R01 begins at Harrison Street south of Avenue 80 and follows an existing channel alignment along a northeast direction for approximately 750-feet then turns in an easterly direction along Avenue 80. The Channel continues for approximately 2,000 feet and turns 90 degrees to the north following the existing channel alignment, then confluences with Kings Road Channel. The overall distance is approximately 1.3 miles. Lateral R01-01 starts at Harrison Street and follows an existing channel alignment in a northeast direction for approximately 1,200 feet, then turns east and confluences with Line R01. The overall distance is approximately 0.84 miles.

Figure 2 – Oasis /Valley Floor 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. The US Army Corps of Engineers Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS) was used in determining the 100-year discharges. CVWD currently recommends HEC-HMS as the hydrologic modeling software per their 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. 3). The input hyetograph for calculating the 100-year peak flows was constructed by nesting the 100-year amounts 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 in the storm the period of peak intensity will occur. Using 50% will result in a balanced storm pattern with the peak intensity occurring 3-hours after the beginning of the 6-hour duration storm (Ref. 4). Depth-Area Reduction Factors were calculated in accordance with the recently adopted 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 unit hydrographs.

Watershed Delineations

Nine watersheds were refined as part of the alternative analysis evaluation. Four of these watersheds (L, M, N, and O1) drain to the CVSC, watersheds O2 and O3 drain to the proposed 68TH Avenue Channel, watersheds P and Q drain directly into the Salton Sea, and watershed R drains to the proposed Kings Road Channel. The watersheds, at their outfalls, vary in size from approximately 2 to 18 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) were used in determining the watershed boundaries for the majority of the study area. It consisted of 2-foot contours and was referenced as Airborne 1 May 2010 LiDAR. For areas that lack LiDAR coverage, (portions of the Santa Rosa Mountains), USGS 7.5 minute topographical maps were used.

The Coachella Valley Canal/USBR Dikes No. 2 and No. 4 creates the upstream drainage boundary along the upper west side of the study area, providing 100-year flood protection from the undeveloped hills and mountains to the west. Along the lower western side of the study area, proposed collector channels

(68TH Avenue Channel and Kings Road Channel) will intercept the alluvial fan flooding from the Santa Rosa Mountains (see "Alternative Study for Oasis Area Final Report" prepared by Tetra Tech, May 2014).

Within the valley floor area, surface water runoff generally flows as unconfined sheet flow in a southwesterly direction across mostly agricultural fields towards the CVSC at slopes ranging between 0.2% and 1.0%. Drainage areas delineations were developed assuming that the local streets and proposed drainage facilities provide adequate conveyance to intercept 100% of the surface runoff from the 100-year storm event.

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 are 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 Oasis/Valley Floor study area varies very little due to the lack of orographic differences in the north-south direction. The 100-year 6-hour rainfall averages between 2.79 (northeastern Oasis area) to 2.65 inches (southwestern Oasis area), depending on its location (see Figure 3). Differences in the east-west direction are slightly more pronounced due to the higher elevations of the Santa Rosa foothills as compared to the valley floor elevations. 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 the rainfall depths. The coordinates of the study area centroid were calculated (33.5801 N. Latitude, 116.1746 W. Longitude) and used as input. Mean precipitation estimates were obtained for 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

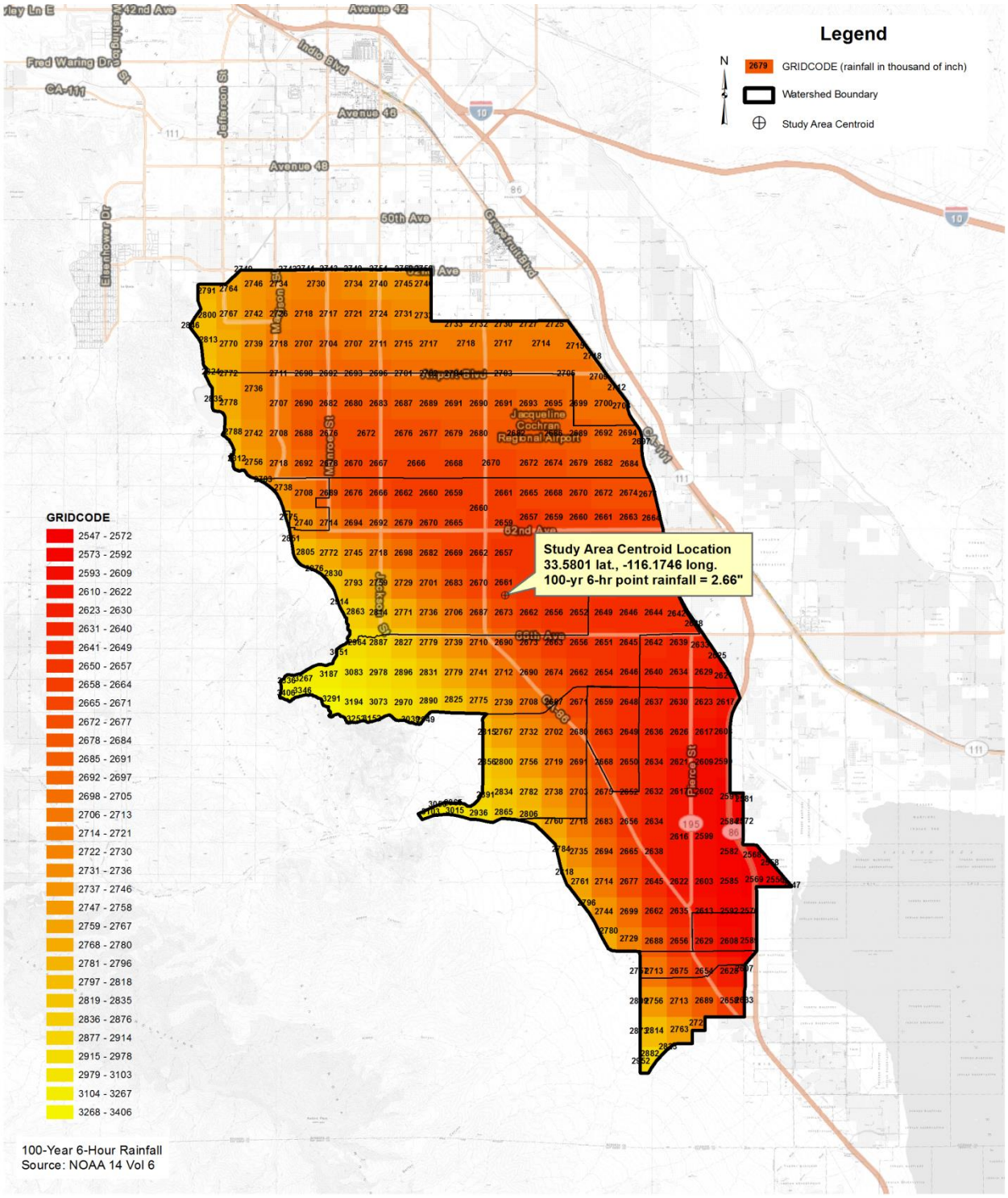


Table 2-1: NOAA 14 100-Year Point Rainfall Depth in Inches[1]								
Study Location	Centroid Location		5-min (in)	15-min (in)	1-hr (in)	2-hr (in)	3-hr (in)	6-hr (in)
Oasis/Valley Floor	Latitude (33.5822)	Longitude (-116.0636)	0.365	0.632	1.24	1.66	2.01	2.66

[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 exceed 10 square miles in accordance with the newly adopted 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 relationship curve (see Appendix A) was used to determine the DARFs. Table 2-2 summarizes the DARFs used in this study. For watersheds M and O1, applying the DARF factor resulted in lower peak discharge at the downstream node (due to the lower point rainfall values) as compared to the upstream node with a smaller tributary area but using the DARF 1.0. To be conservative, DARFs were not applied to these watersheds due to their close proximity to the 10 square mile limitation.

Table 2-2: Depth-Area Reduction Factors (DARFs)									
Watershed Name	L	M	N	O1	O2	O3	P	Q	R
Drainage Area (sq mi)	8.0	10.9	17.7	10.6	1.8	3.4	13.7	0.9	2.5
DARFs	1.00	0.915	0.874	0.917	1.00	1.00	0.897	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 based on an interpolation of the existing land as shown in the National Agriculture Imagery Program (NAIP) 2011 aerial photo (Exhibit 2). For hydrologic modeling purposes, the land uses need to be classified based on their percent imperviousness and ground cover type. Six land use (cover

type) classifications were developed for the study area (see Exhibit 3) along with their associated RI numbers (see Table 2-3).

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
Agricultural/Fallow Condition	0	76	85	92
Barren	0	78	86	93
Commercial/Barren[(1)]	90	78	86	93
Natural/Open Brush-Poor Condition	0	62	76	88
Residential	50	32	56	87
Golf Courses	0	50	68	79

(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. In general, the mountainous areas are Soil Type D, which has the highest runoff potential. The lower regions and valley areas are either Soil Type A or Soil Type B, which have the lowest runoff potential (see Exhibit 4).

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 ArcView Geographic Information System (GIS) computer program makes this otherwise laborious task manageable. Unique soil-land use polygons are constructed and an averaging 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 and area-averaged RI for each sub-basin and corresponding infiltration rates are included in Appendix D.

Channel Routing

Channel routing is used in flood hydrology 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 urban channels, the recommended method is Kinematic Wave routing. The Kinematic Wave method is a simplified form of the equation of motion (Ref. 5). 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, no attenuation. The amount 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 output table 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)
Line L01	L1	Jackson St.	0.99	763
Line L01	CP_L3	Van Buren St.	1.98	1476
Line L01	CP_L5	Lateral L01-01	4.05	2920
Line L01	CP_L6	Harrison St.	5.05	3396
Line L01	CP_L7	Tyler St.	6.06	3964
Line L01	CP_L8	Avenue 56	6.82	4263
Line L01	CP_L9	CVSC	7.99	4649
Lateral L01-01	L4	Jackson St.	1.08	799
Line M01	M1	Avenue 58	1.01	754
Line M01	CP_M5	Jackson St.	2.08	1438
Line M01	CP_M6	Lateral M01-02	4.10	2755
Line M01	CP_M7	Lateral M01-01	6.12	4067
Line M01	CP_M8	Thermal Airport	9.46	5933
Line M01	CP_M9	CVSC	10.89	6493
Lateral M01-01	M2	Avenue 58	1.01	752
Lateral M01-02	M3	Avenue 58	1.01	835
Line N01	N1	Avenue 62	1.05	772
Line N01	CP_N2	Avenue 63	1.96	1425
Line N01	CP_N3	Jackson St.	2.63	1809
Line N01	CP_N4	e/o Jackson St.	3.94	2566
Line N01	CP_N6	Lateral N01-03	5.98	3874
Line N01	CP_N7	e/o Van Buren St.	6.95	4483
Line N01	CP_N9	Lateral N01-02	9.46	6120
Line N01	CP_N11	Tyler St.	11.46	6509
Line N01	CP_N14	Thermal Motor Sports Ch.	13.71	7660
Line N01	CP_N15	Polk St.	14.12	7780
Line N01	CP_N17	Lateral N01-01	16.91	8979
Line N01	CP_N18	CVSC	17.72	919
Lateral N01-01	N16	Avenue 62	1.37	907
Lateral N01-02	N8	Avenue 62	1.00	794
Lateral N01-03	N5	Avenue 62	1.01	717
Line O01	O1-1	Jackson St.	3.00	2373
Line O01	CP_O1-2	w/o Harrison St.	4.27	3145
Line O01	CP_O1-3	Harrison St.	5.37	3772

Table 2-4: 100-Year Peak Discharge Summary Table (Cont.)

Drainage	Concentration	Location	Area	Discharge

System Name	Point ID		(sq mi)	(cfs)
Line O01	CP_O1-5	Lateral O01-01	6.64	4429
Line O01	CP_O1-6	Polk St.	7.76	5096
Line O01	CP_O1-8	Fillmore St.	9.72	6298
Line O01	CP_O1-9	Pierce St./CVSC	10.56	6792
Lateral O01-01	O1-4	Highway 86	0.78	845
Line O02	O2-1	Avenue 70	0.75	791
Line O02	CP_O2-2	68TH Ave. Channel	1.75	1619
Line O03	O3-1	Tyler St.	0.82	565
Line O03	CP_O3-2	Avenue 72	1.32	816
Line O03	CP_O3-4	Lateral O03-01	3.35	2400
Lateral O03-01	O3-3	Tyler St.	1.02	840
Line P01	CP_P4	Fillmore St.	2.37	1845
Line P01	CP_P5	Lateral P01-02	4.12	2975
Line P01	CP_P7	Lateral P01-01	5.38	3892
Line P01	CP_P9	Highway 86	7.21	5205
Line P01	CP_P15	Salton Sea Outlet	13.69	7452
Lateral P01-01	P6	Pierce St.	1.16	990
Lateral P01-02	P1	Avenue 73	0.59	455
Lateral P01-02	CP_P2	Avenue 74	1.49	1098
Line P02	P10	Avenue 70	1.81	1138
Line P02	CP_P11	Avenue 72	3.60	2076
Line P02	CP_P12	Buchanan St.	4.80	2843
Line P02	CP_P13	Avenue 13	6.13	3672
Line P02	CP_P14	Avenue 74	6.13	3625
Lateral P02-01	P13	Pierce St.	0.83	773
Line Q01	Q1	Highway 86	0.91	777
Line R01	R1	Harrison St./(Hwy86)	1.26	969
Line R01	CP_R2	Avenue 80	1.43	1033
Line R01	CP_R3	n/o Avenue 80	1.58	1107
Line R01	CP_R4	Lateral R01-01	2.45	1744
Lateral R01-01	R4	Harrison St./(Hwy86)	0.71	557

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 and revised during the final design phase of each system to ensure the most efficient solution 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 profile and pressure gradients in open or closed conduits with irregular or regular shape sections. The flow in the system is allowed to alternate between supercritical, subcritical, or pressure flow in a sequence.

Water Surface Control Elevations

The starting water surface elevations for Lines L01, M01, N01 and O01 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 HEC-RAS output file are included in Appendix I.

For Lines O02 and O03, the starting water surface elevations were taken from the proposed 68TH Avenue Storm Drain prepared by Tetra Tech, May 2014. Line R01 starting water surface elevation was taken from Kings Road Storm Drain prepared by Tetra Tech, May 2014.

For the channels discharging directly into the Salton Sea (Lines P01 and Q01), starting water surface elevations were based on an existing lake elevation of -230 as estimated from the 2010 LiDAR data and 2012 Eagle Aerial Imaging aerial photo.

Open Channels

When the 100-year water surface within the channel is below the adjacent ground elevations (incised channels), 3-feet of freeboard is required and when the 100-year water surface is above the adjacent ground elevations (leveed channels), four feet of freeboard is required. All open channel sections are concrete lined on the sides and bottom. The minimum channel slope is 0.0010, with 1.5:1 side slopes, a minimum bottom width (B) of 6-feet, and a 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). When open channels cross major roads, culverts will be necessary to convey the flows beneath the road. 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.

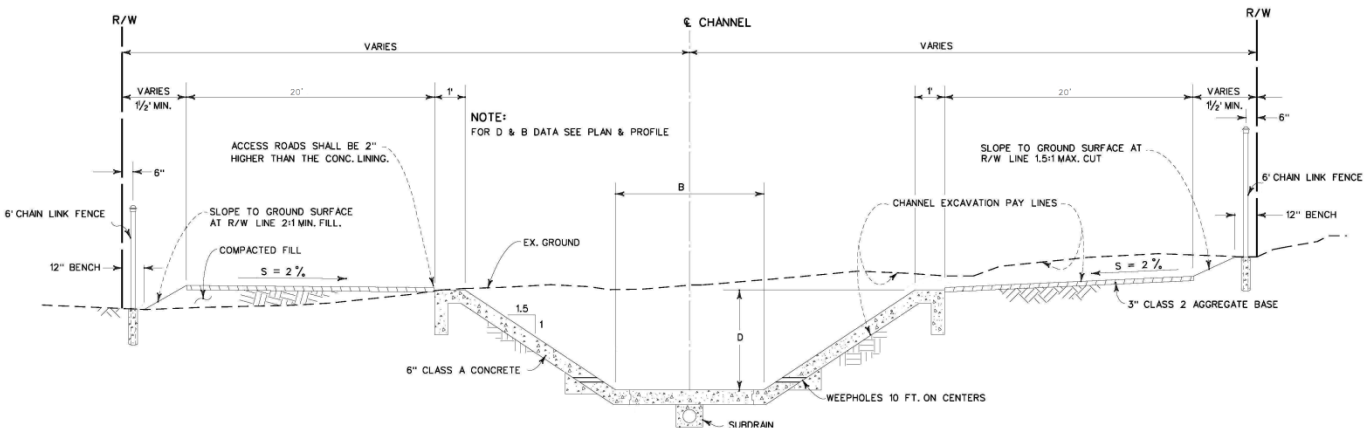


Figure 4 – Typical Concrete Trapezoidal Channel

Closed Conduits

RCPs were proposed when the capacity of a 96-inch diameter, or smaller, pipe can convey the 100-year peak flow. When the hydraulic capacity of a 96-inch RCP was exceeded, open channels were used. Other limitations may be due to height restriction of the existing ground. RCPs require 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" of 0.013. Nominal pipe sizes were increased in 6-inch diameter increments when selecting the proposed pipe sizes.

Single and multi-cell RCBs were used for most culvert crossings due to the capacity limitations of RCPs. The minimum culvert slope of 0.0025 was used and was hydraulically analyzed using a Manning's "n" of 0.014. RCBs require 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

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 results and channel improvements, as well as identifying constraints associated with roads and other man made features. WSPG input and output files are included Appendix H.

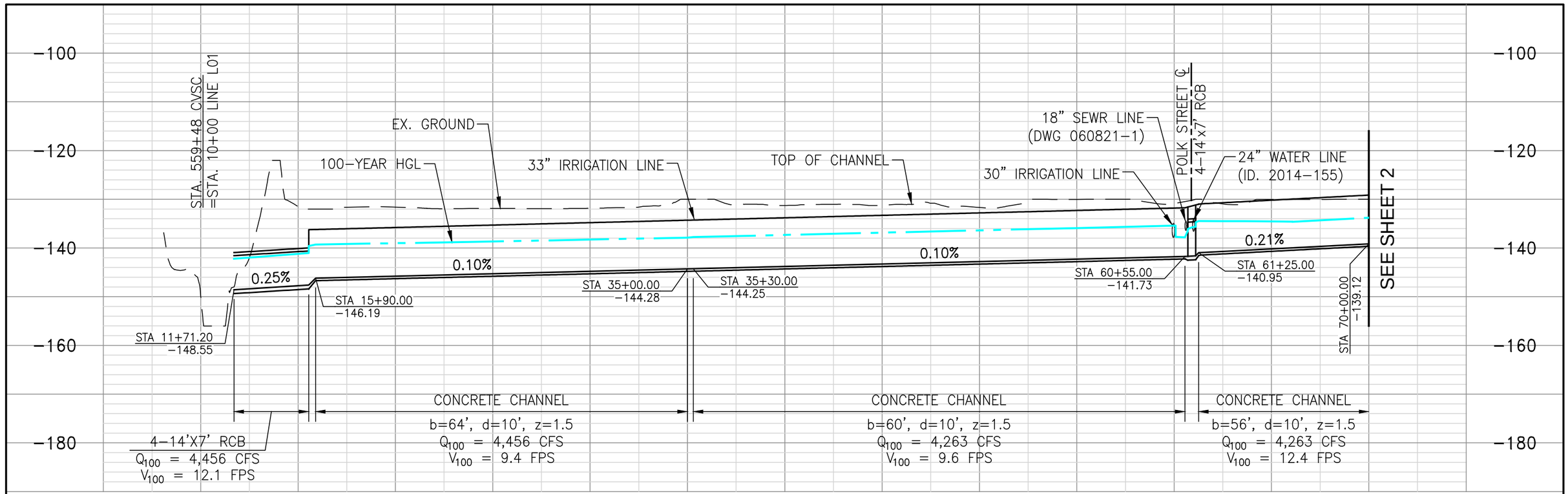
SECTION 4 – SMP Exhibit Map and Plan and Profile Sheets

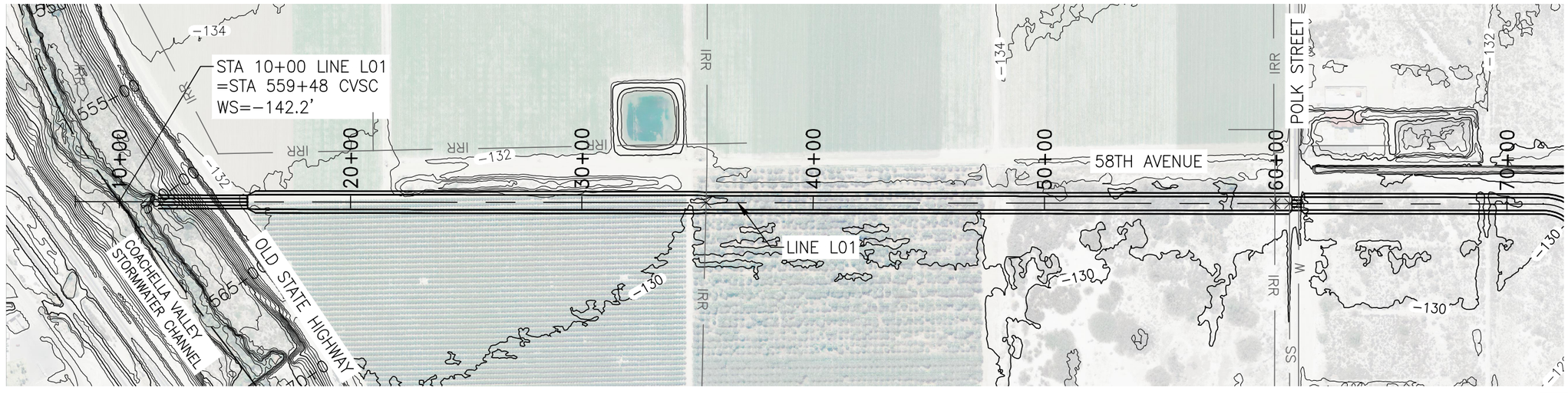
SMP Exhibit Map

An overall SMP Facility Map (Exhibit 5) has been prepared for the Oasis/Valley Floor study area. The exhibit shows the facility locations, sizes, and 100-year flow rates.

Plan and Profile Sheets

Results of the WSPG analysis are presented on the SMP Plan and Profile Sheets (Exhibit 6) following this section. 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 plan and profile sheets were prepared on 11” x 17” sheets at a scale of 1” = 500’.





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APPROVED BY:
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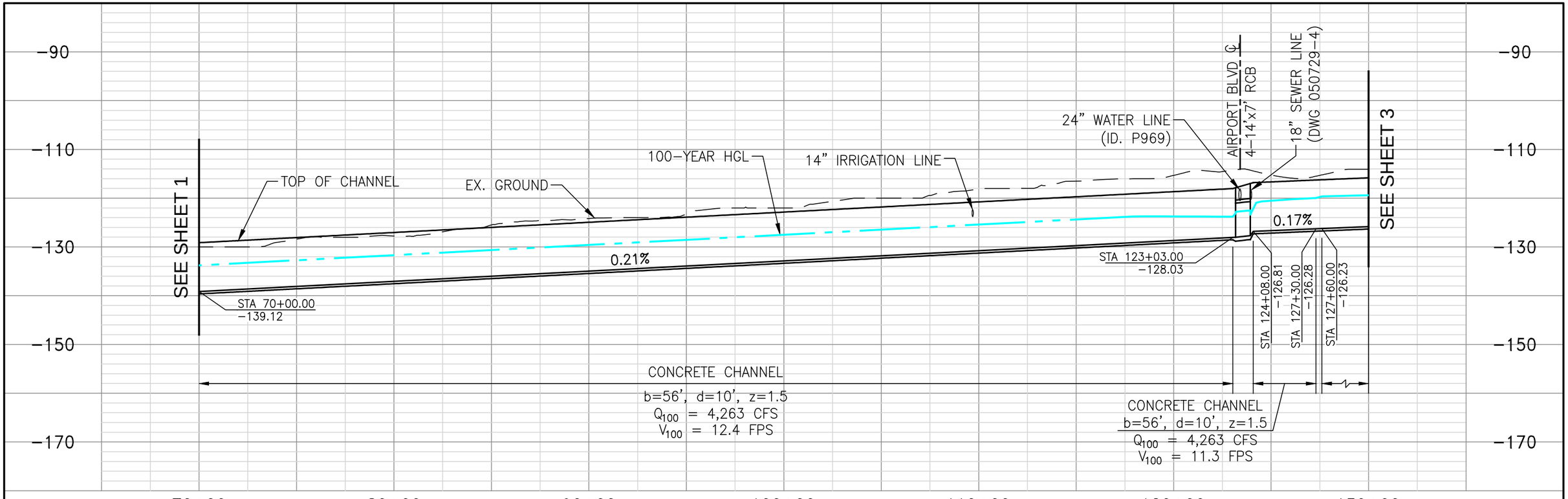

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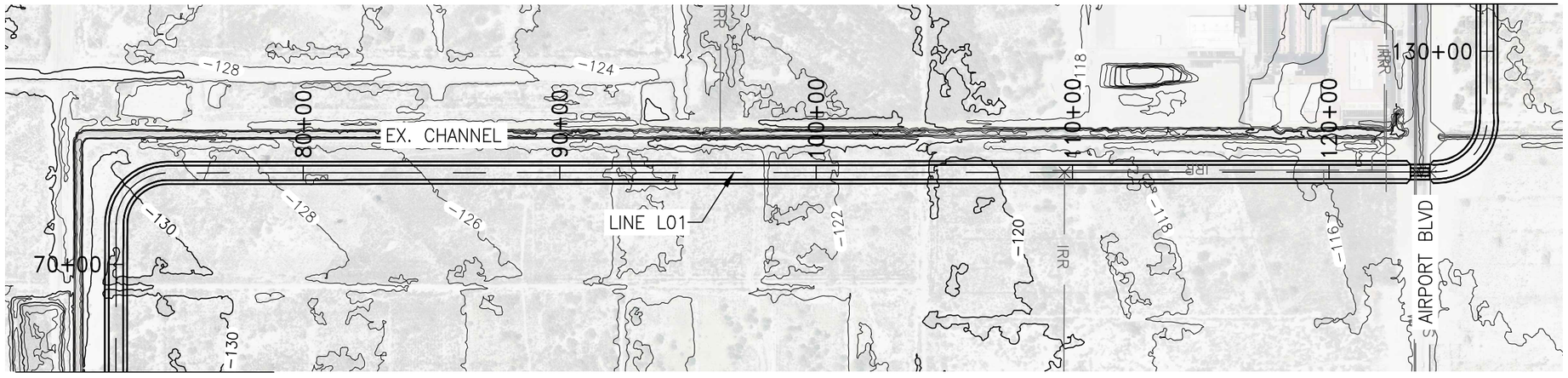

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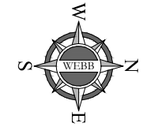

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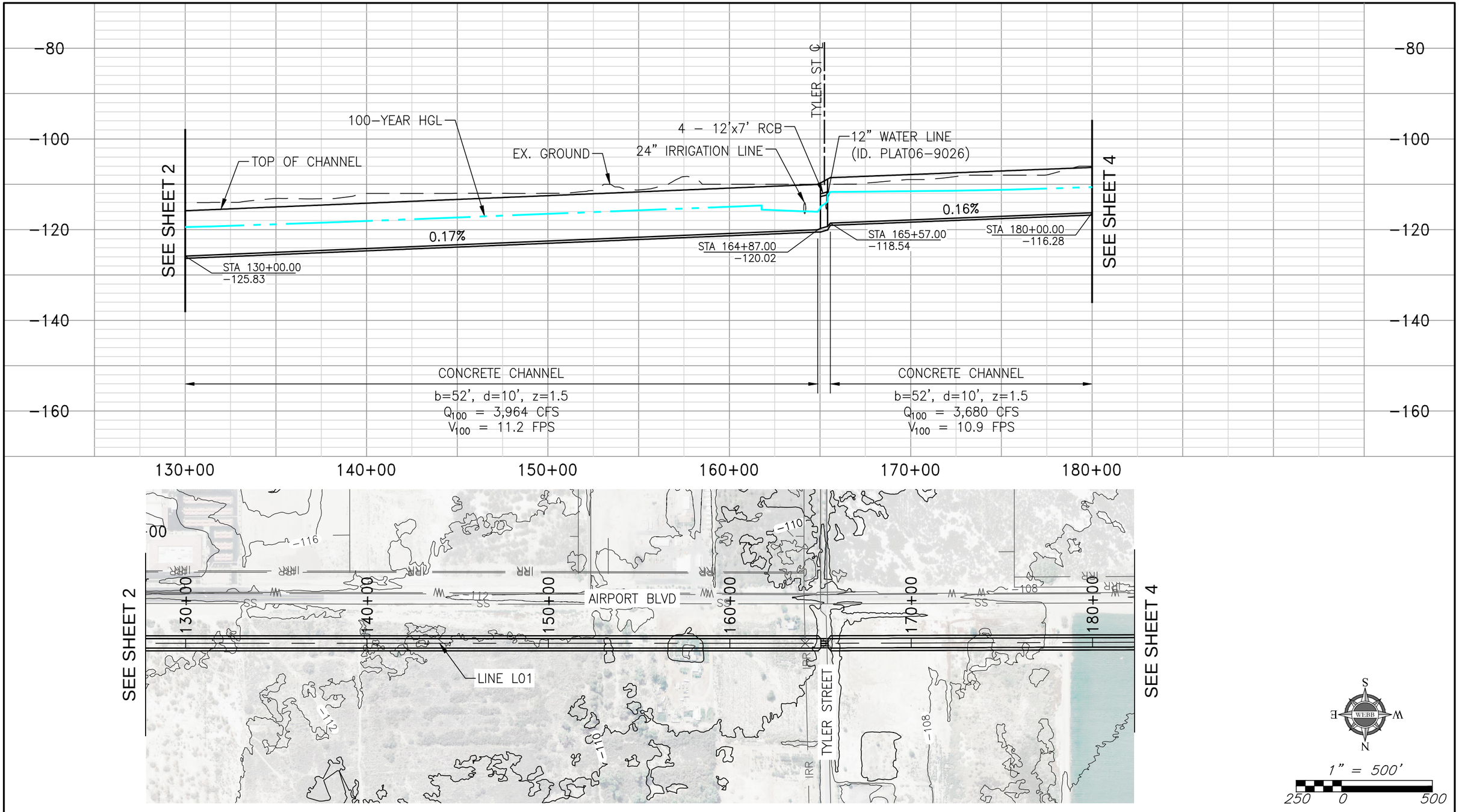

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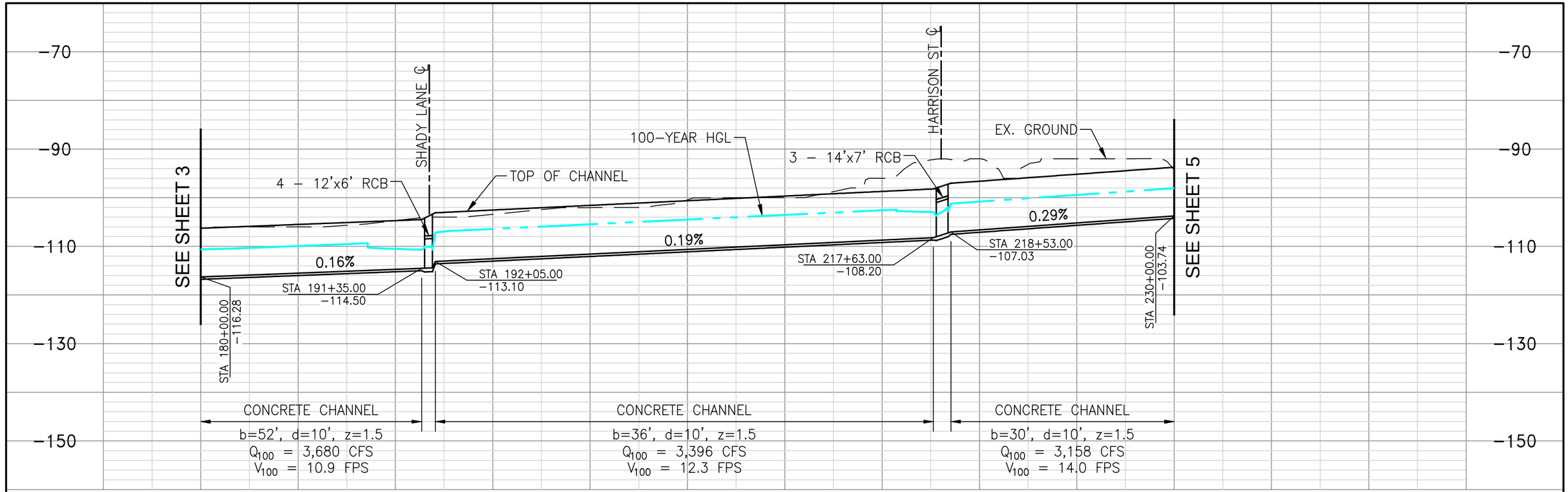

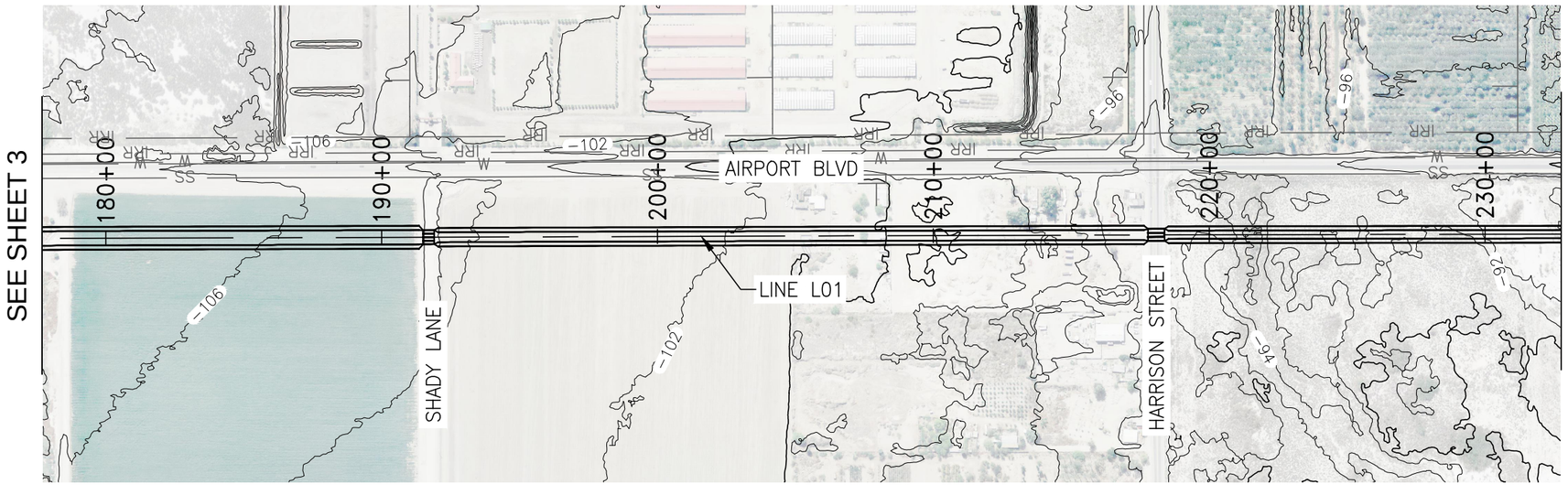

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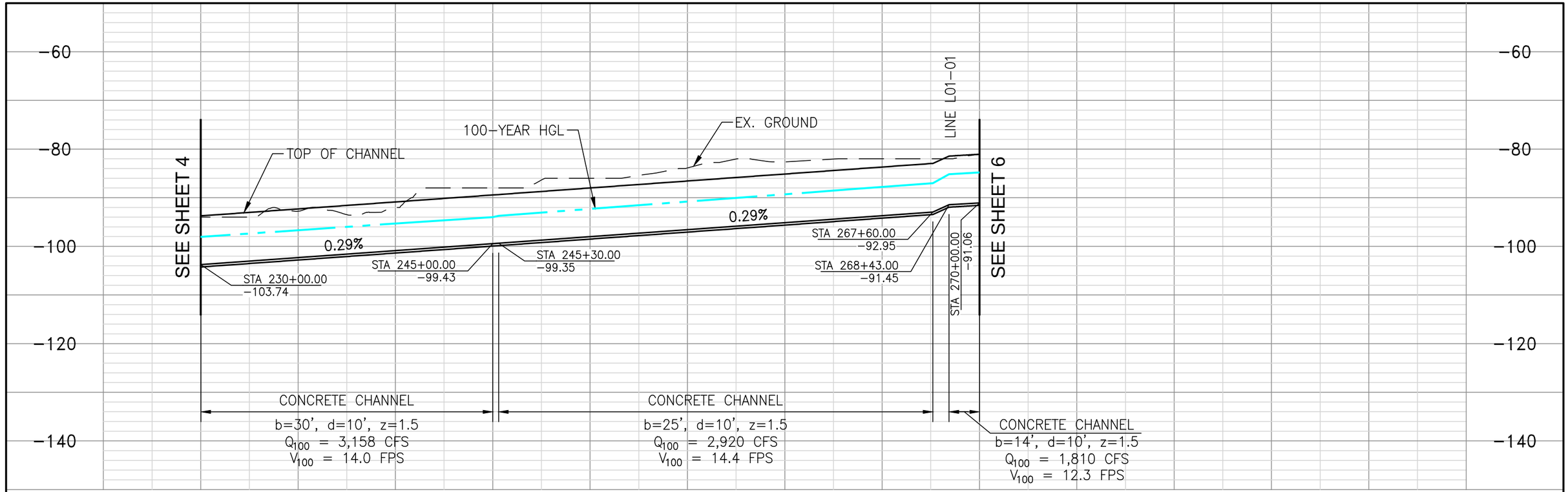

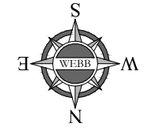

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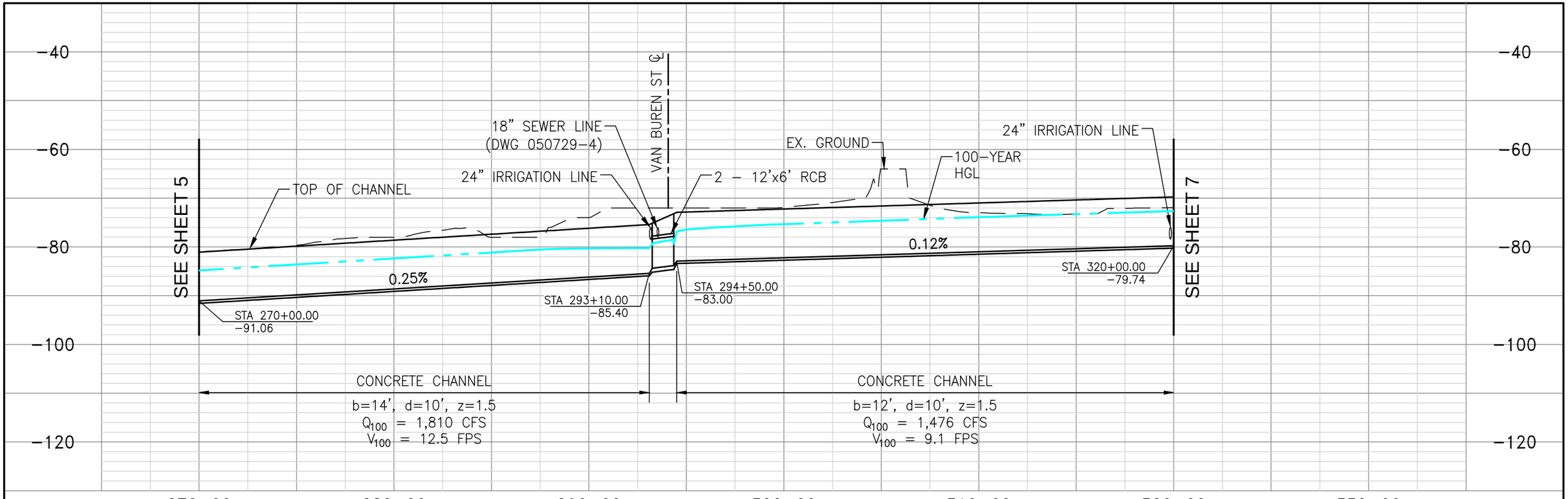

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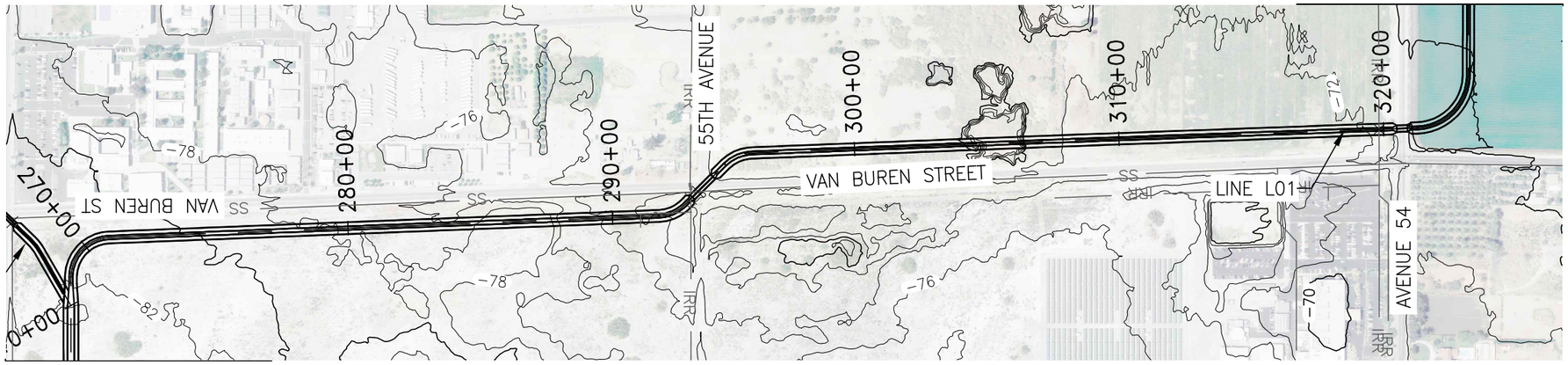

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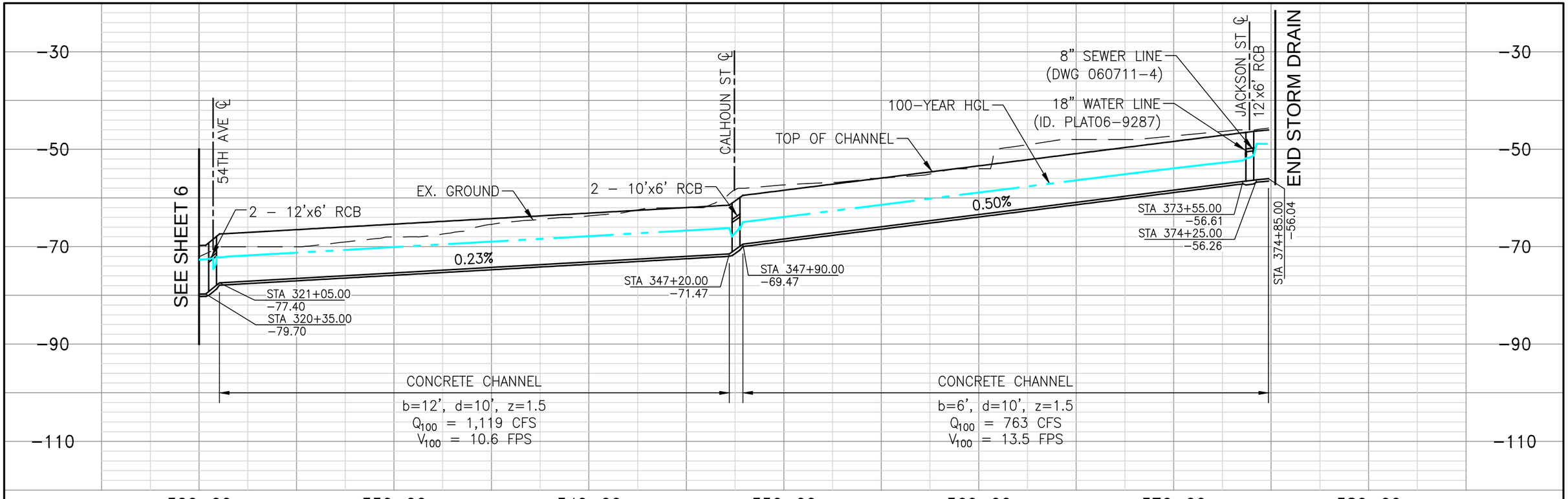

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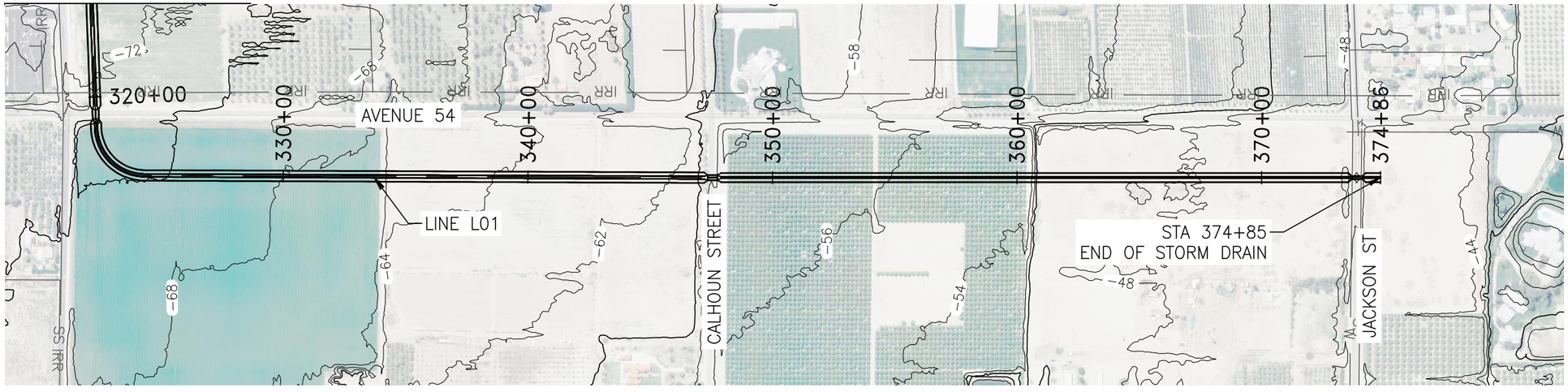

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LINE L01
STA 320+00 - STA 374+85

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DRAWING NO. LN001
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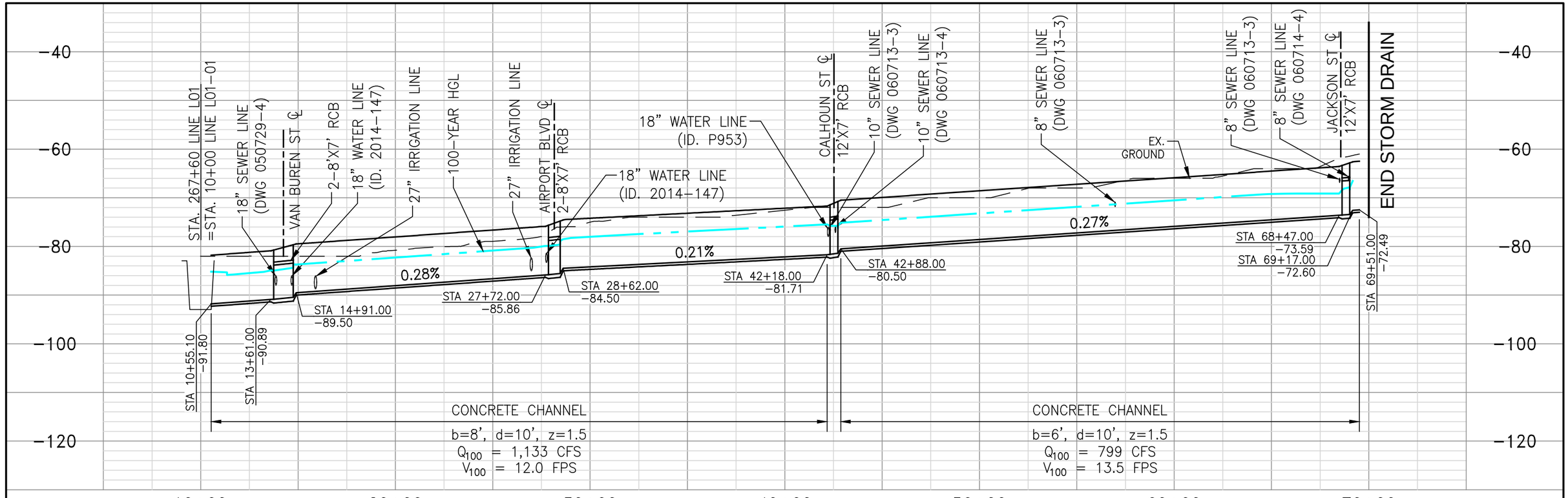

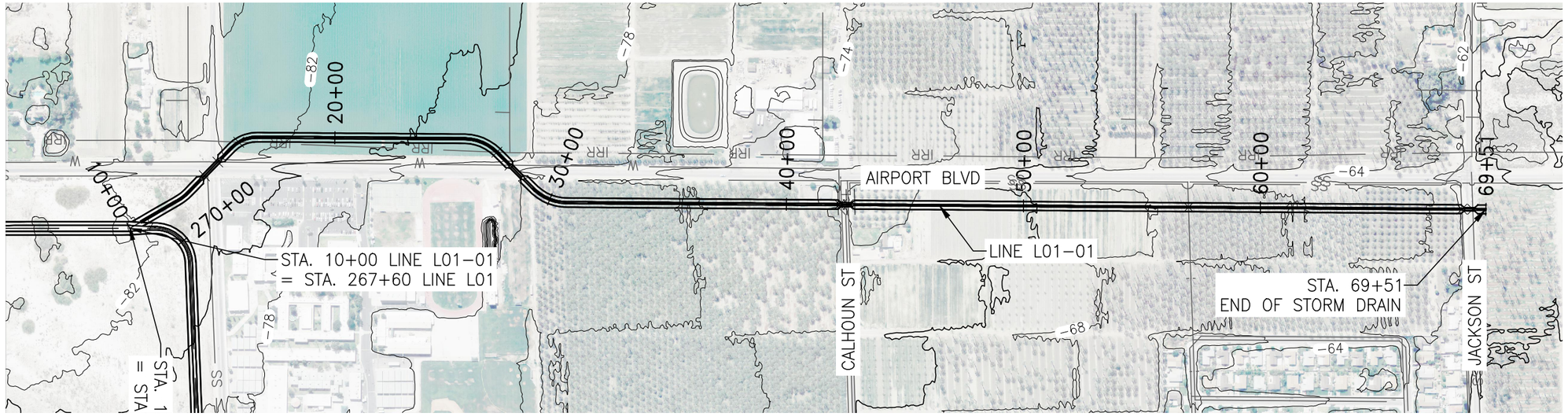

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LINE L01-01
STA 10+00 - STA 69+51

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DRAWING NO. LN001
SHEET NO. 8 OF 8

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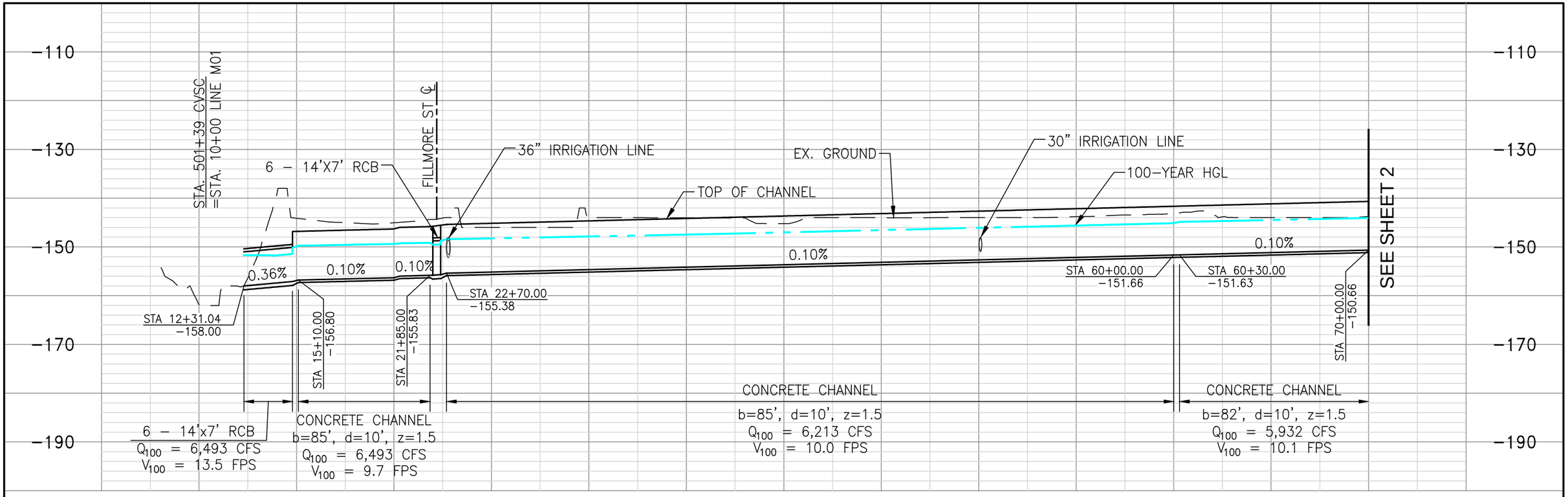

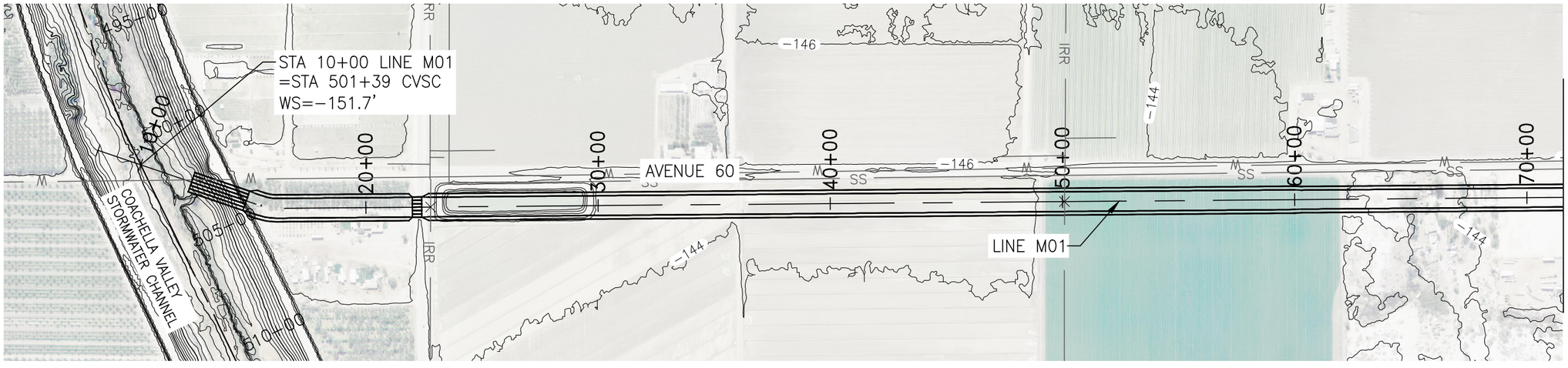

1" = 500'

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 M01
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

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE M01
STA 10+00 – STA 70+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 1 OF 8

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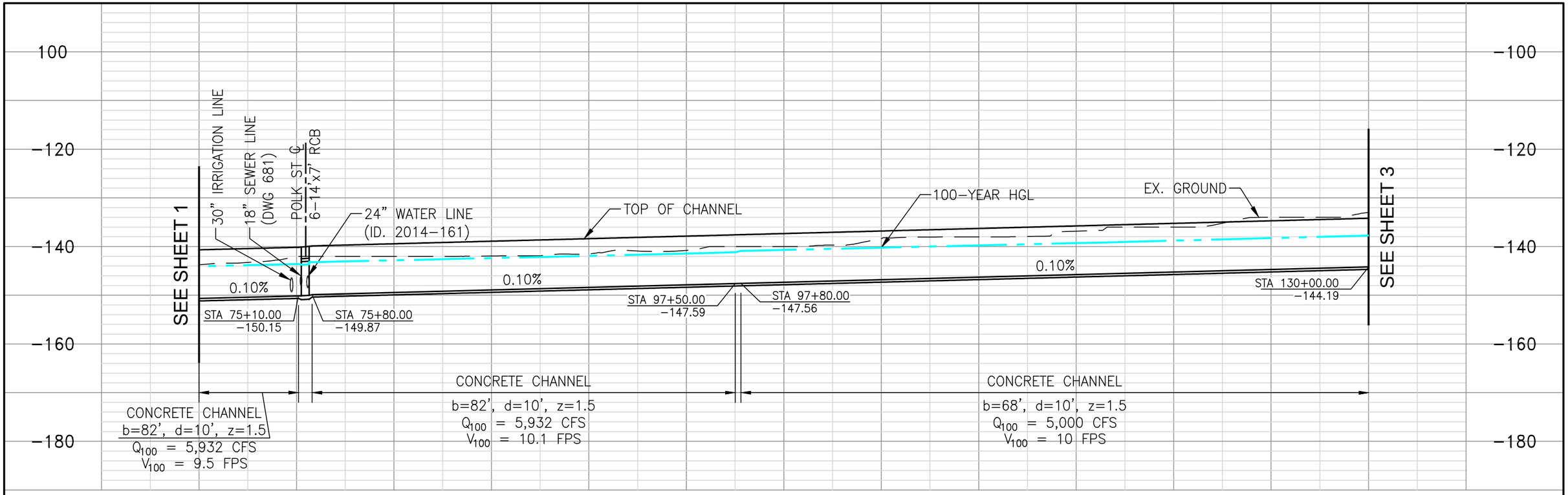

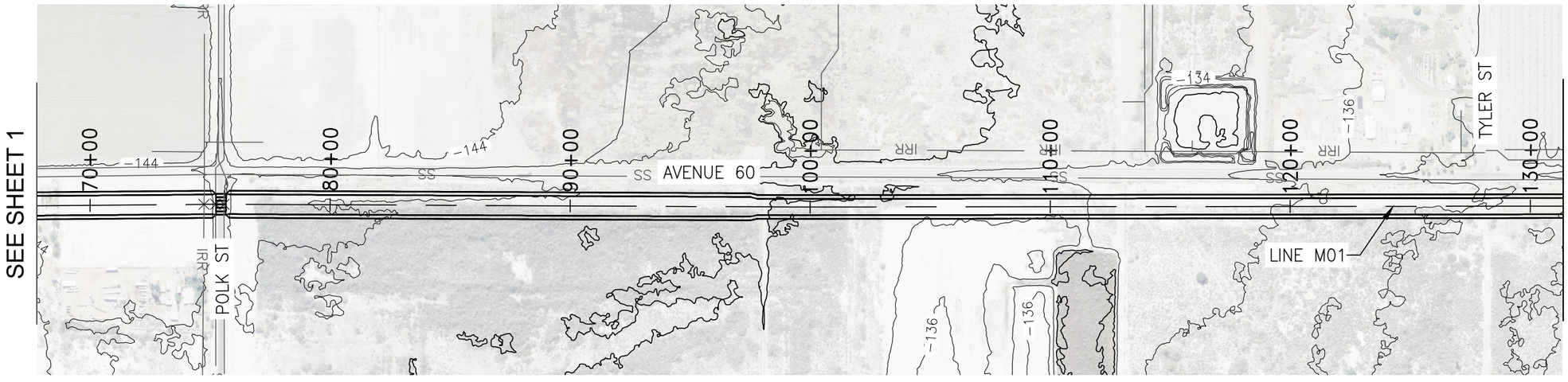

1" = 500'

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 M01
PLAN AND PROFILE

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

APPROVED BY:

ENGINEER, RCE DATE:

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REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE M01
STA 70+00 - STA 130+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 2 OF 8

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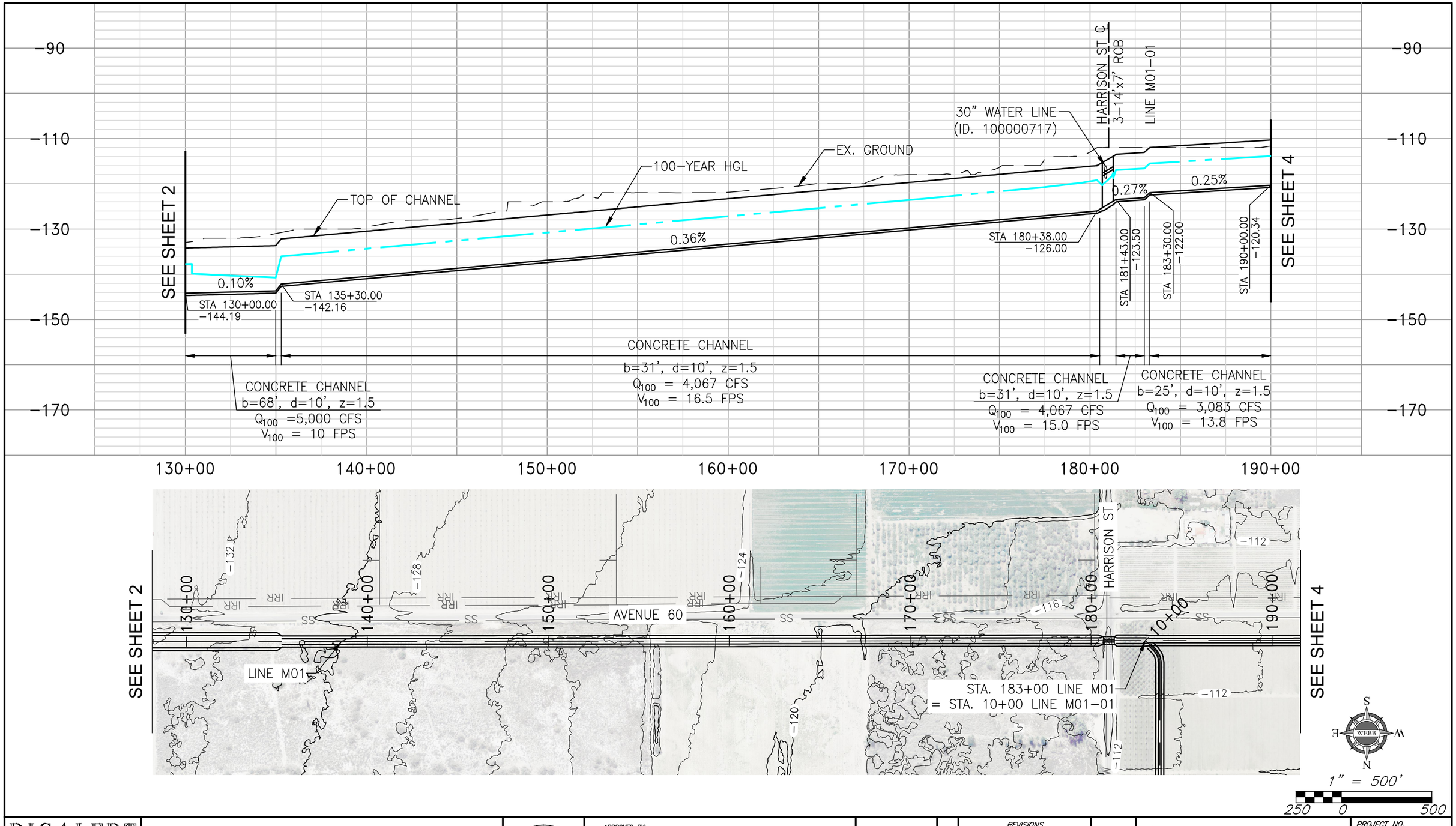

DIGALERT
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LINE M01
PLAN AND PROFILE

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

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ENGINEER, RCE DATE:

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE M01
STA 130+00 - STA 190+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 3 OF 8

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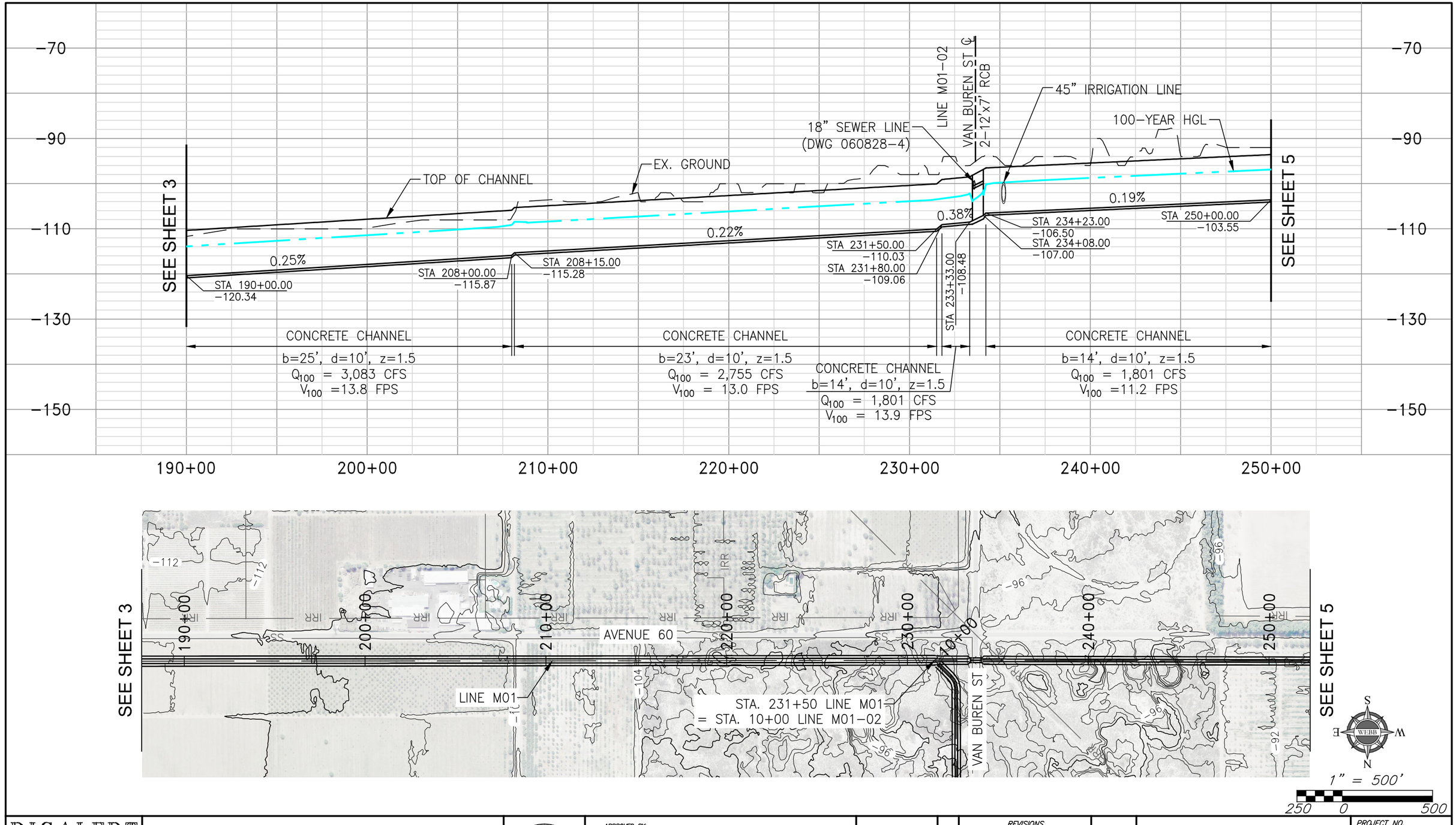

1" = 500'

250 0 500

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A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

LINE M01
PLAN AND PROFILE

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

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ENGINEER, RCE DATE:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE M01
STA 190+00 - STA 250+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 4 OF 8

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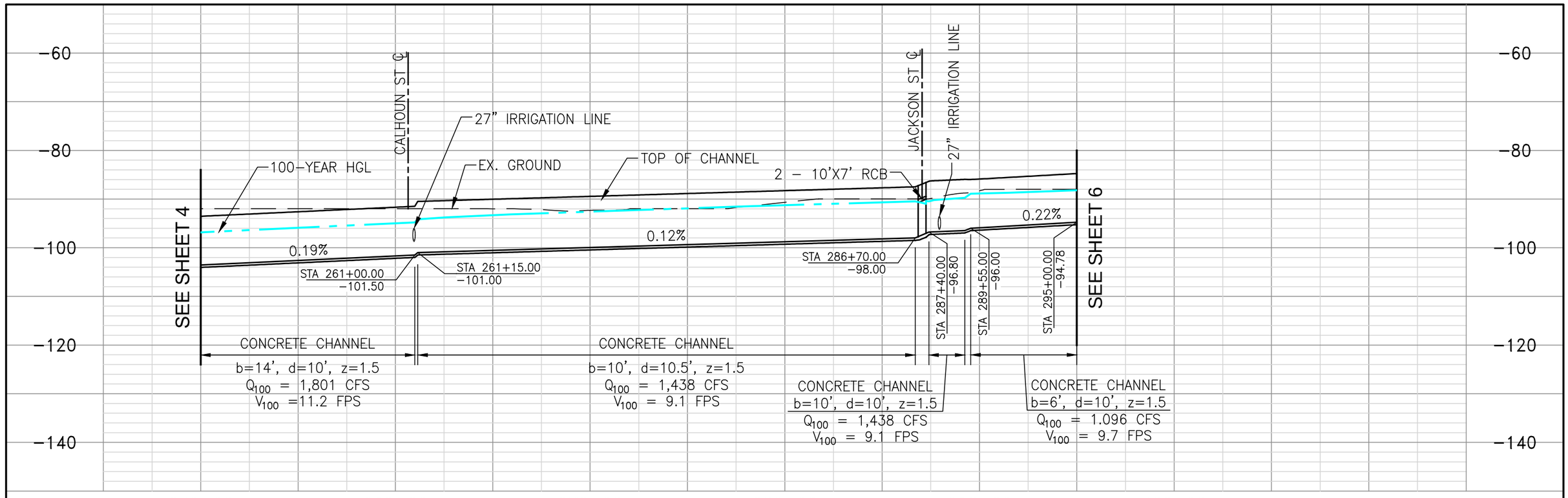

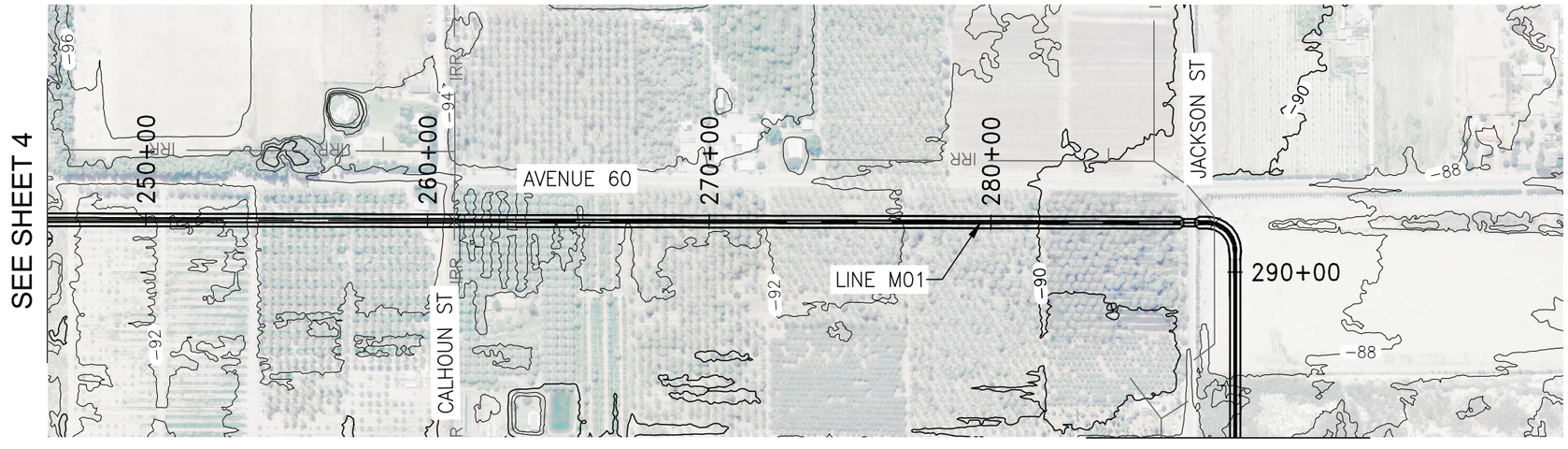

1" = 500'

250 0 500

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LINE M01
PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
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CIVIL
STATE OF CALIFORNIA

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ENGINEER, RCE DATE:

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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE M01
STA 250+00 - STA 295+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 5 OF 8

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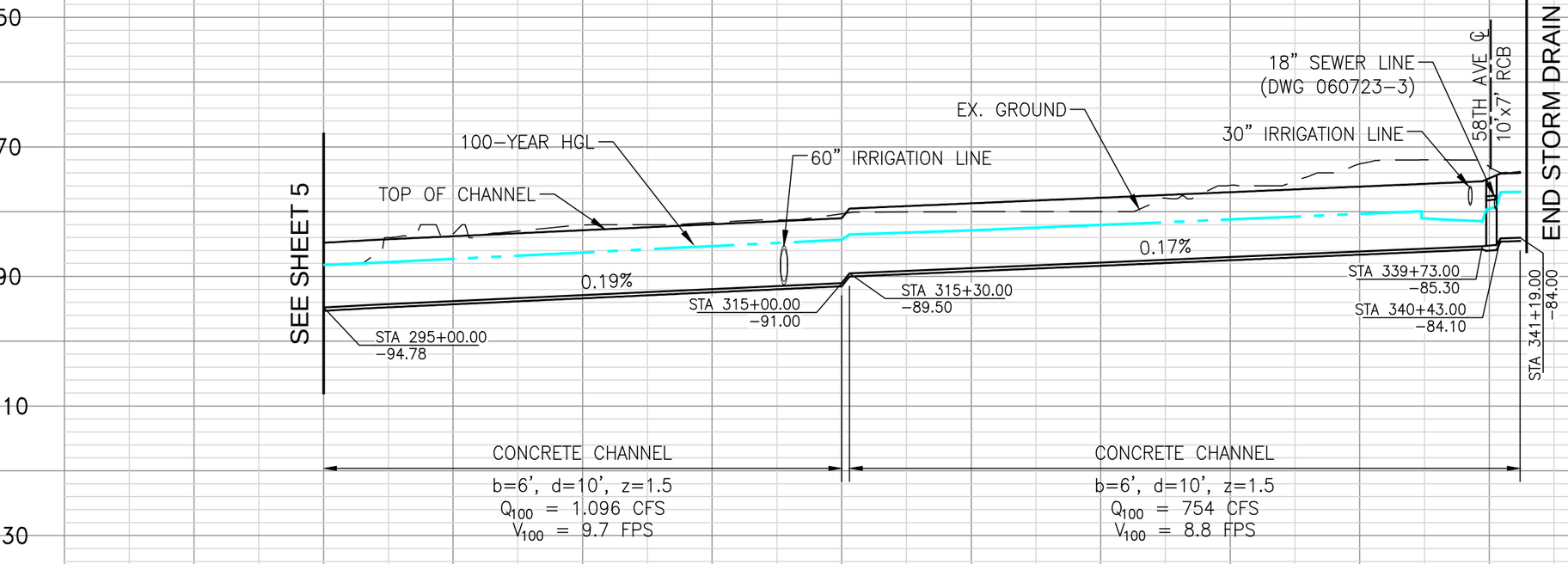

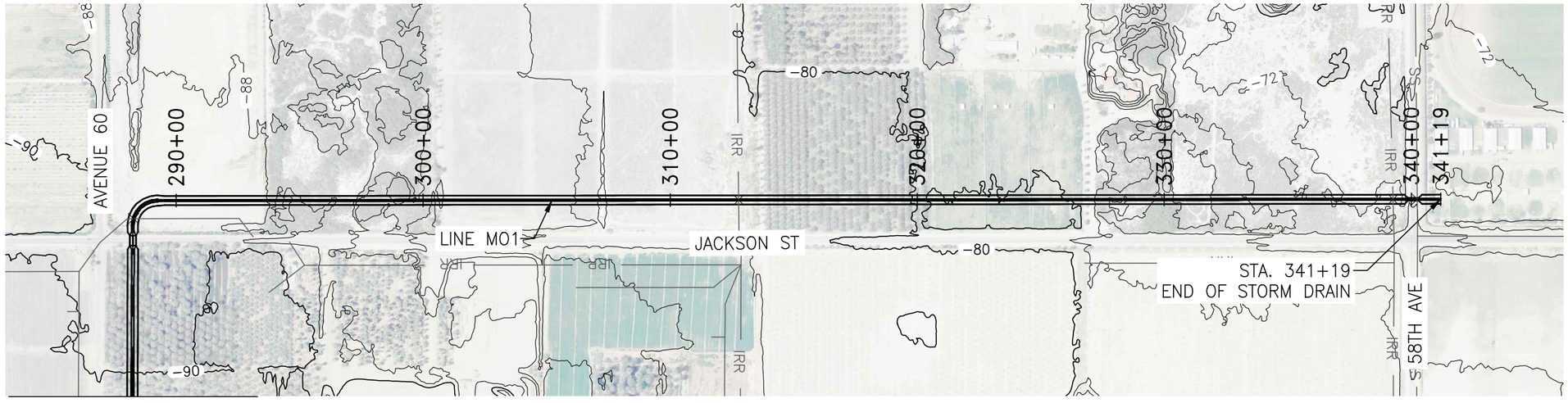

SEE SHEET 5

1" = 500'
250 0 500

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LINE M01
PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
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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 M01
STA 295+00 - STA 341+19

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 6 OF 8

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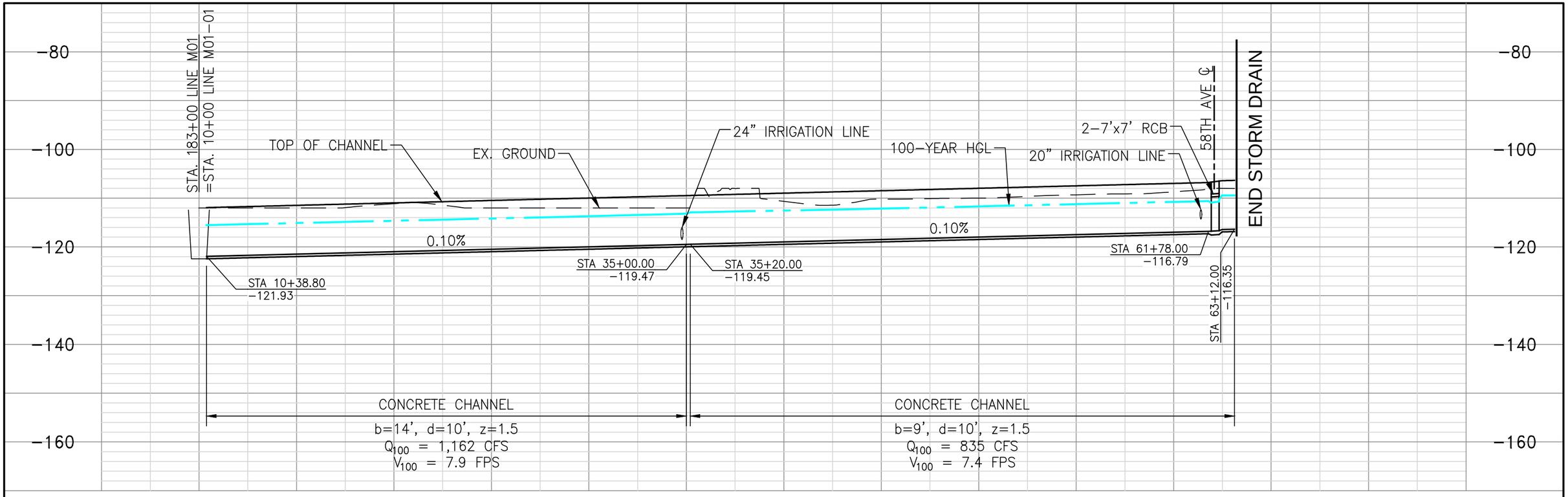

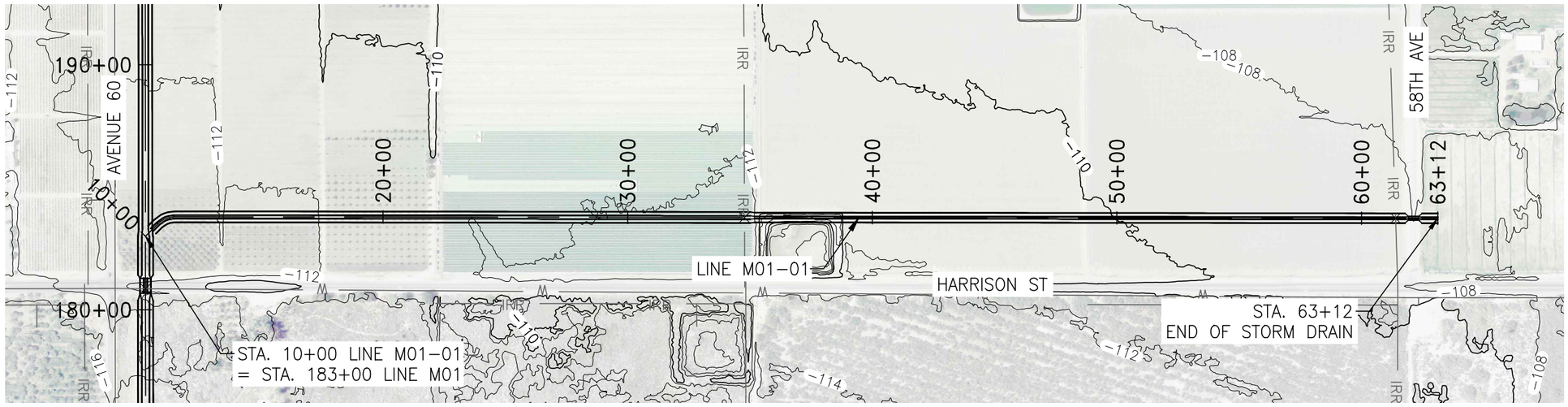

1" = 500'

250 0 500

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LINE M01-01
PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
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CIVIL
STATE OF CALIFORNIA

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ENGINEER, RCE DATE:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE M01-01
STA 10+00 - STA 63+12

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 7 OF 8

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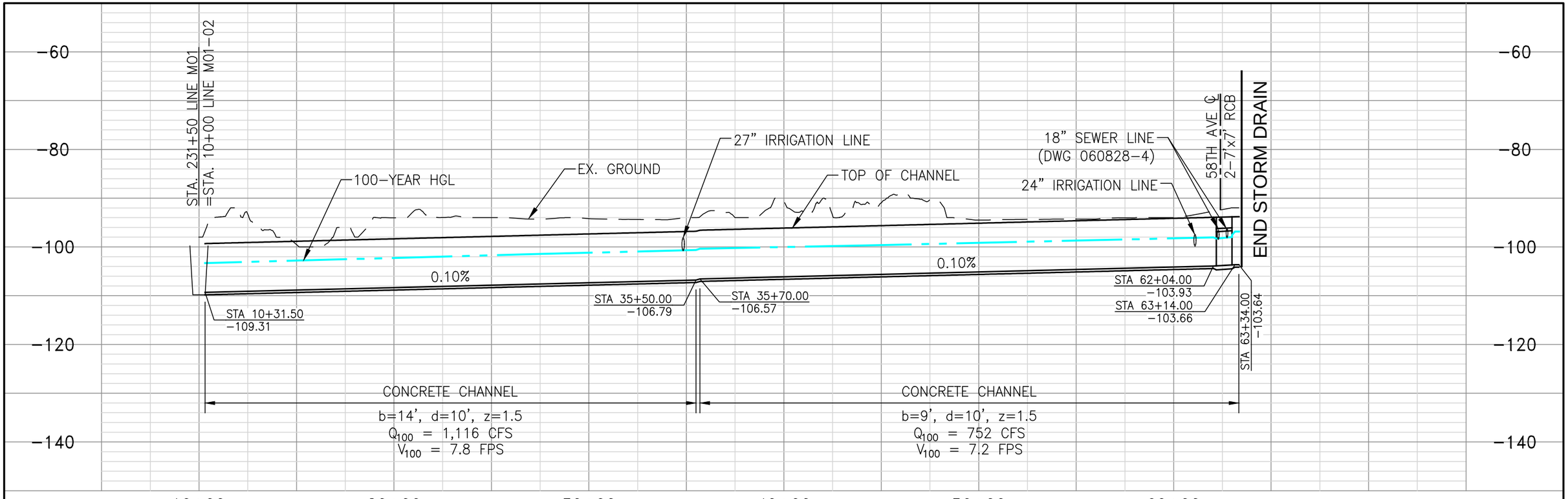

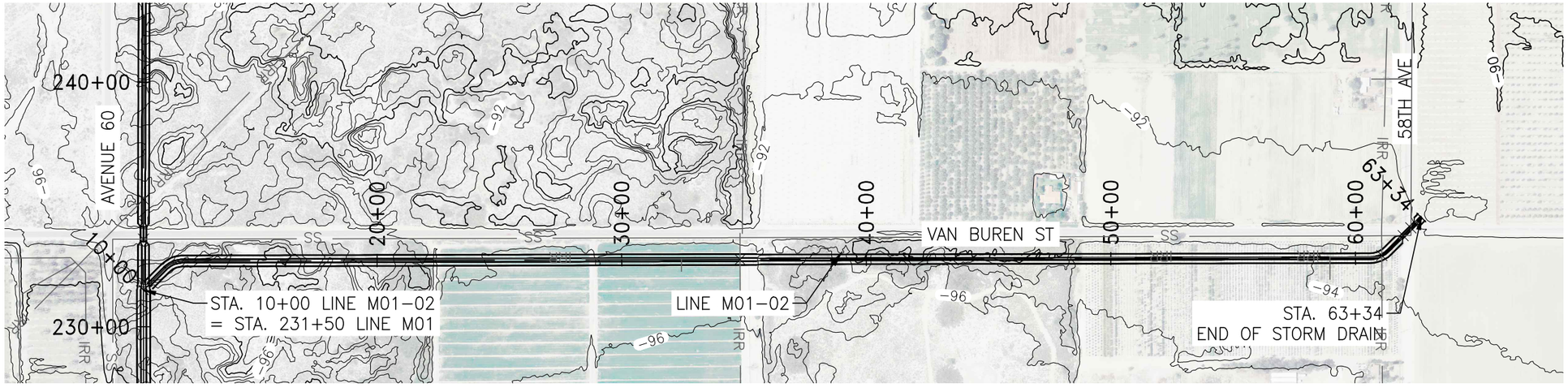

1" = 500'

250 0 500

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A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

LINE M01-02
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:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE M01-02
STA 10+00 - STA 63+34

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

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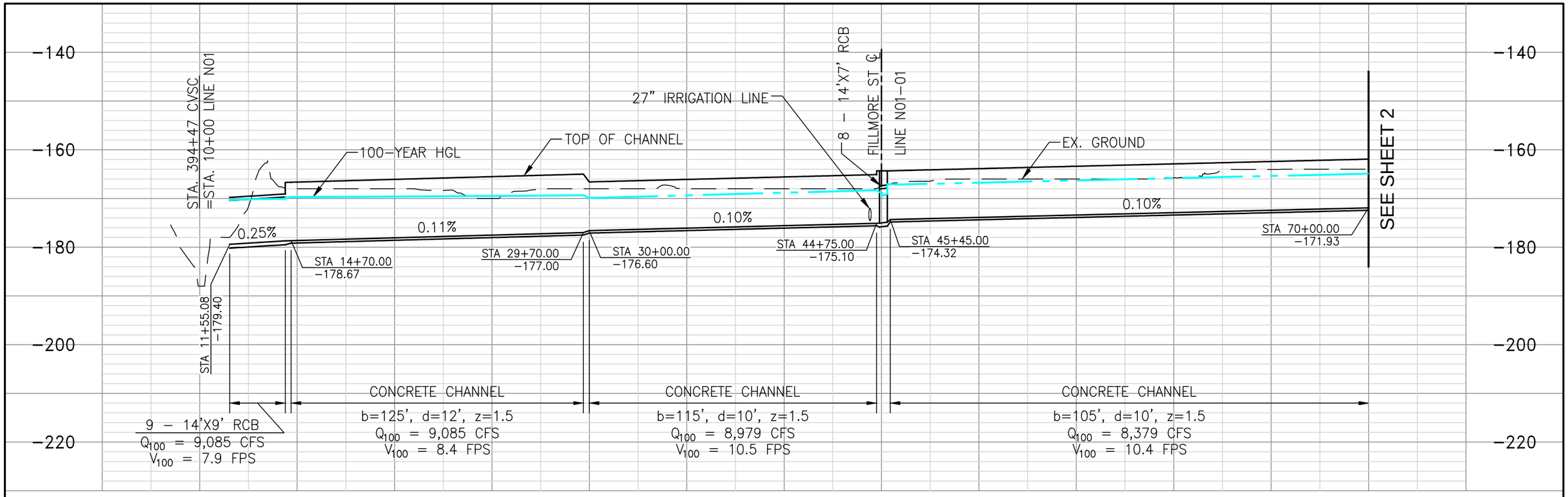

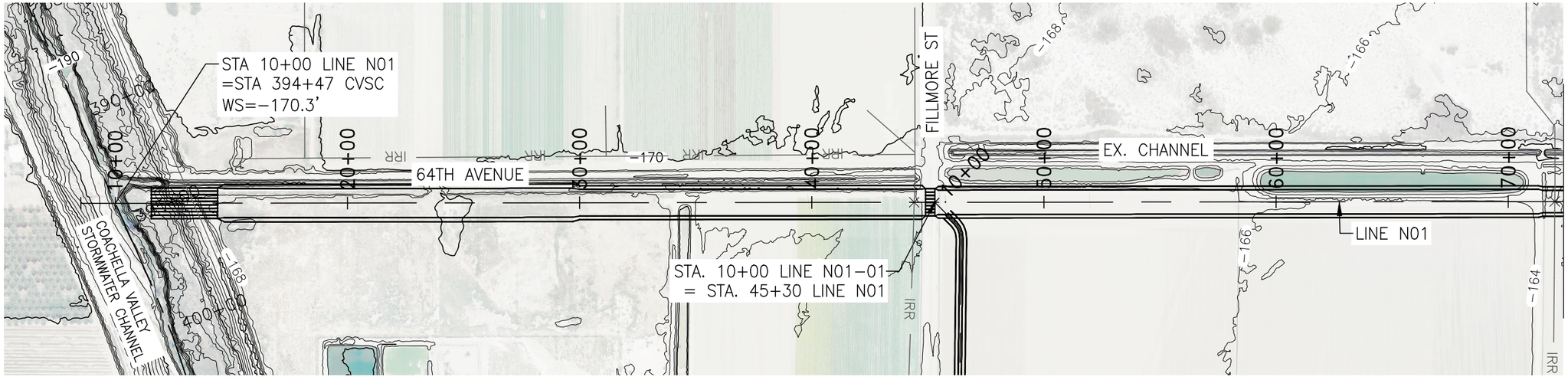

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250 0 500

DIGALERT
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TOLL FREE 1-800-227-2600
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A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

LINE N01
PLAN AND PROFILE

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

APPROVED BY:
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FAX (951) 788-1256

ENGINEER, RCE DATE:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE N01
STA 10+00 - STA 70+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 1 OF 9

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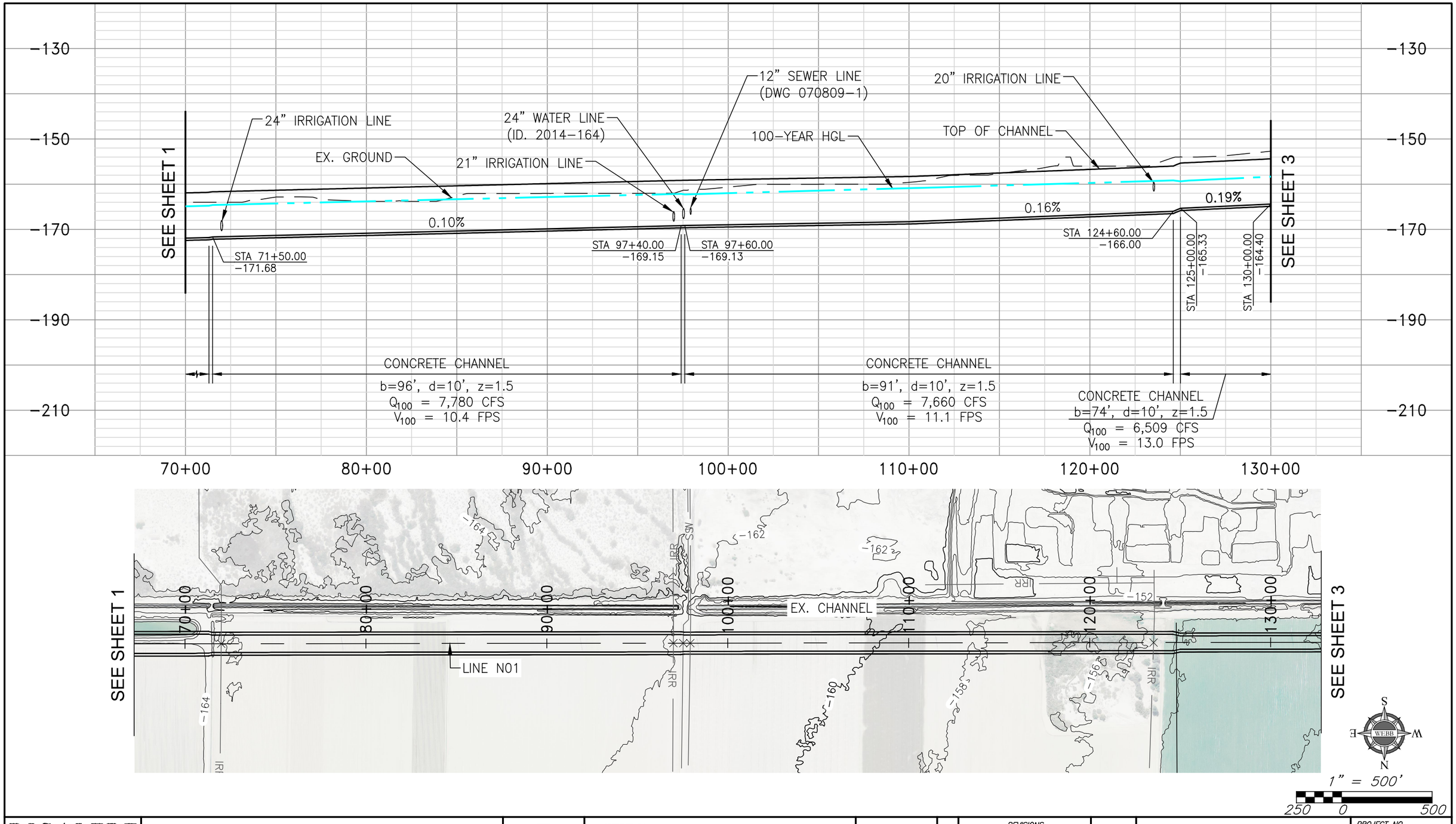

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250 0 500

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TOLL FREE 1-800-227-2600
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LINE N01
PLAN AND PROFILE

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ENGINEER, RCE DATE:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE N01
STA 70+00 - STA 130+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 2 OF 9

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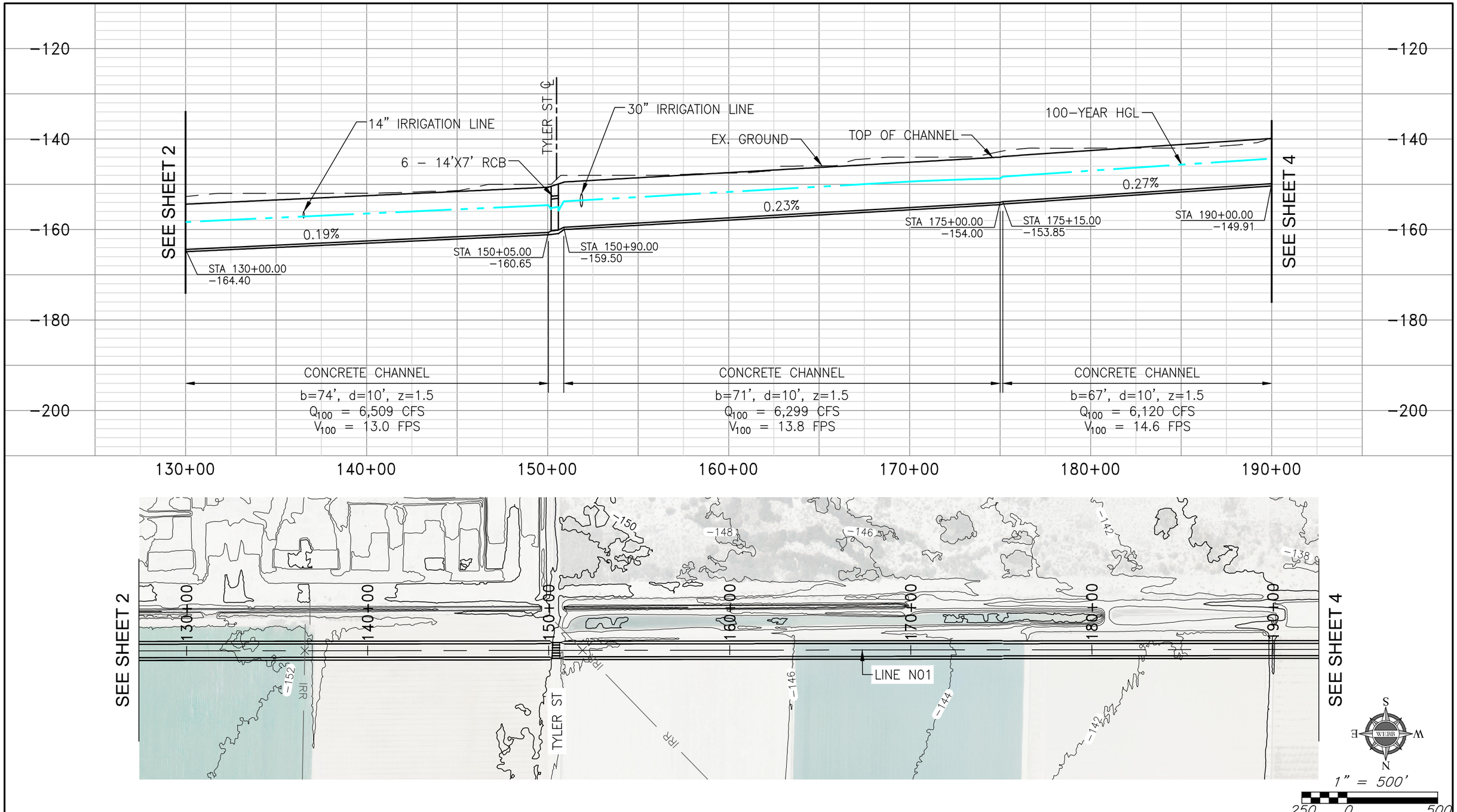

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LINE N01
PLAN AND PROFILE

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CIVIL
STATE OF CALIFORNIA

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ENGINEER, RCE
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REVISIONS			
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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE N01
STA 130+00 - STA 190+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 3 OF 9

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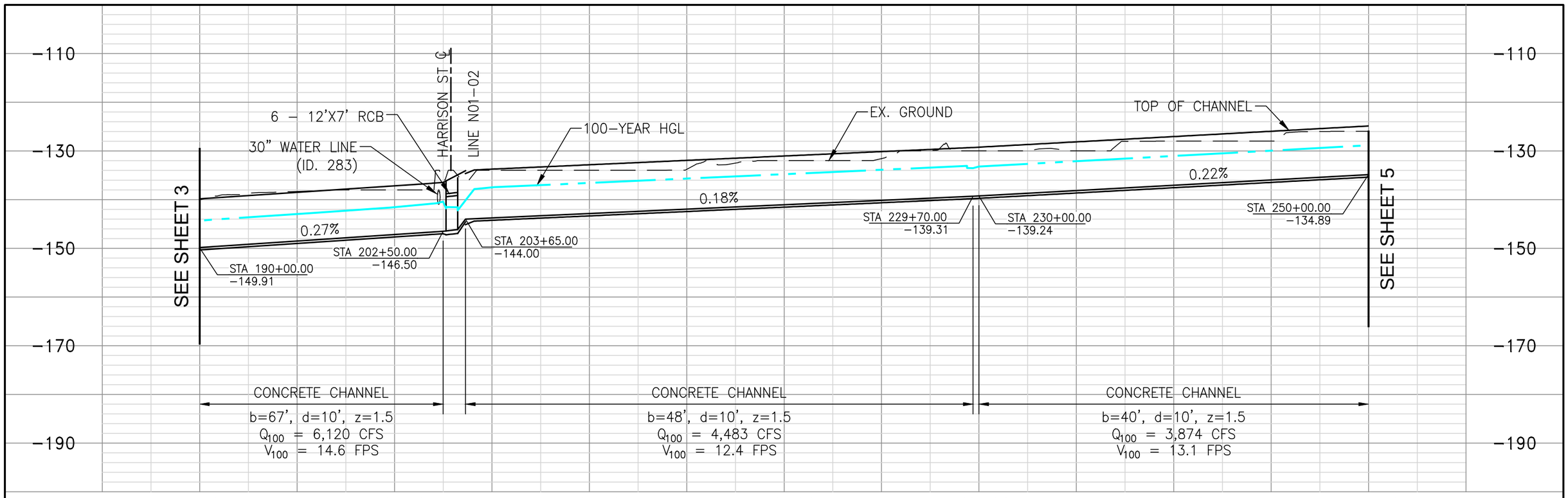

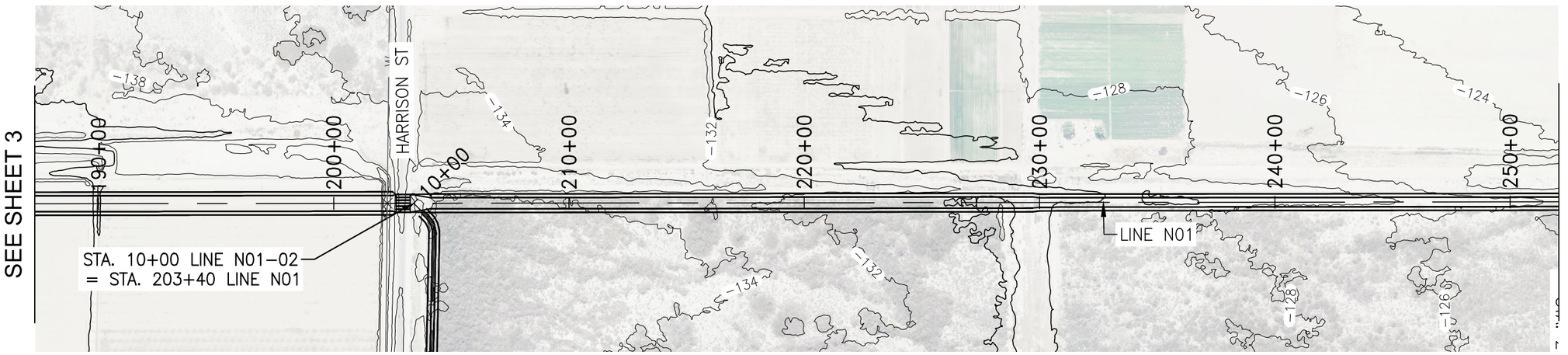

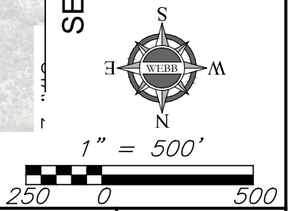

1" = 500'

250 0 500

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TWO WORKING DAYS BEFORE YOU DIG
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LINE N01
PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
JOSEPH C. CALDWELL
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CIVIL
STATE OF CALIFORNIA

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ENGINEER, RCE DATE:

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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE N01
STA 190+00 - STA 250+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 4 OF 9

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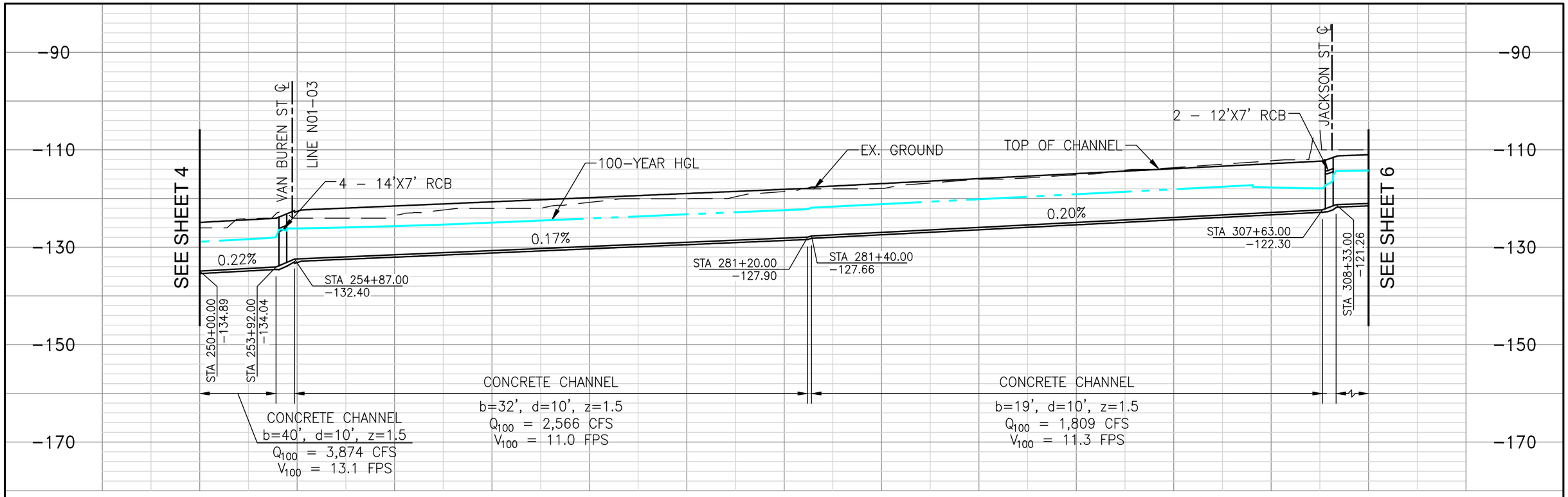

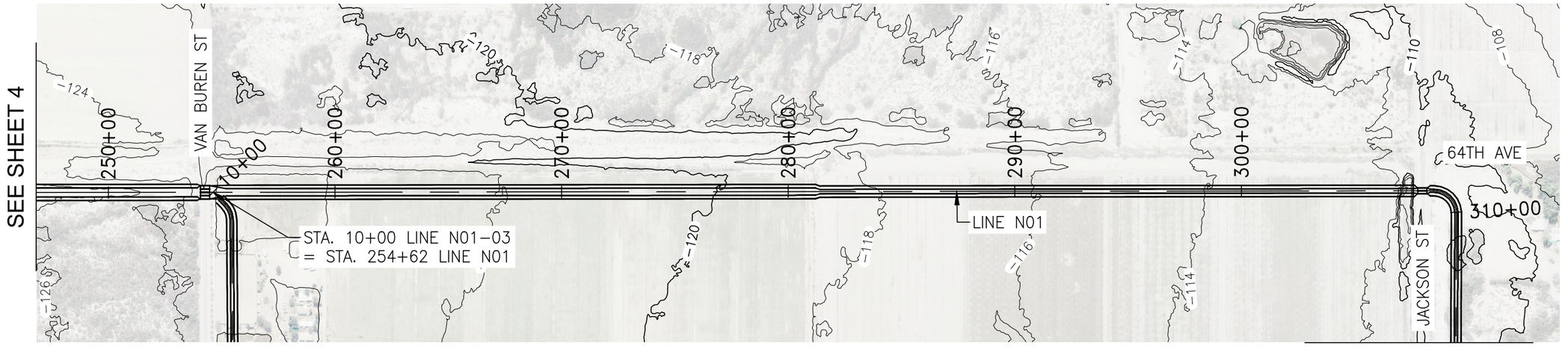

DIGALERT — DIAL BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — TWO WORKING DAYS BEFORE YOU DIG — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

LINE N01
PLAN AND PROFILE

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

APPROVED BY:

ENGINEER, RCE DATE:

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REF.	DESCRIPTION	APPR.	DATE
	REVISIONS		

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE N01
STA 250+00 - STA 310+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 5 OF 9

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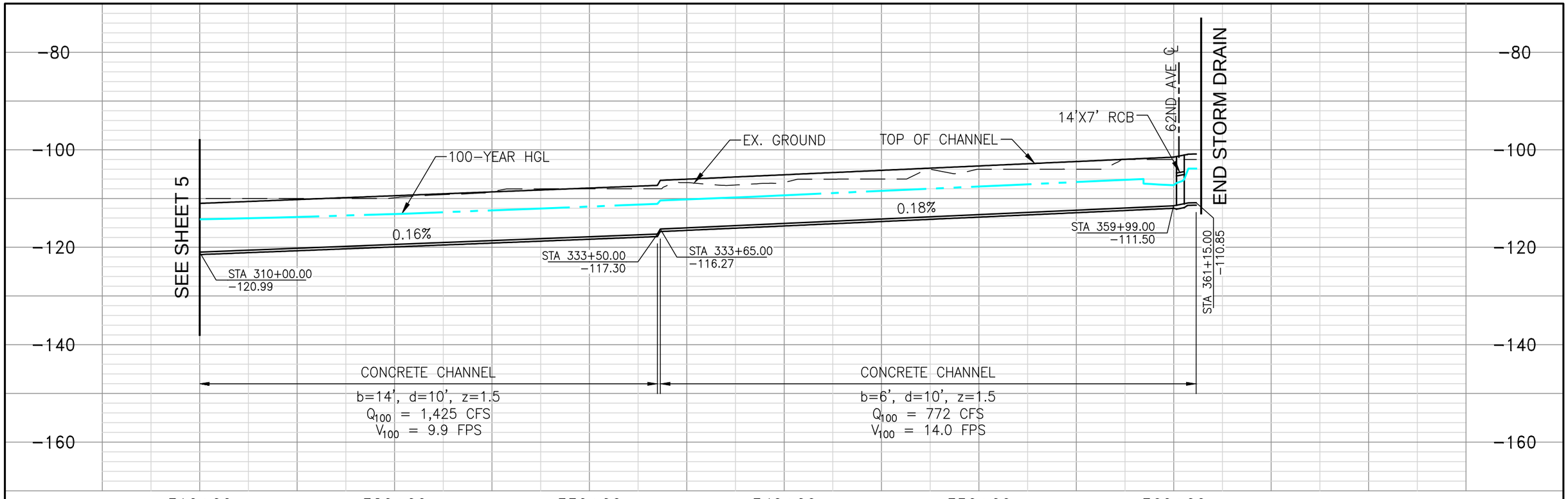

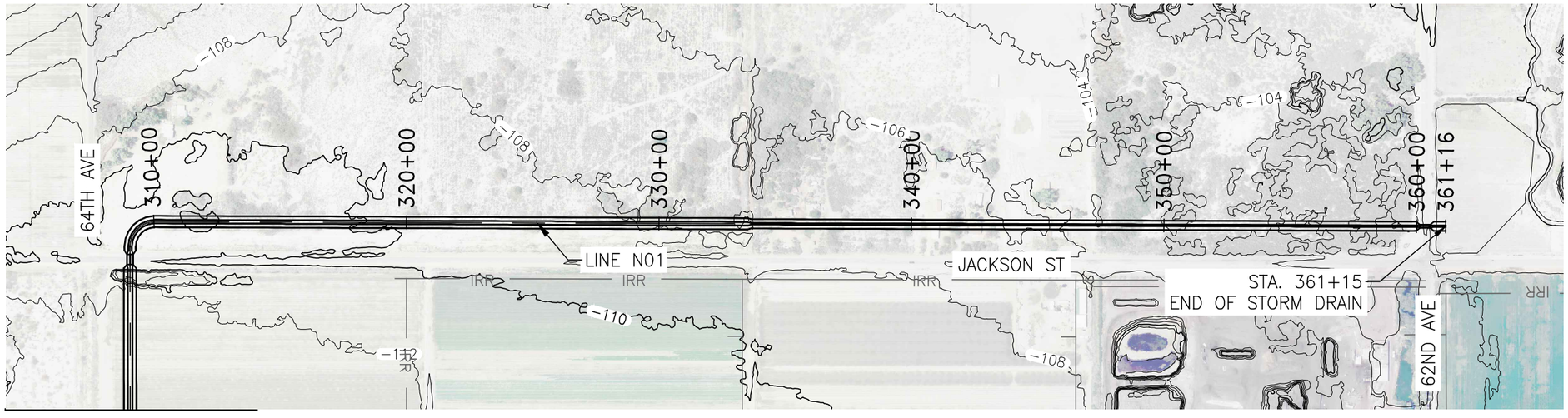

SEE SHEET 5

1" = 500'

250 0 500

DIGALERT
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TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

LINE N01
PLAN AND PROFILE

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

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ENGINEER, RCE DATE:

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COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE N01
STA 310+00 - STA 361+15

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 6 OF 9

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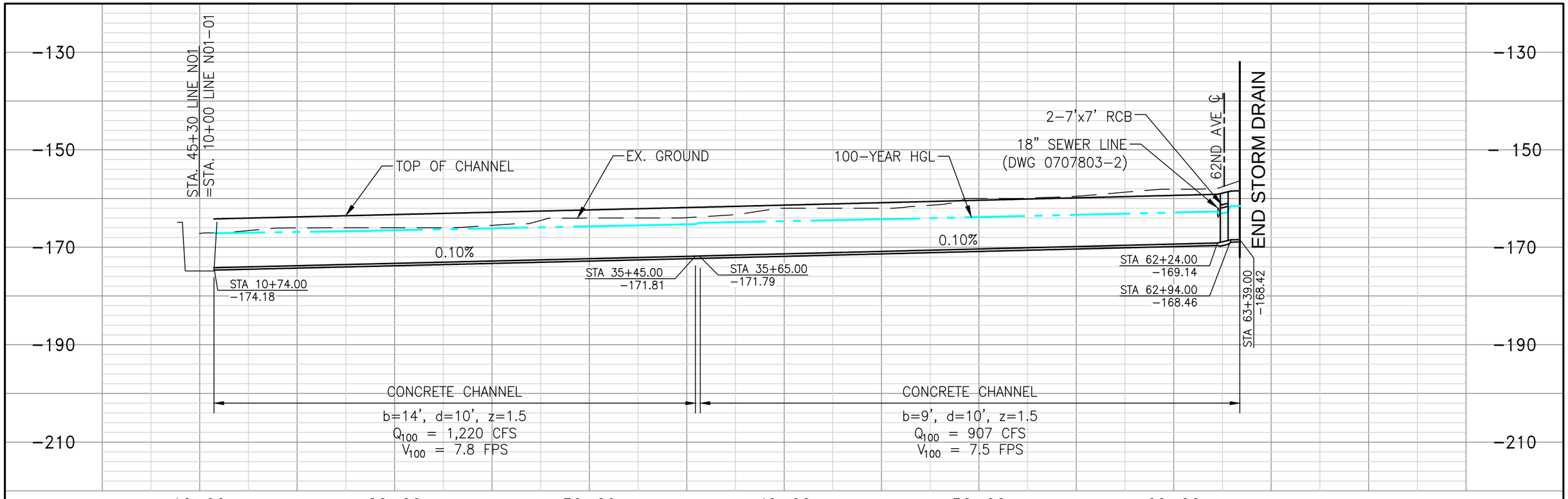

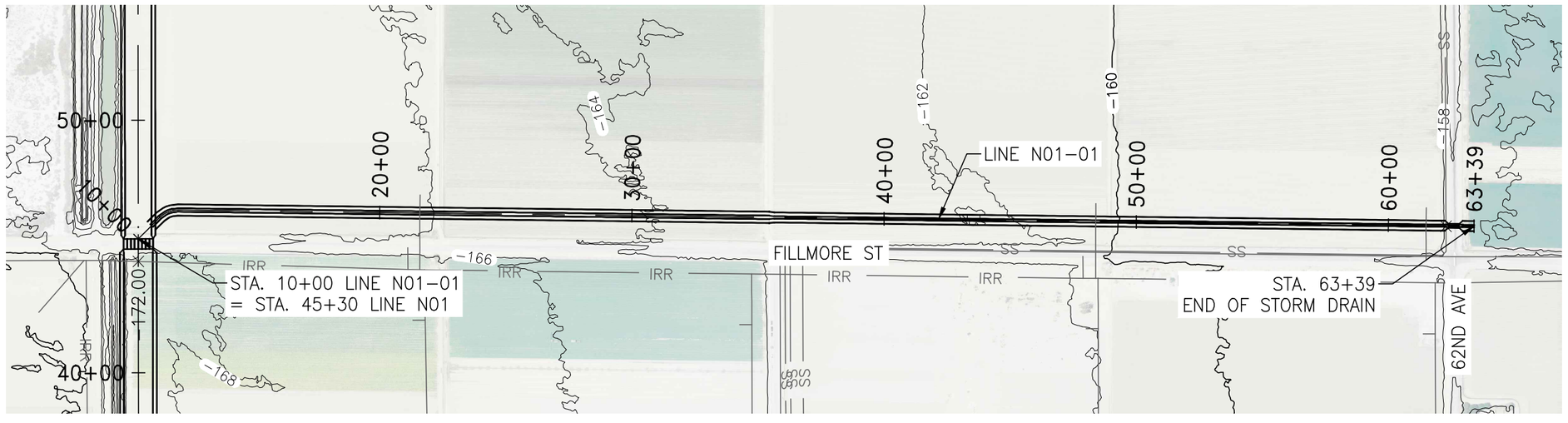

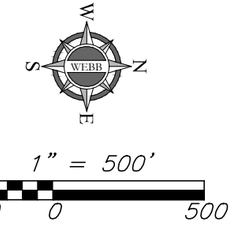

DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

LINE N01-01
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:

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE N01-01
STA 10+00 - STA 63+39

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 7 OF 9

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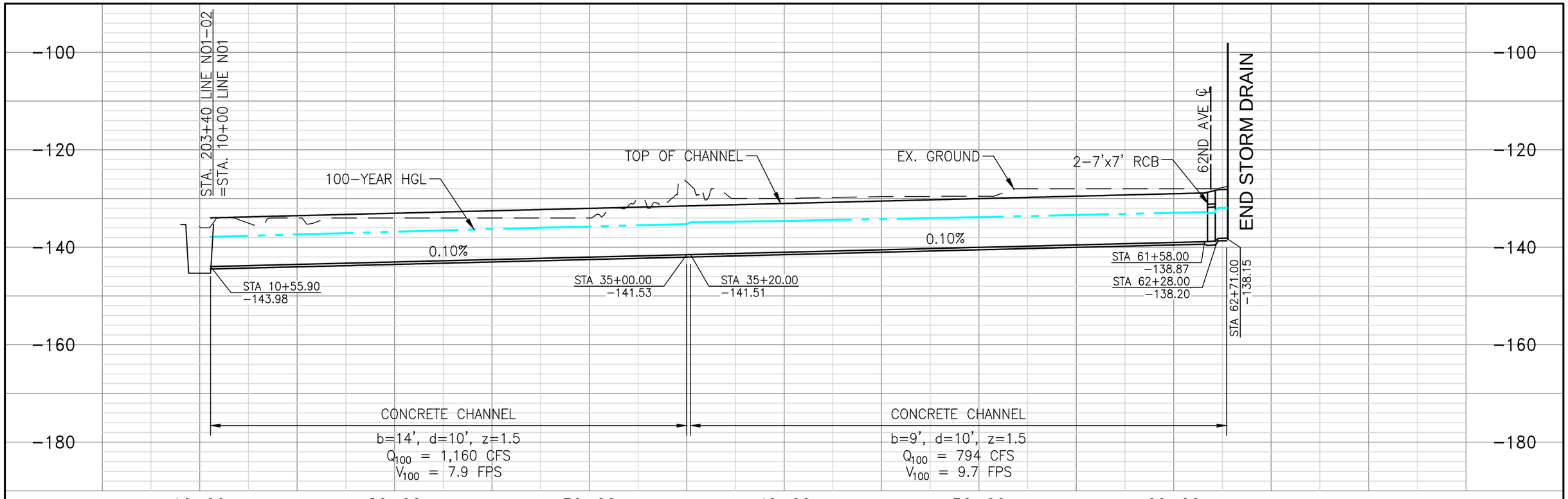

1" = 500'

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 N01-02
PLAN AND PROFILE

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

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PH. (951) 686-1070
FAX (951) 788-1256

ENGINEER, RCE DATE:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE N01-02
STA 10+00 - STA 62+71

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 8 OF 9

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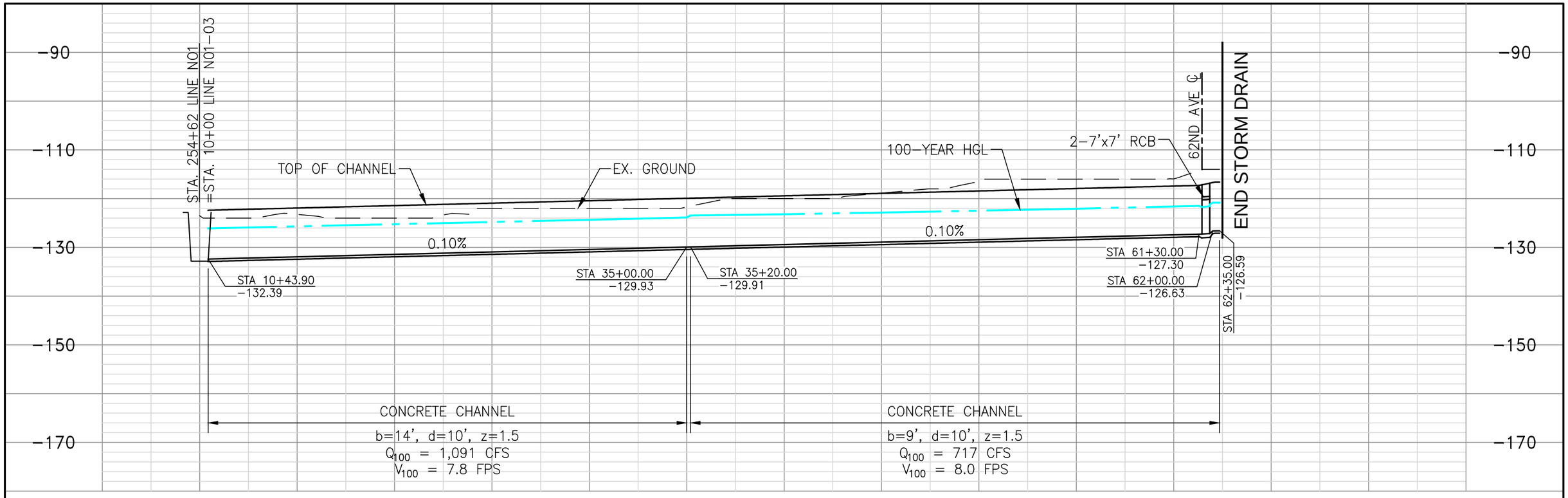

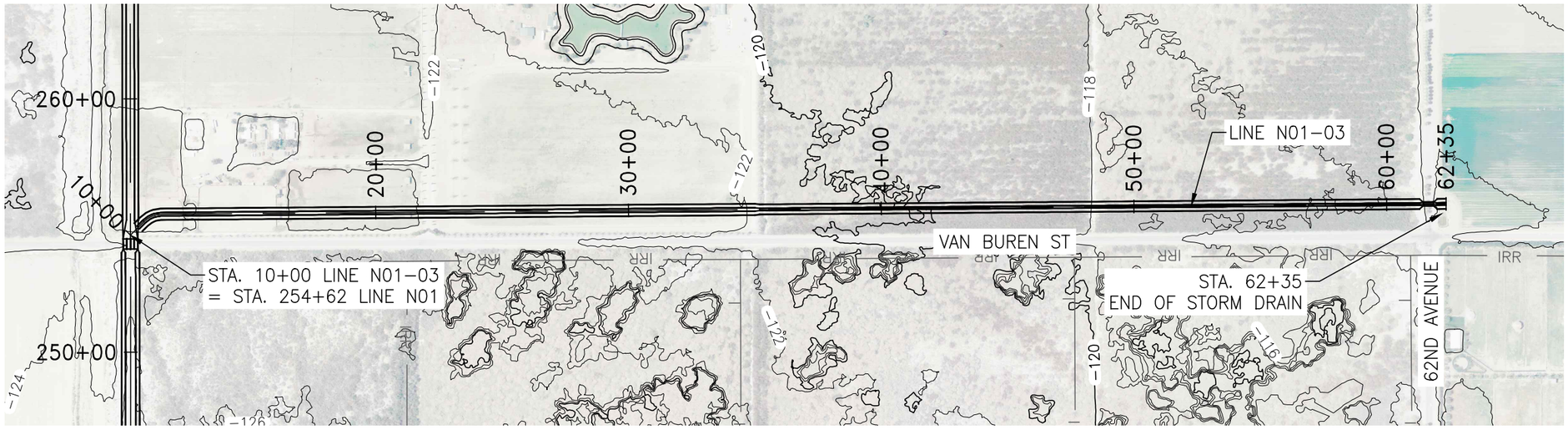

1" = 500'

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 N01-03
PLAN AND PROFILE

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

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RIVERSIDE CA. 92506
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FAX (951) 788-1256

ENGINEER, RCE DATE:

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE N01-03
STA 10+00 - STA 62+35

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

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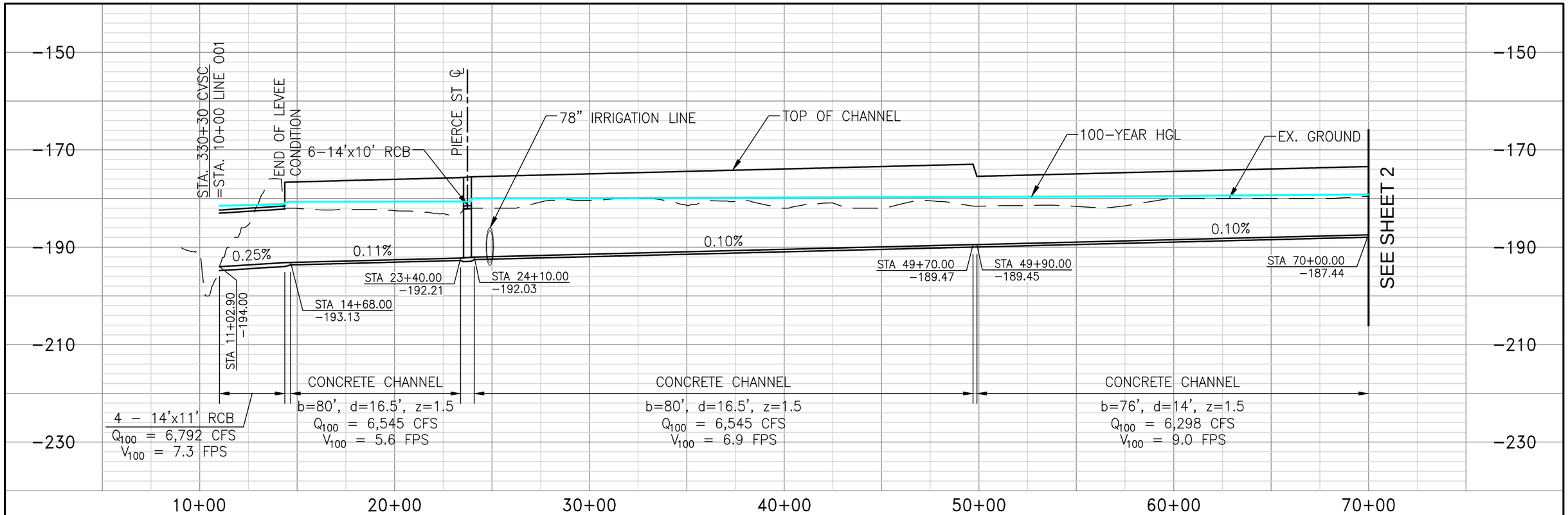

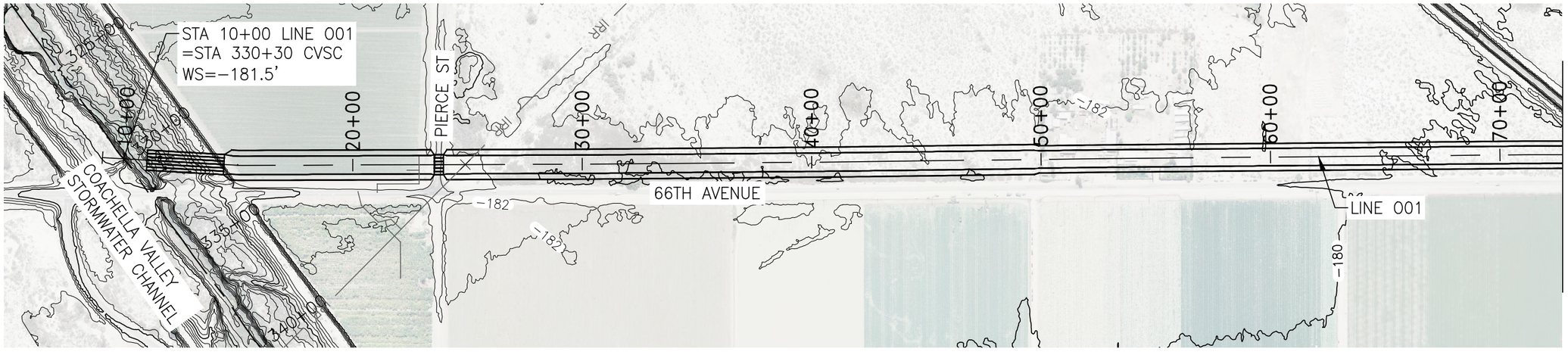

1" = 500'

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 001
PLAN AND PROFILE

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

APPROVED BY:
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ENGINEER, RCE DATE:

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE 001
STA 10+00 - STA 70+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 1 OF 7

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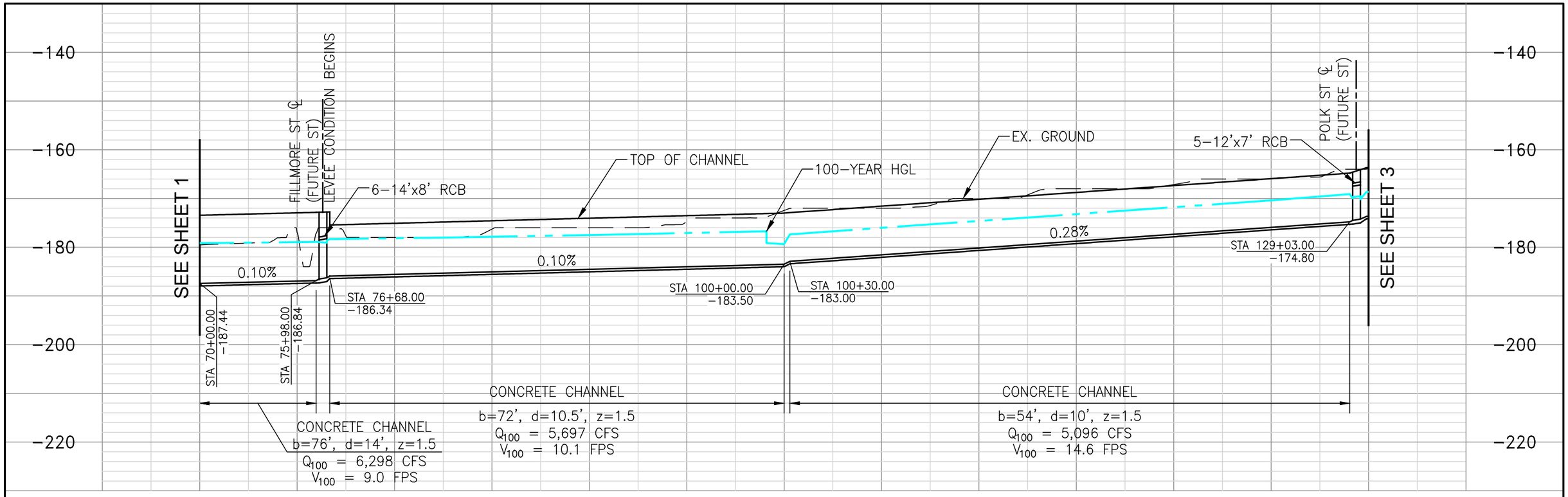

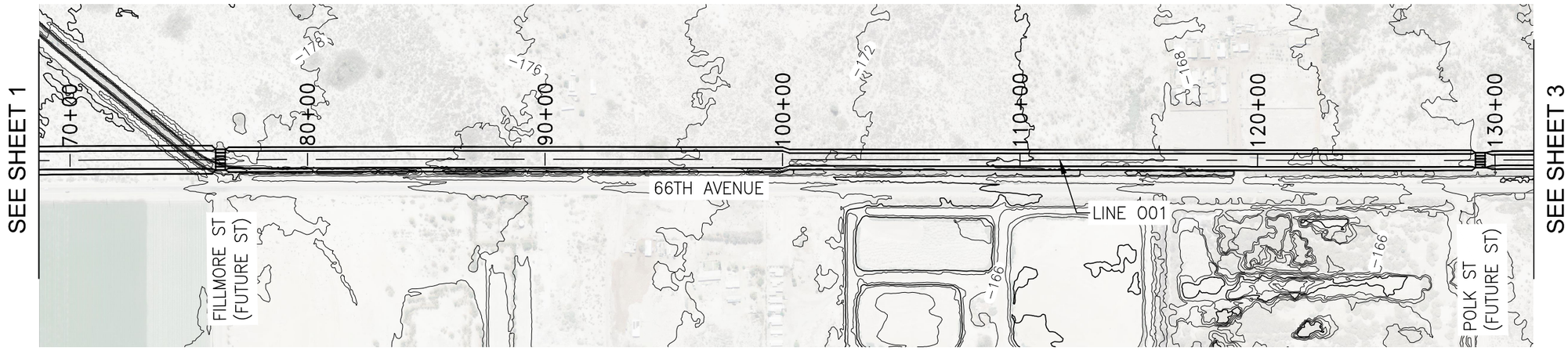

1" = 500'

250 0 500

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

LINE 001
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

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE 001
STA 70+00 - STA 130+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 2 OF 7

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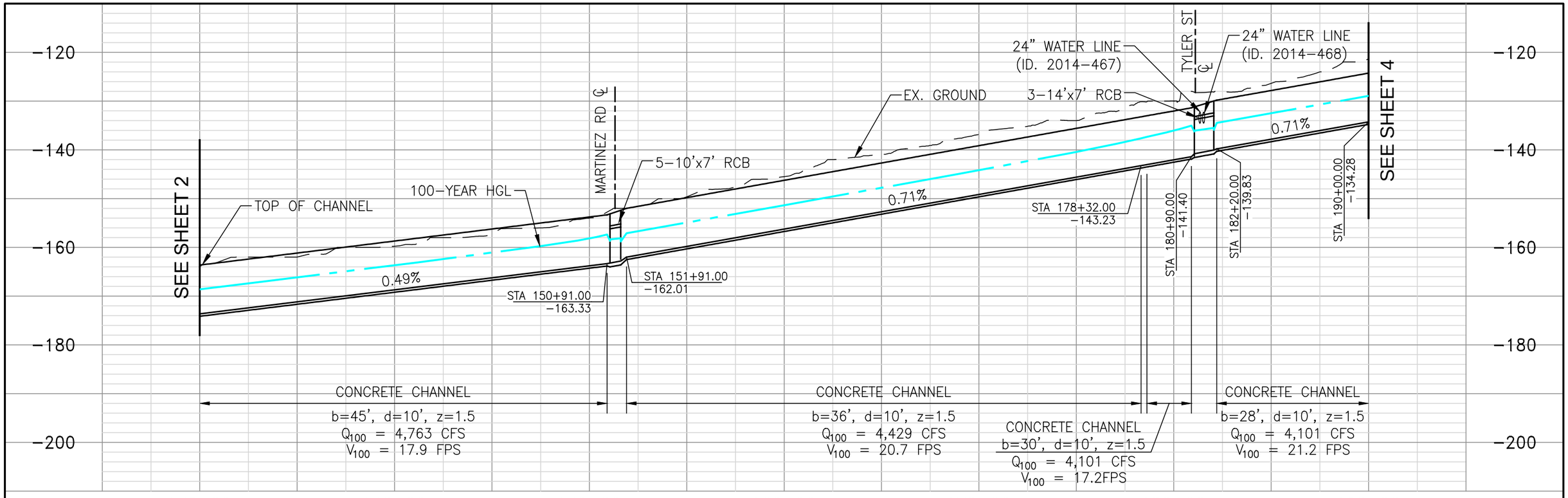

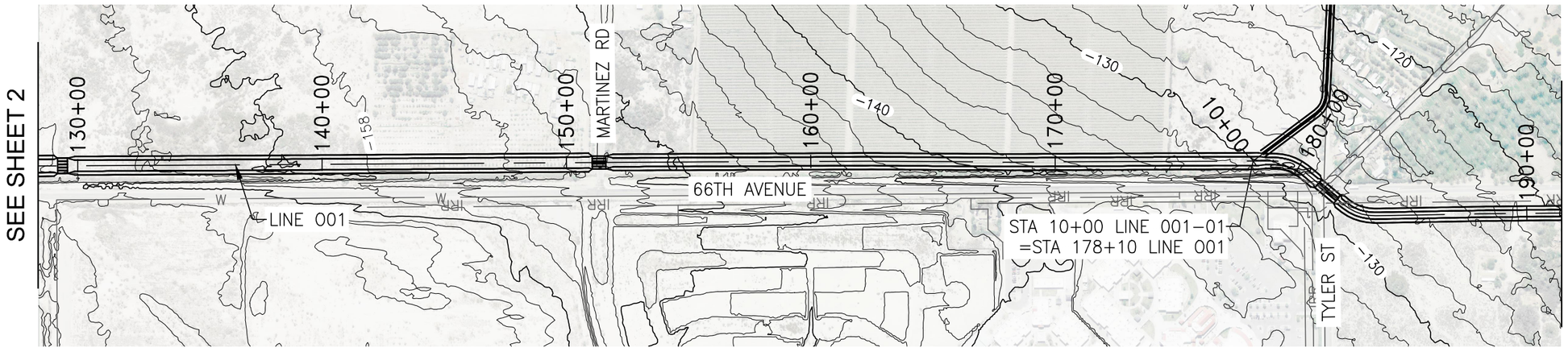

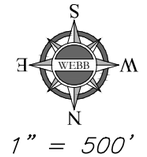

1" = 500'

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 001
PLAN AND PROFILE

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

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

ENGINEER, RCE DATE:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE 001
STA 130+00 - STA 190+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 3 OF 7

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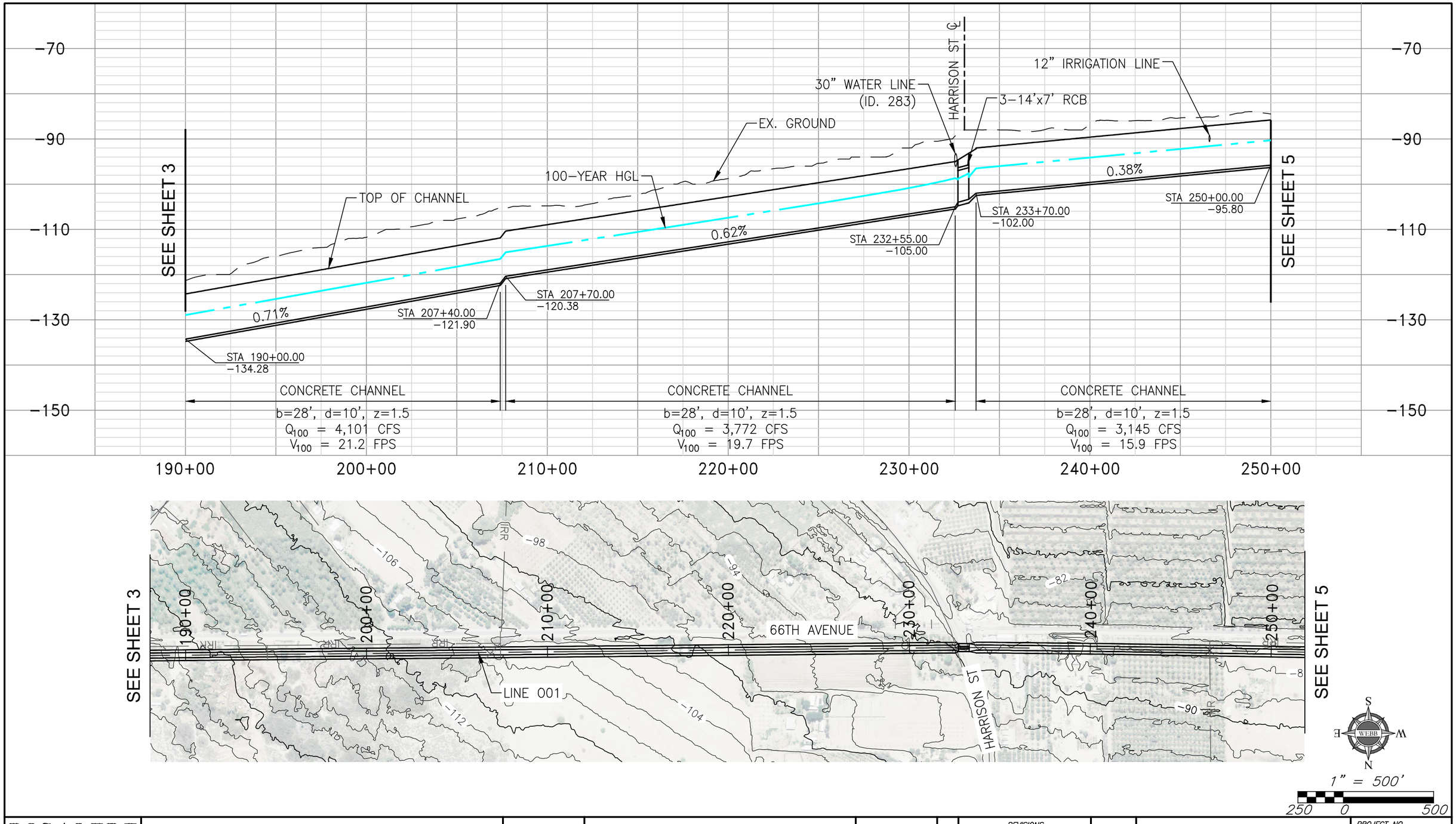

DIGALERT
DIAL BEFORE YOU DIG TOLL FREE 1-800-227-2600 — TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

LINE 001
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:

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE 001
STA 190+00 - STA 250+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 4 OF 7

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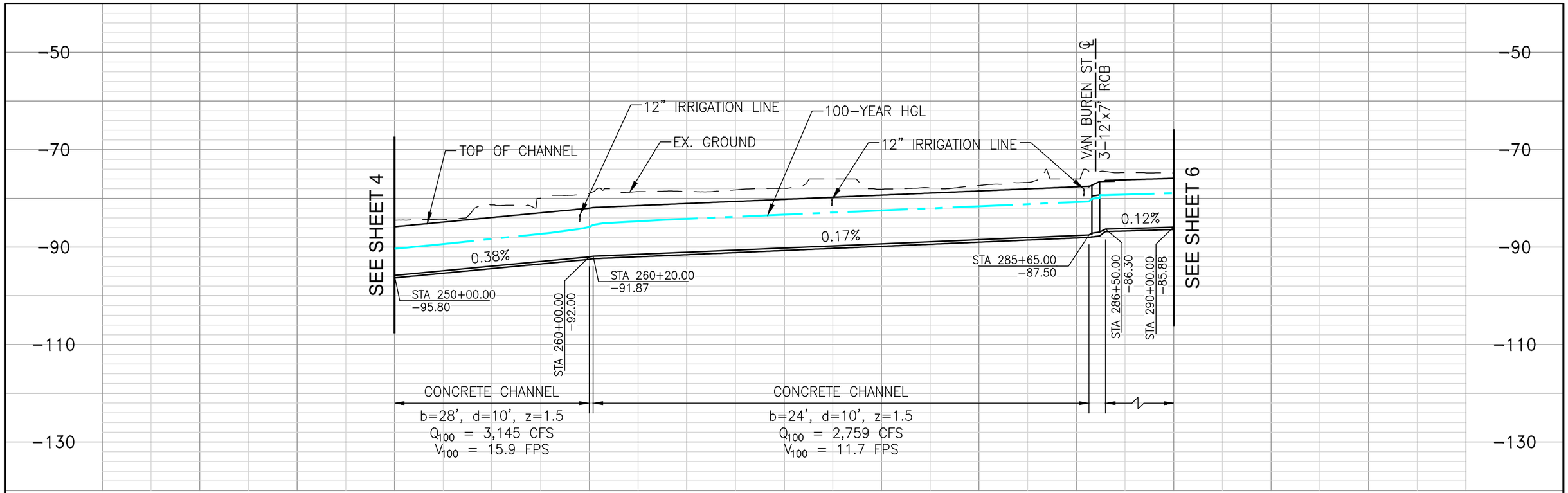

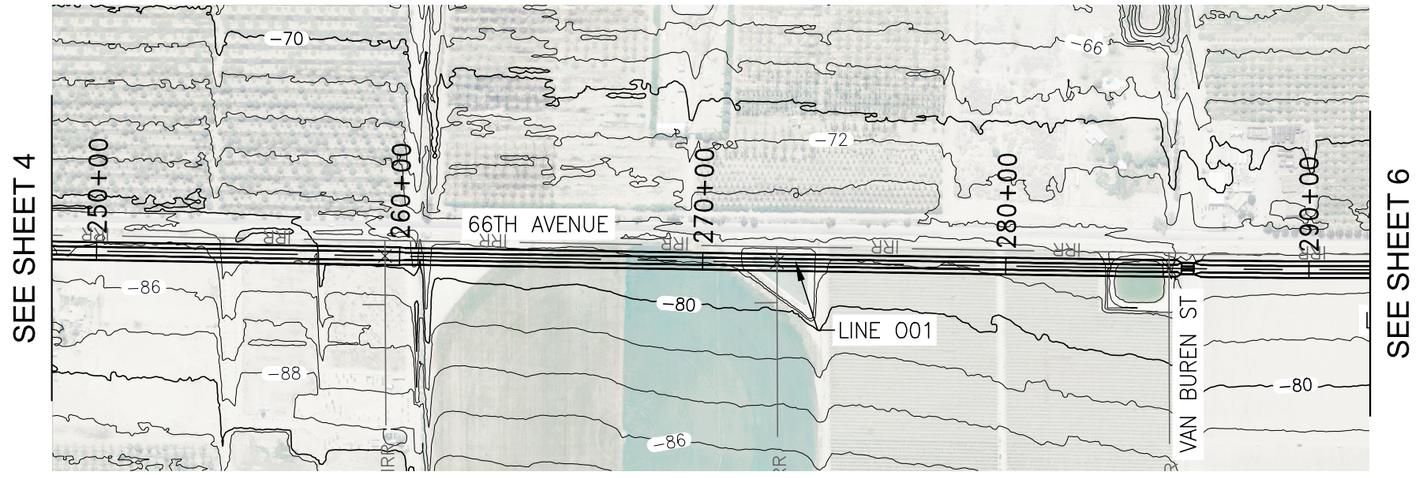

1" = 500'

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 001
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

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE 001
STA 250+00 - STA 290+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 5 OF 7

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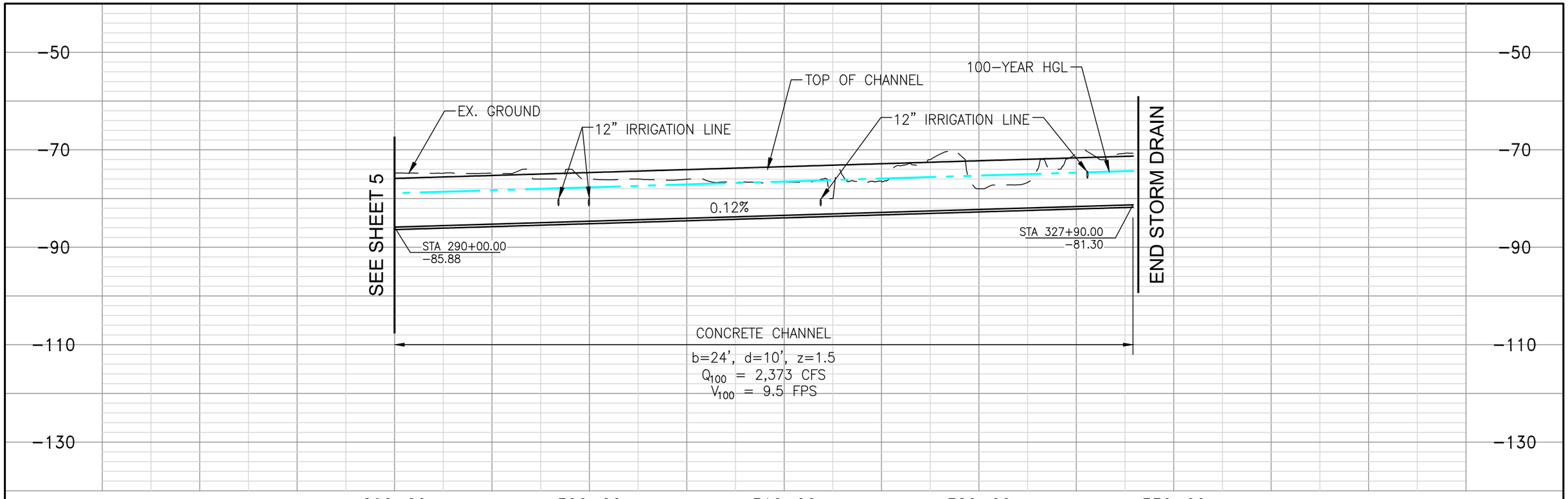

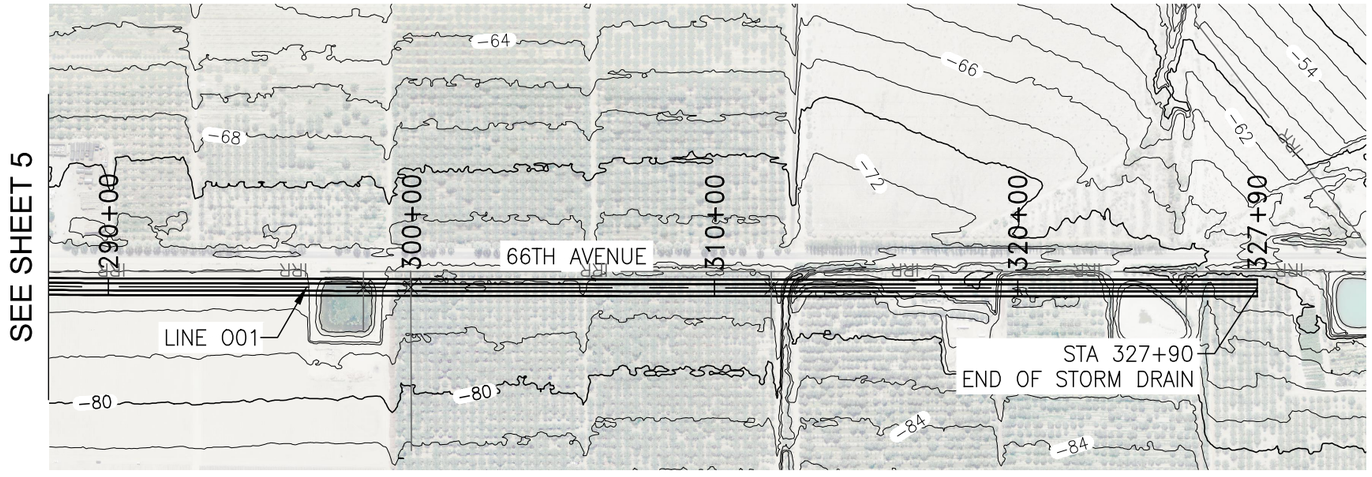

1" = 500'

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 001
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

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE 001
STA 290+00 - STA 327+90

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 6 OF 7

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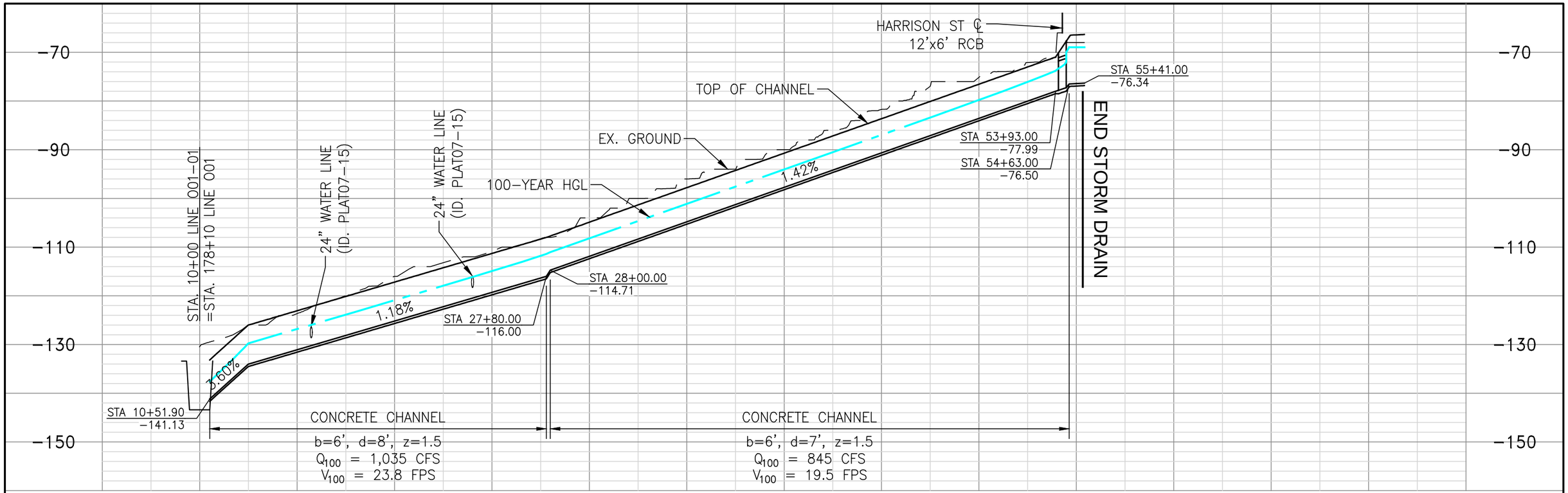

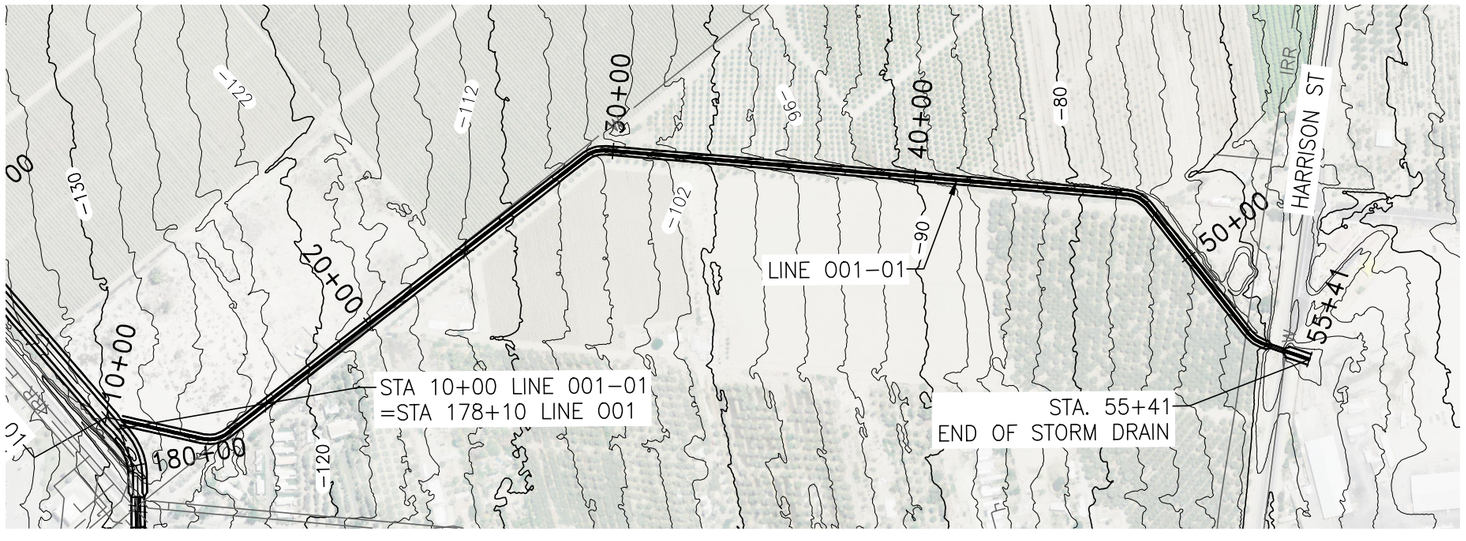

1" = 500'

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 001 - 01
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

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE 001 - 01
STA 130+00 - STA 190+00

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

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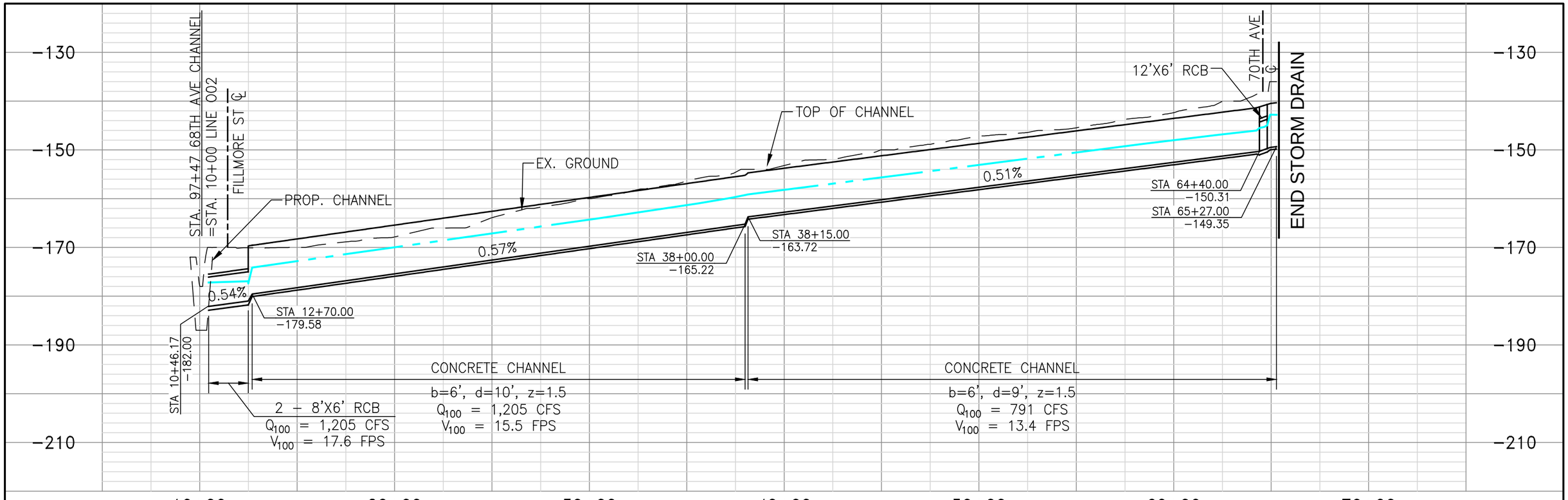

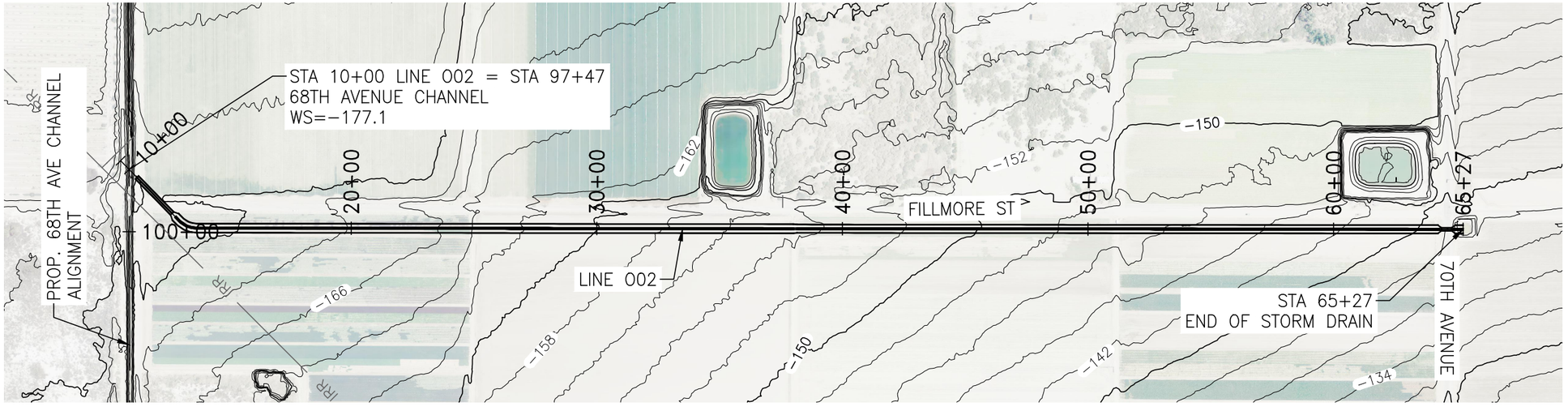

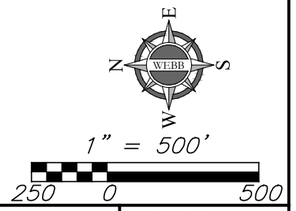

DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

LINE 002
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

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE 002
STA 10+00 - STA 65+27

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

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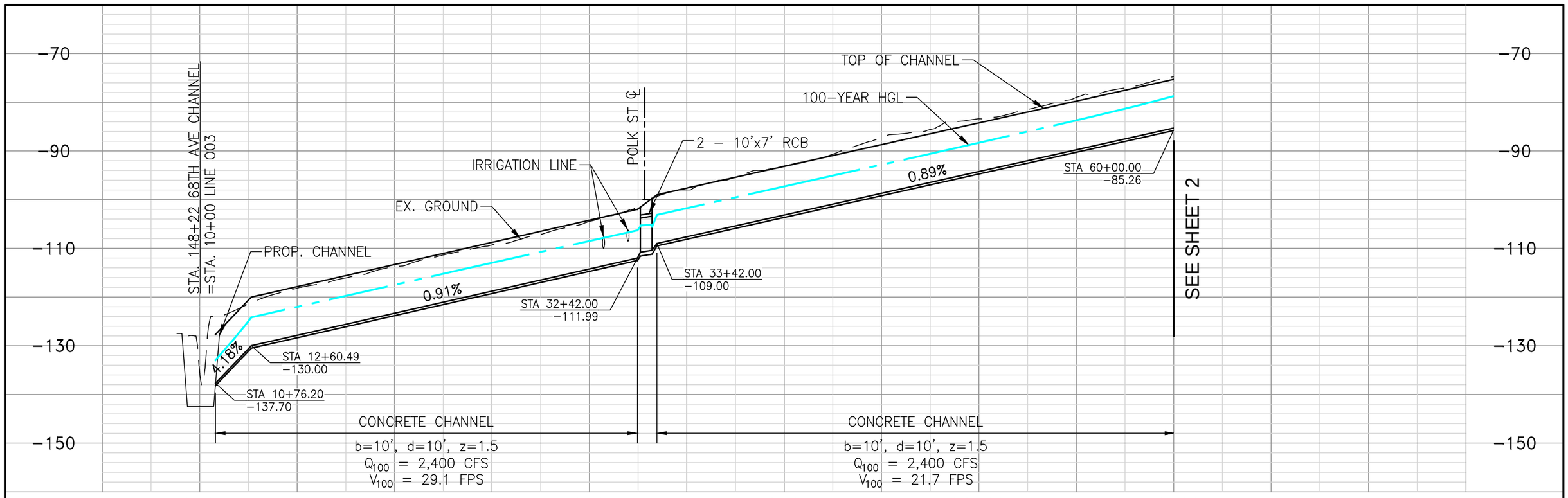

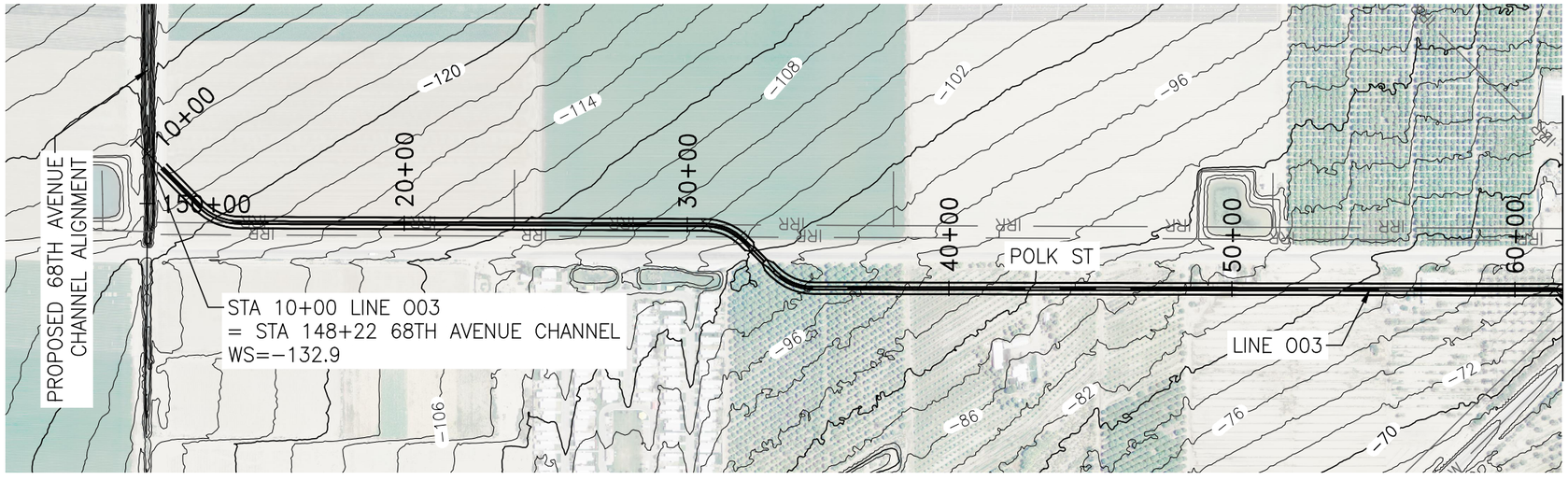

N E W S WEBB

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 003
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

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE 003
STA 10+00 – STA 60+00

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

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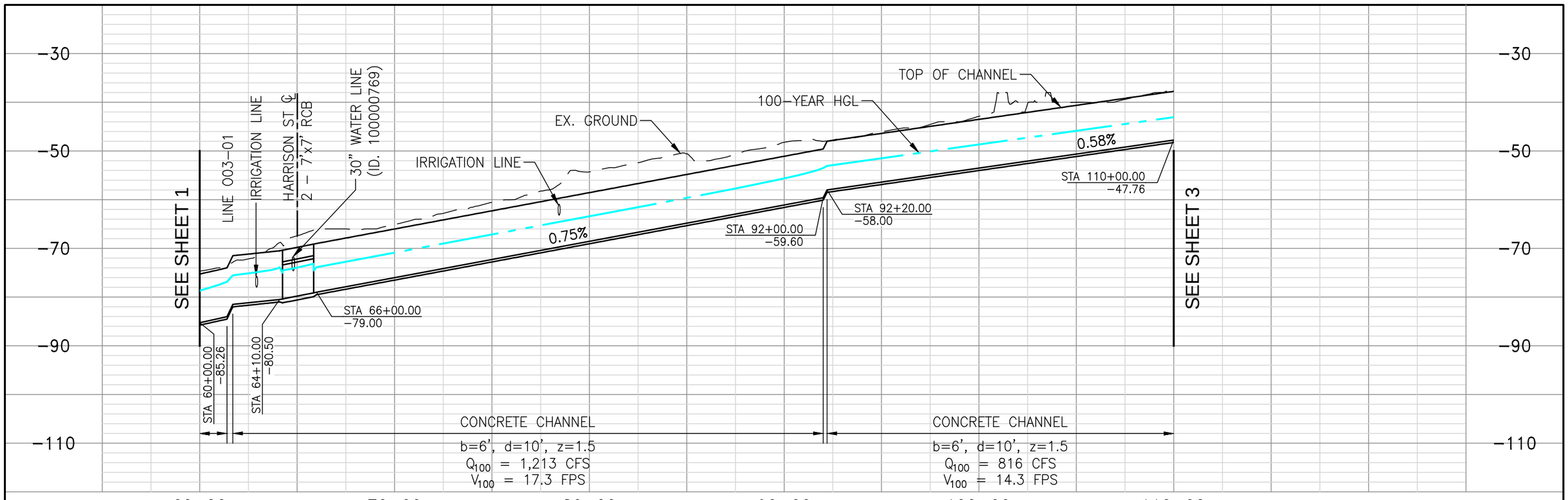

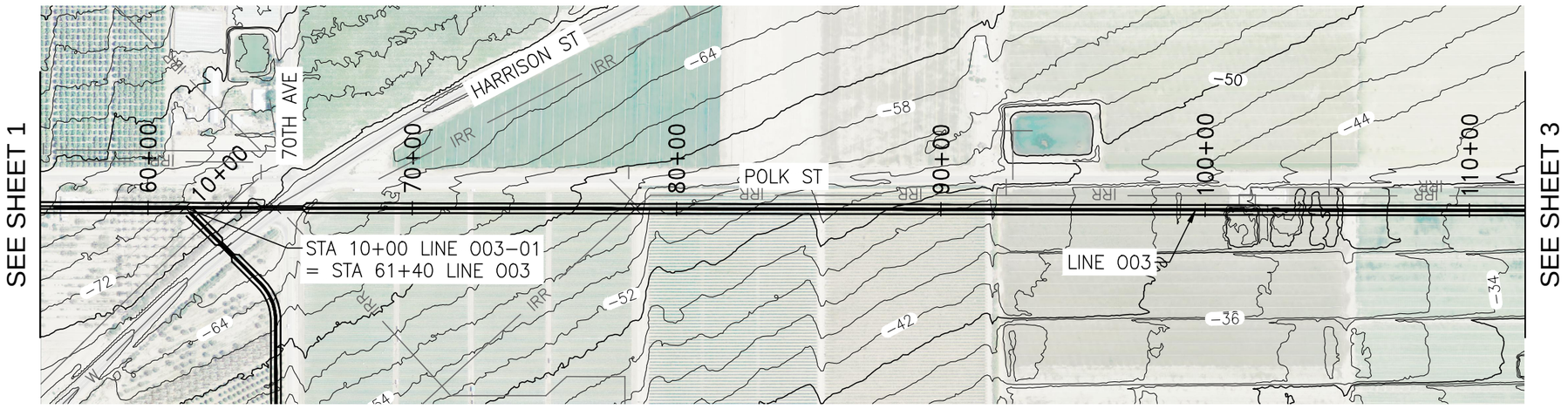

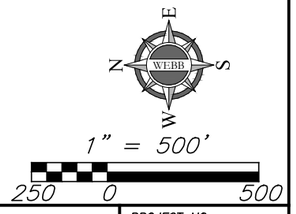

DIGALERT
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TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

LINE 003
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

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE 003
STA 60+00 - STA 110+00

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

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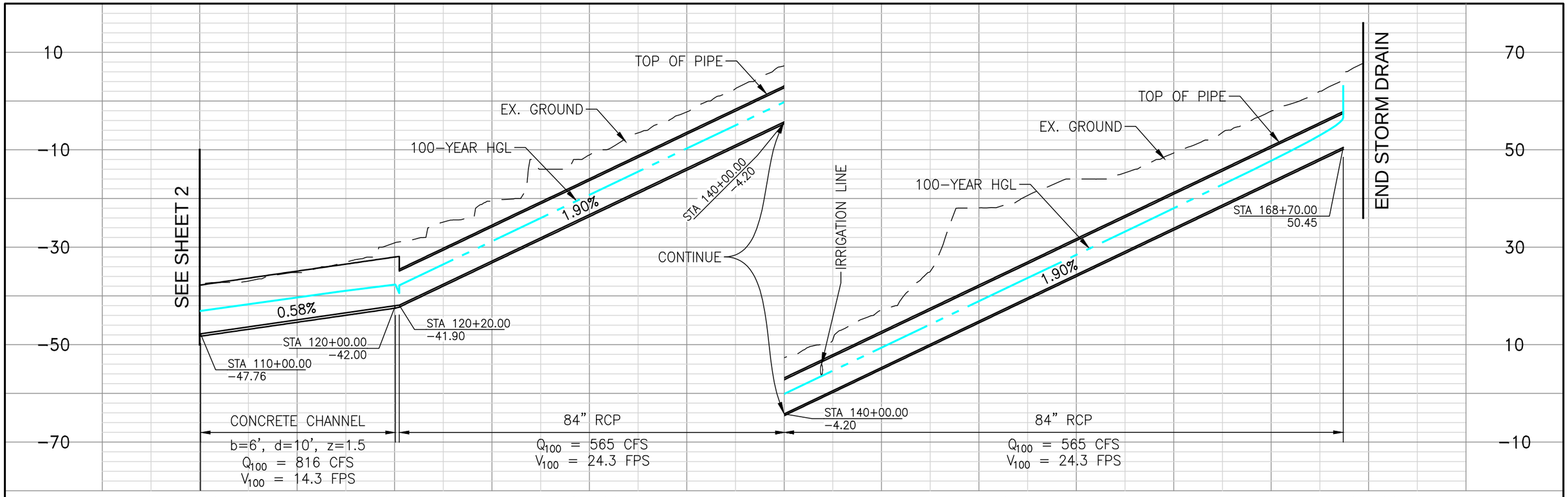

DIGALERT — DIAL BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — TWO WORKING DAYS BEFORE YOU DIG — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

LINE 003
PLAN AND PROFILE

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

APPROVED BY:

ENGINEER, RCE DATE:

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

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE 003
STA 110+00 − STA 168+70

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

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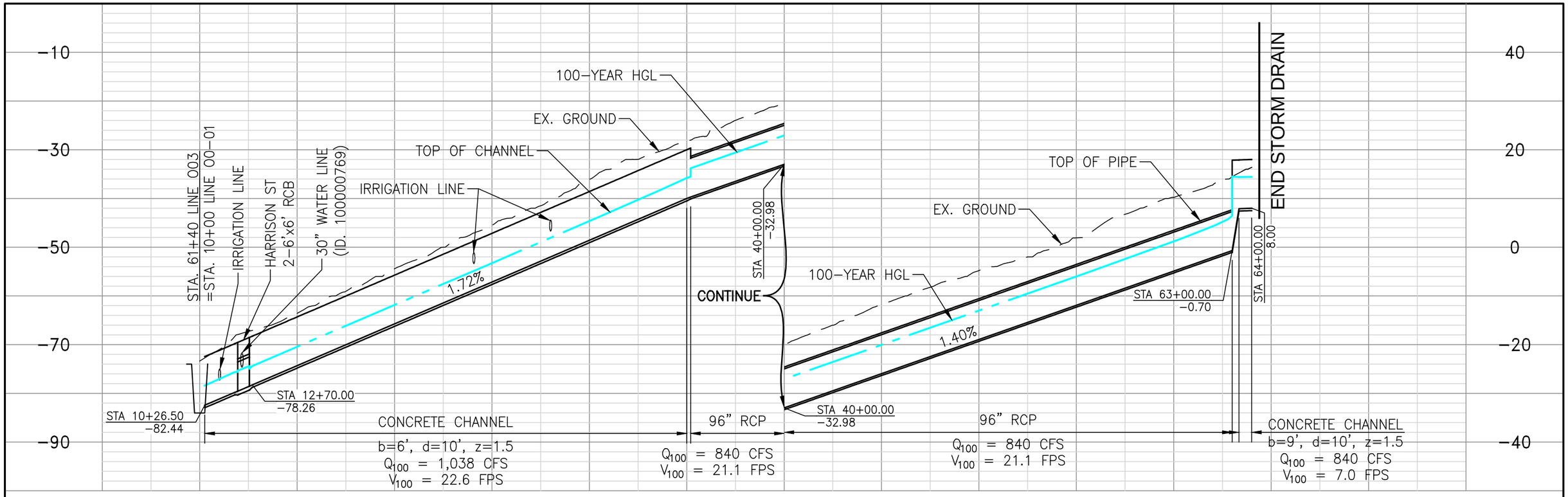

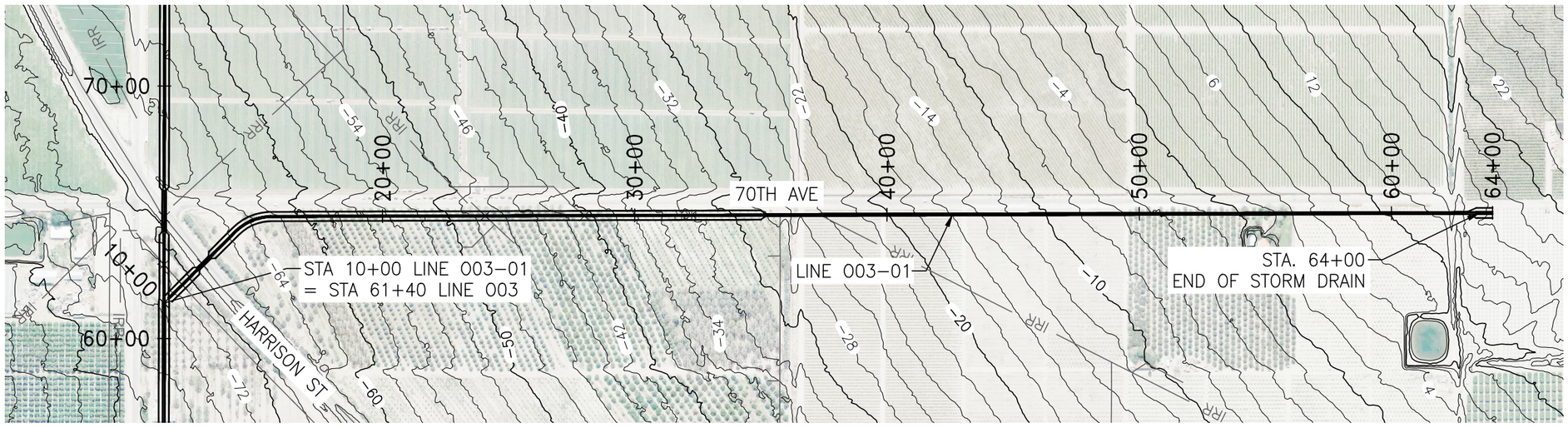

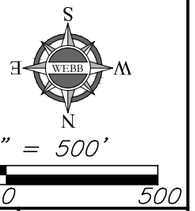

DIGALERT
DIAL BEFORE YOU DIG TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

LINE 003-01
PLAN AND PROFILE

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

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FAX (951) 788-1256

ENGINEER, RCE DATE:

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE 003-01
STA 10+00 - STA 64+00

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

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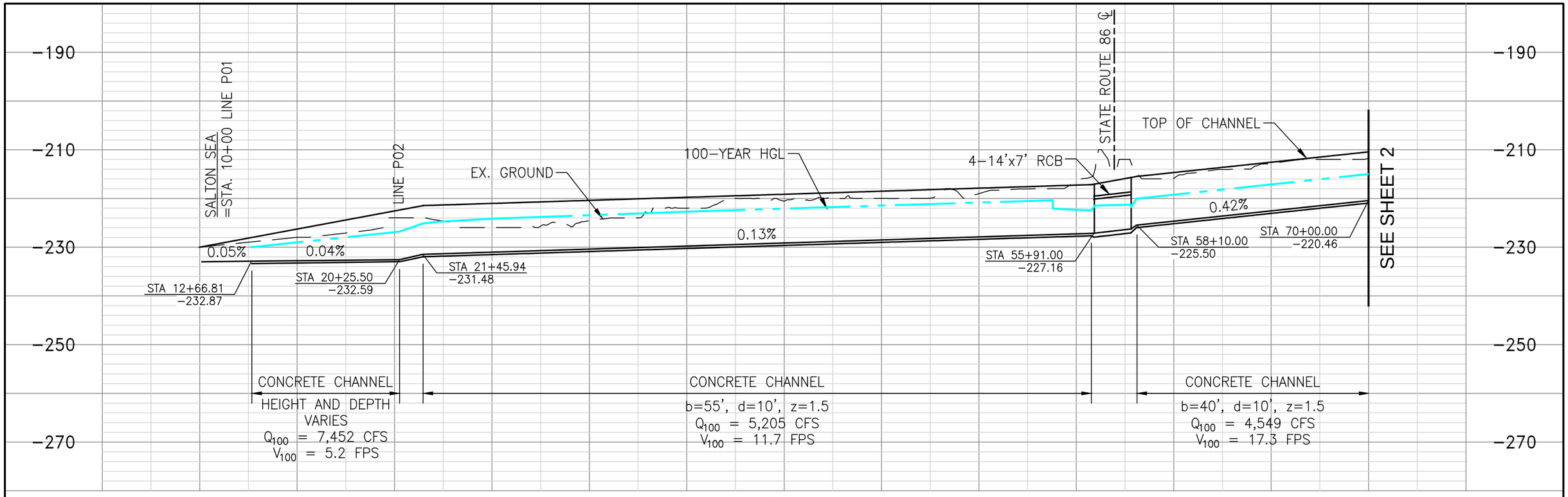

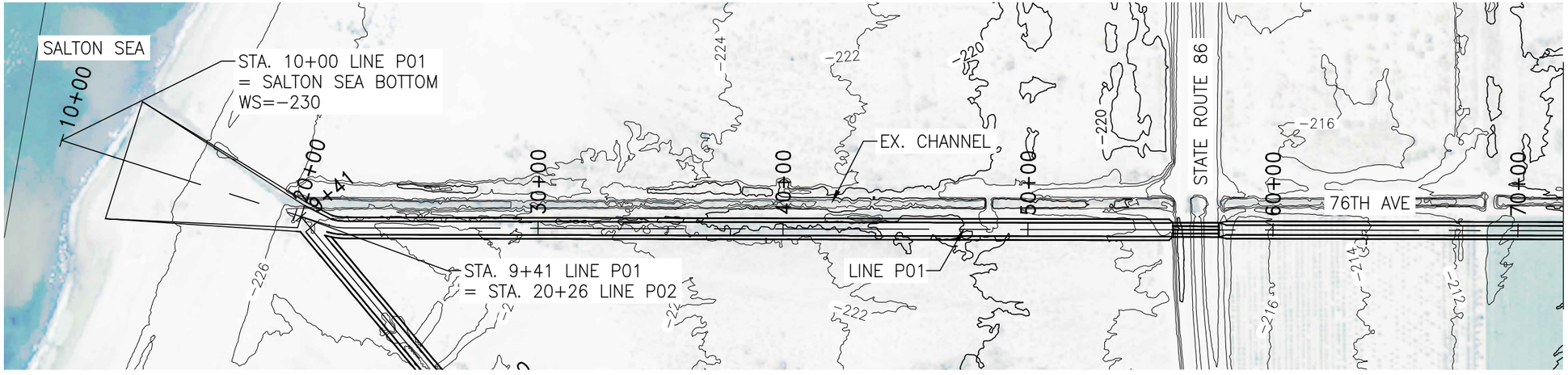

1" = 500'

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 P01
PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
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NO. C67239
CIVIL
STATE OF CALIFORNIA

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ENGINEER, RCE DATE:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE P01
STA 10+00 - STA 70+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 1 OF 12

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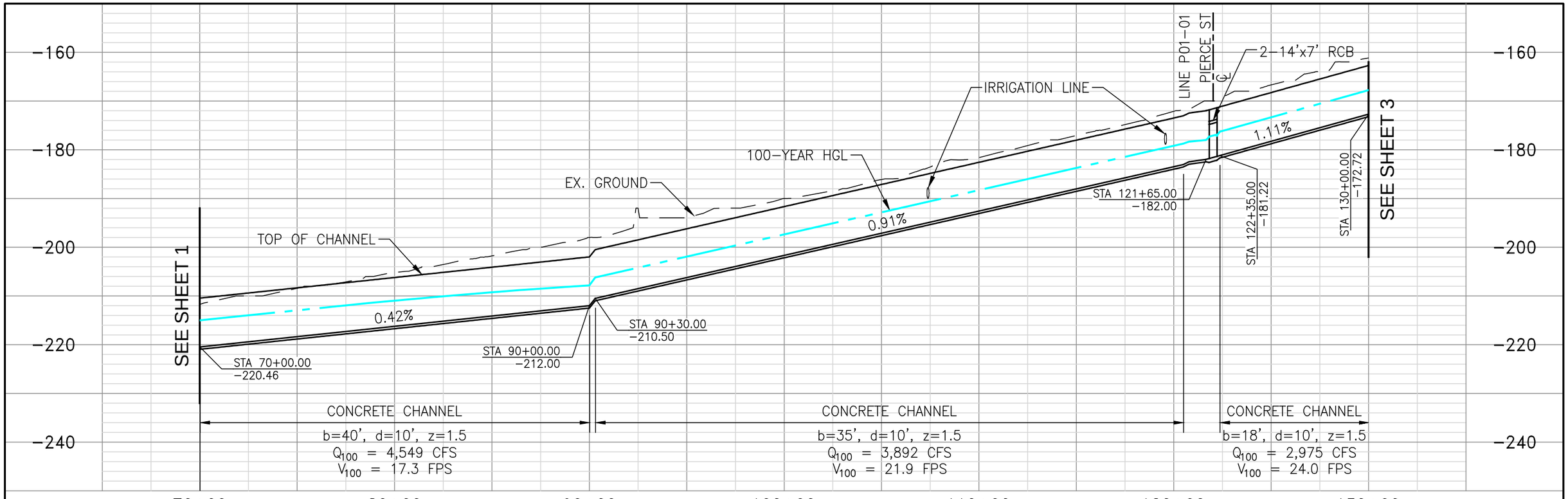

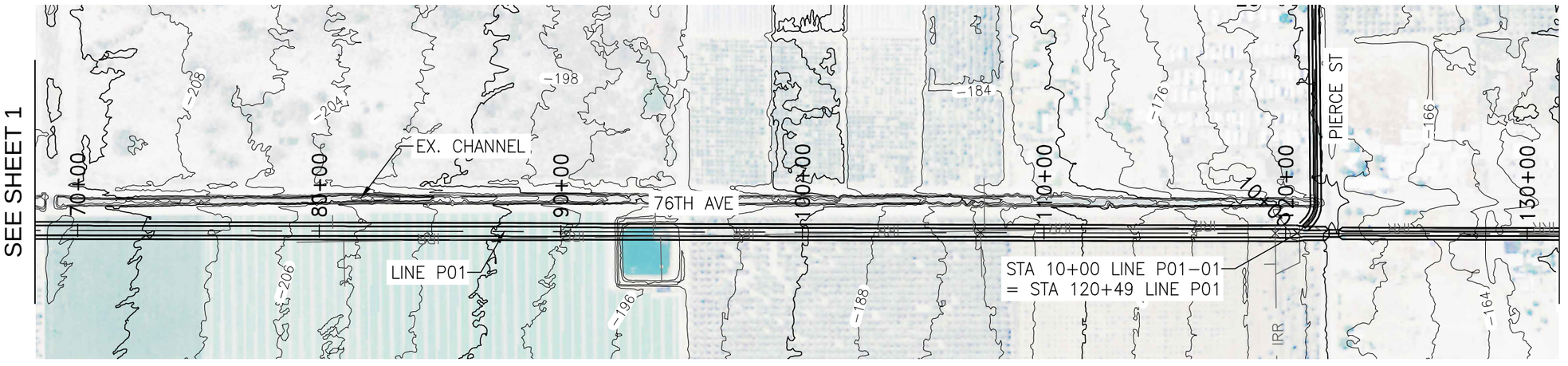

1" = 500'

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 P01
PLAN AND PROFILE

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

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ENGINEER, RCE DATE:

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE P01
STA 70+00 − STA 130+00

PROJECT NO. 2012−0001
DRAWING NO. LN001
SHEET NO. 2 OF 12

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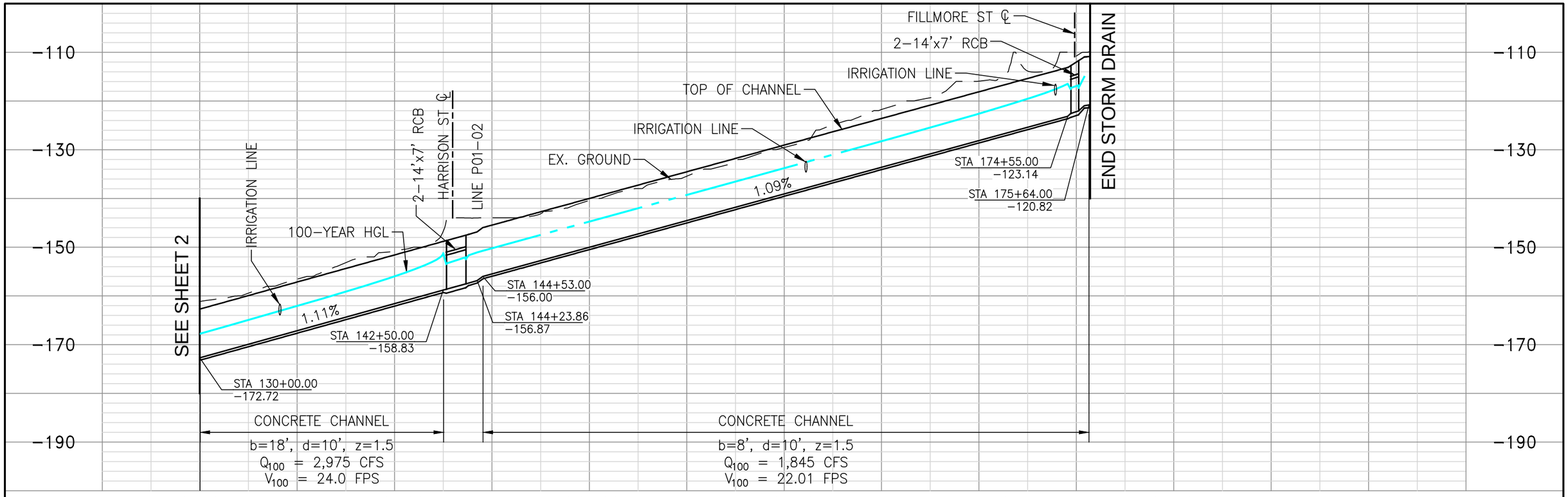

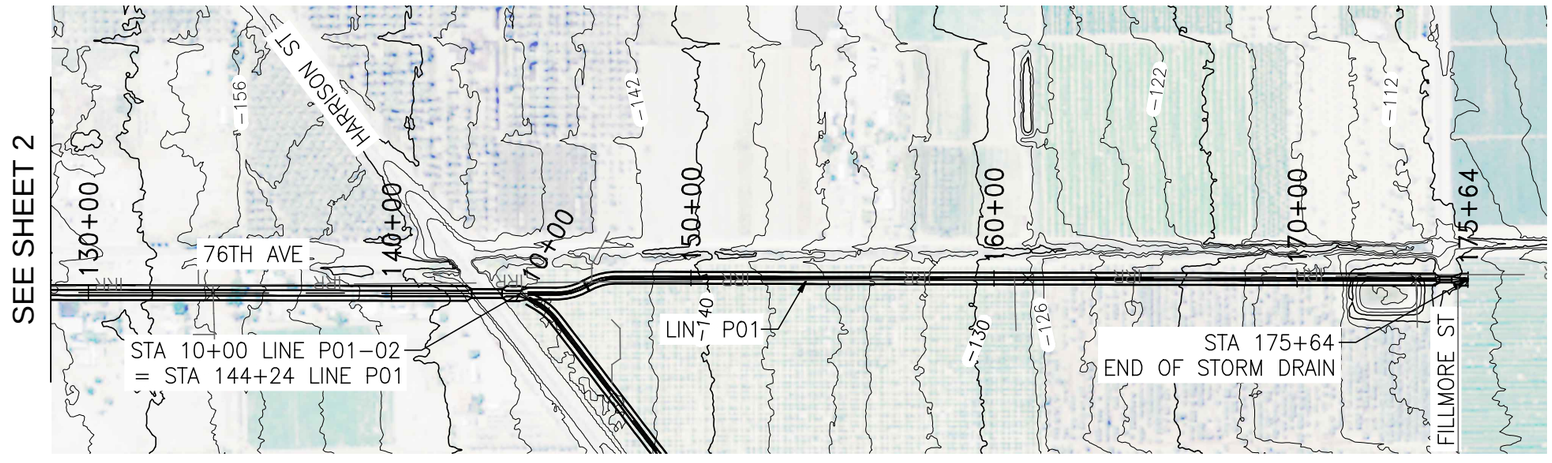

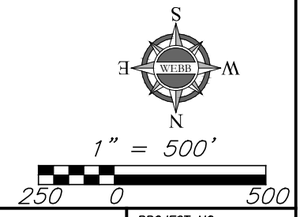

DIGALERT
DIAL BEFORE YOU DIG TOLL FREE 1–800–227–2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

LINE P01
PLAN AND PROFILE

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

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FAX (951) 788–1256

ENGINEER, RCE DATE:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE P01
STA 130+00 – STA 175+64

PROJECT NO. 2012–0001
DRAWING NO. LN001
SHEET NO. 3 OF 12

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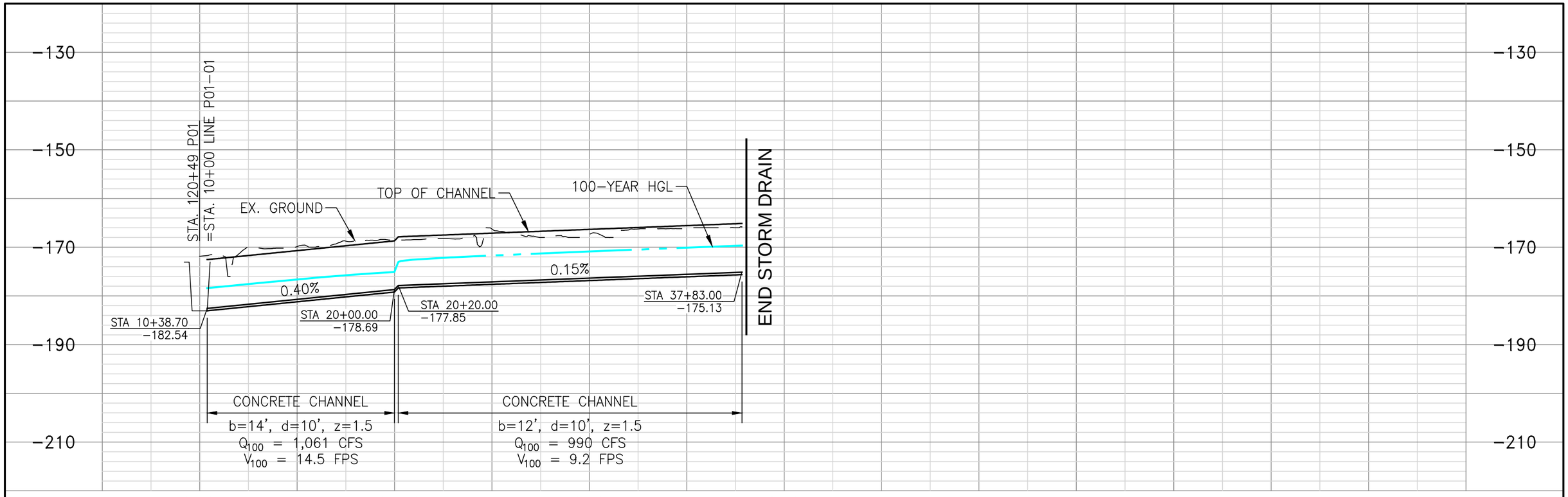

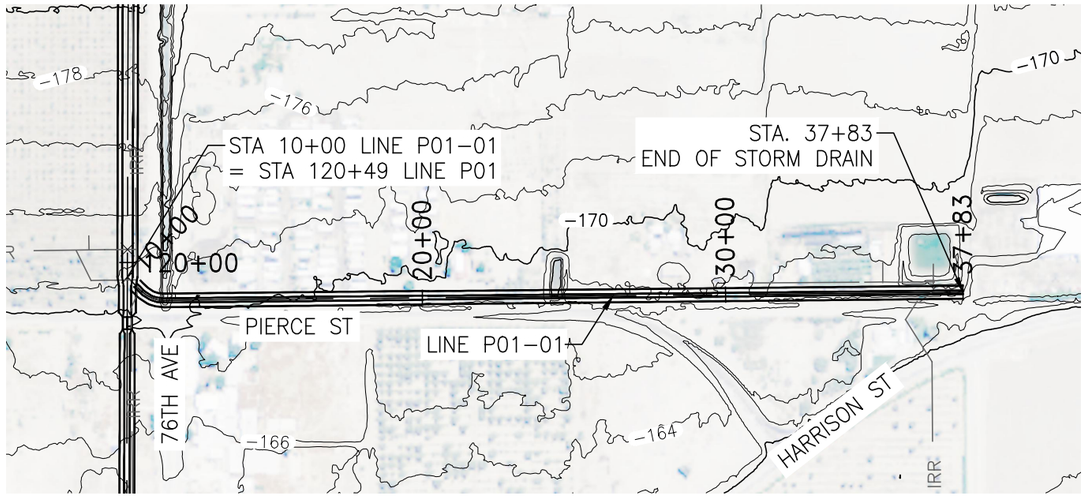

1" = 500'

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 P01-01
PLAN AND PROFILE

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

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FAX (951) 788-1256

ENGINEER, RCE DATE:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE P01-01
STA 10+00 - STA 37+83

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 4 OF 12

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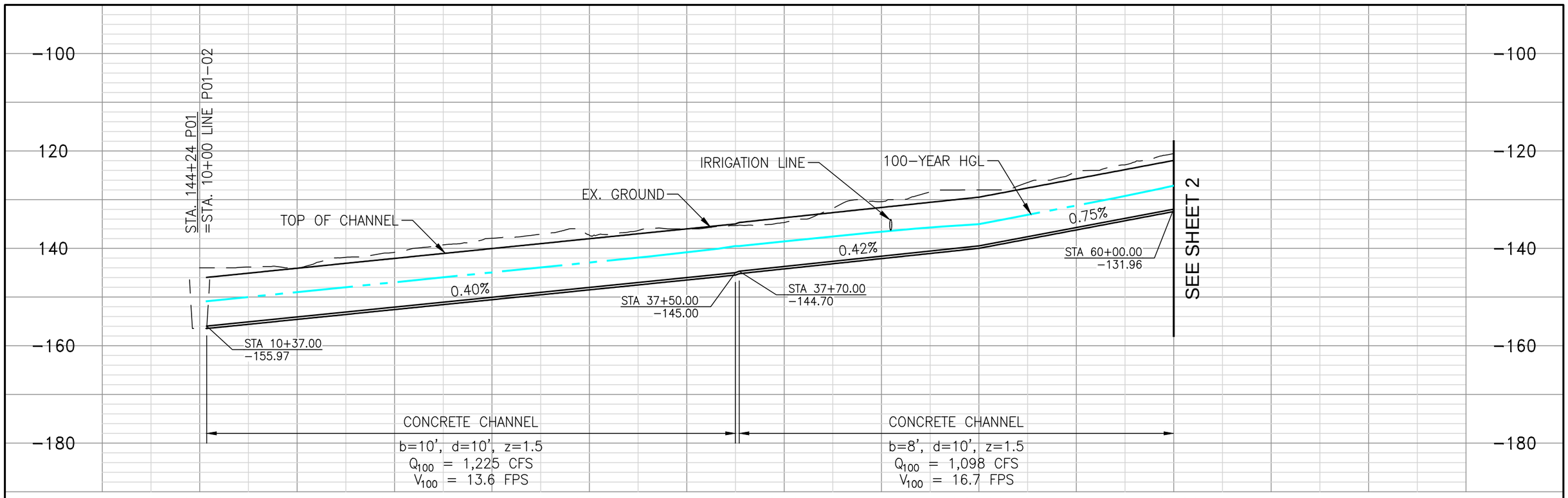

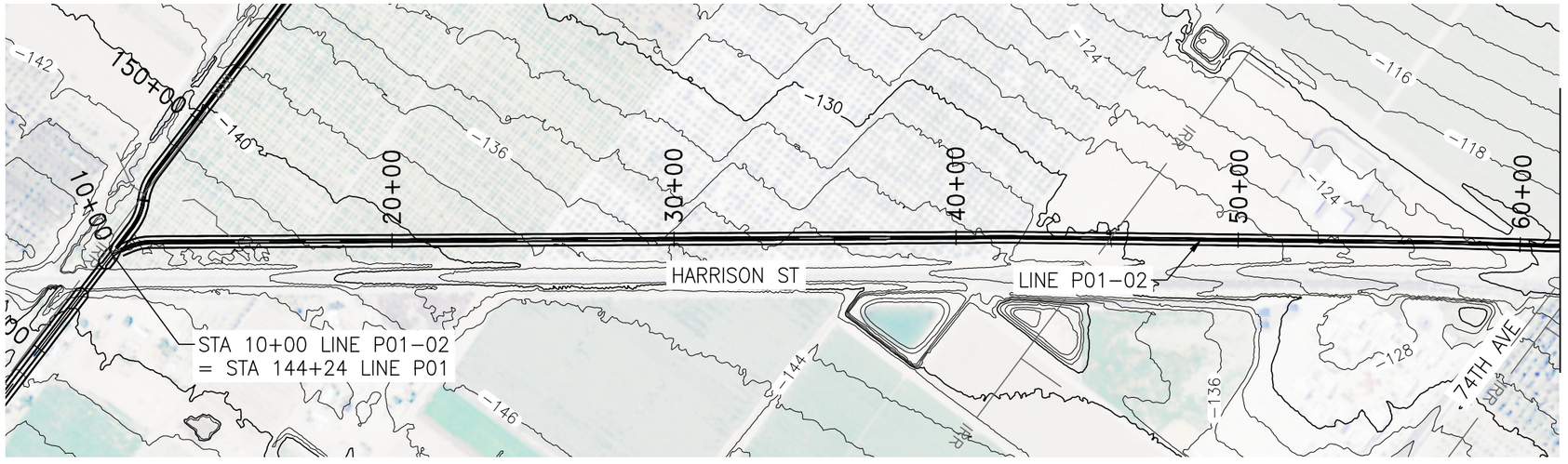

1" = 500'

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 P01-02
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

ENGINEER, RCE DATE:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE P01-02
STA 10+00 - STA 60+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 5 OF 12

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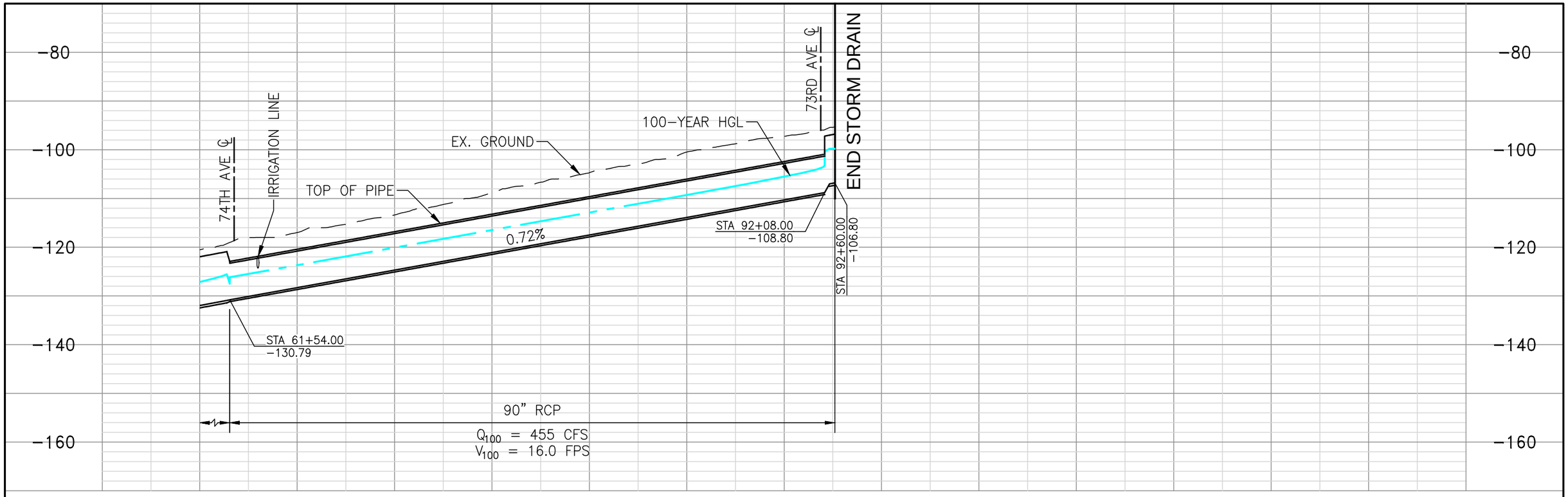

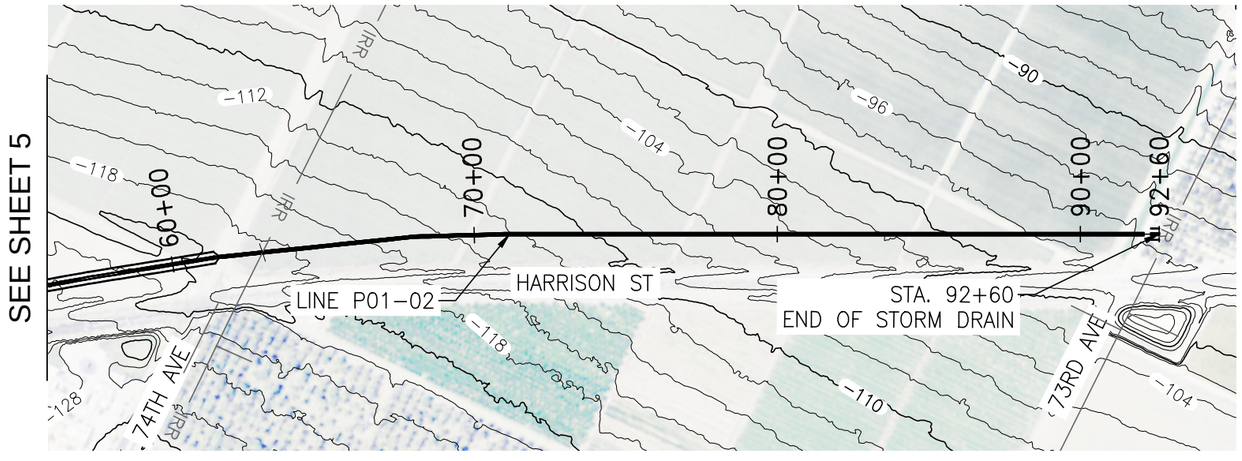

1" = 500'

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 P01-02
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
FAX (951) 788-1256

ENGINEER, RCE DATE:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE P01-02
STA 130+00 - STA 175+64

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 6 OF 12

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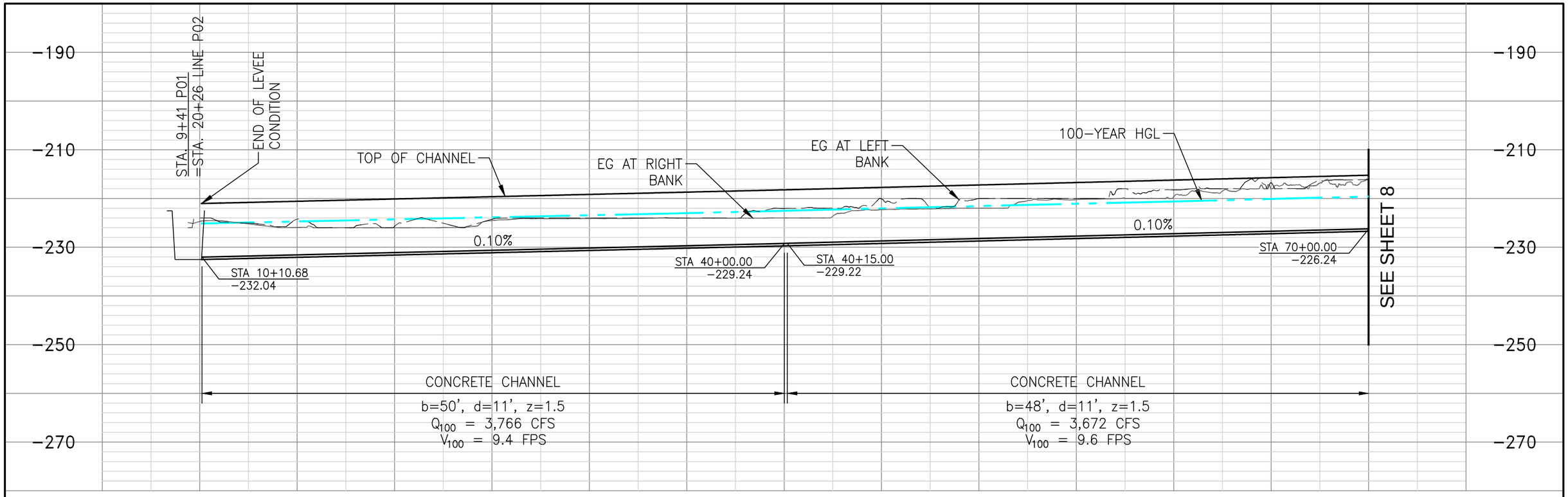

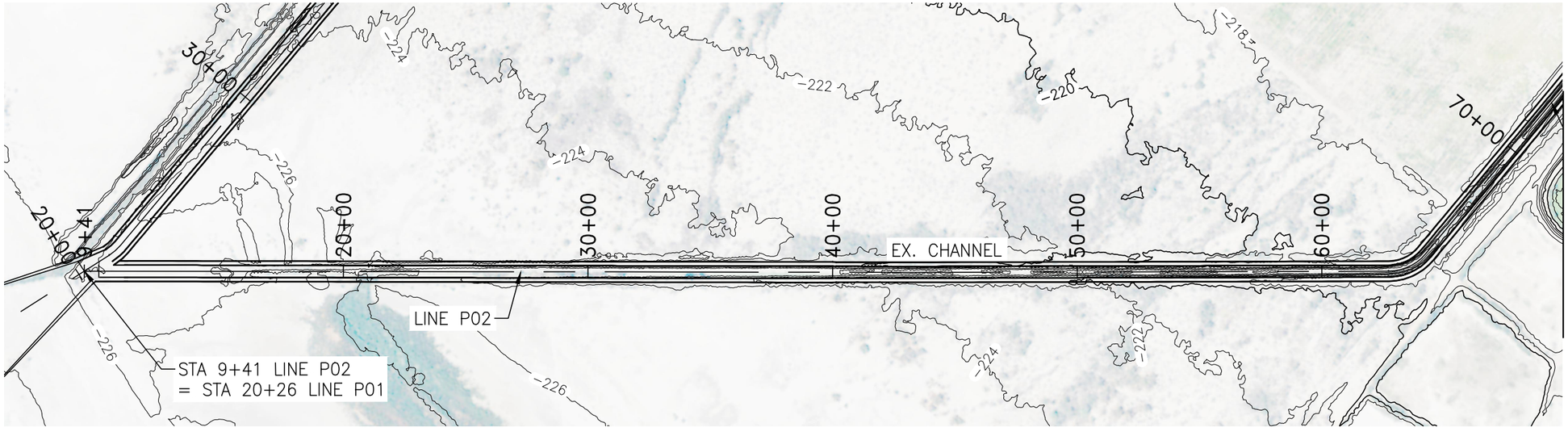

DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

LINE P02
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
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

ENGINEER, RCE DATE:

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE P02
STA 10+00 - STA 70+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 7 OF 12

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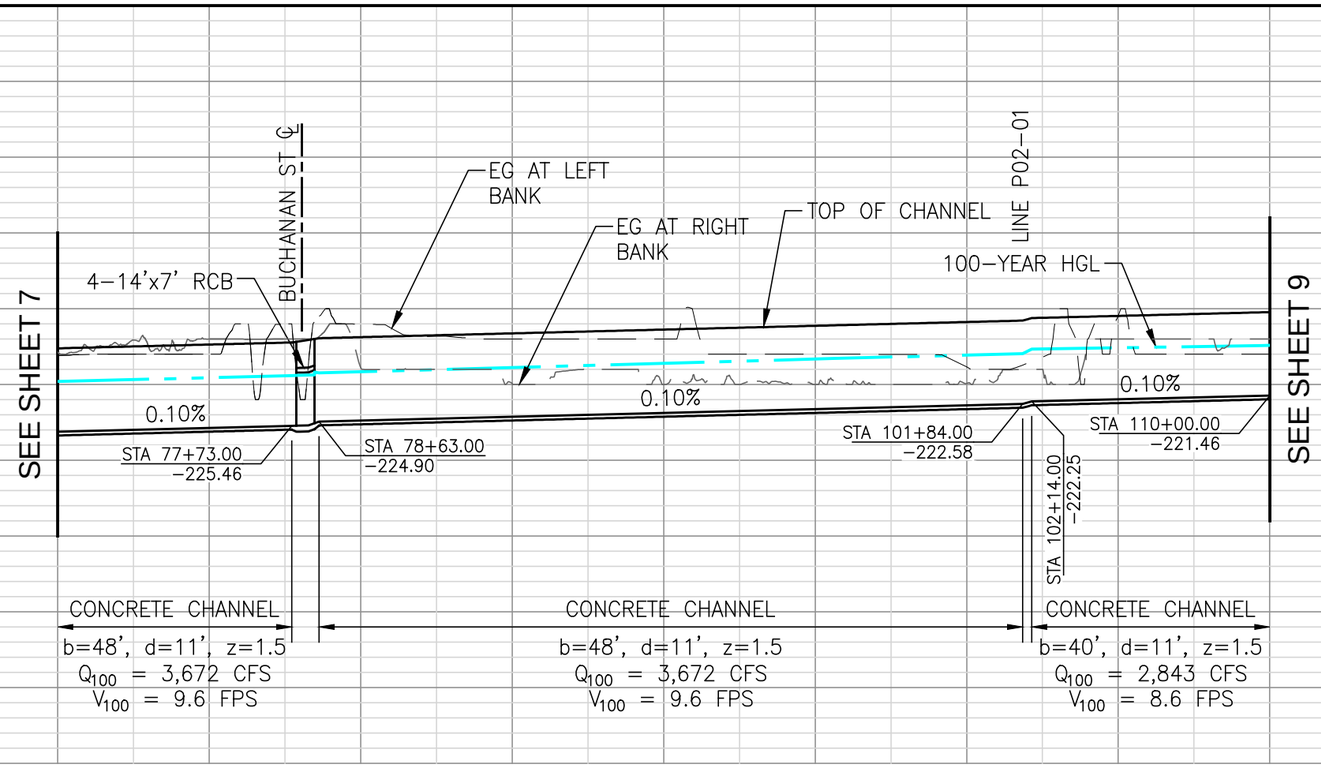

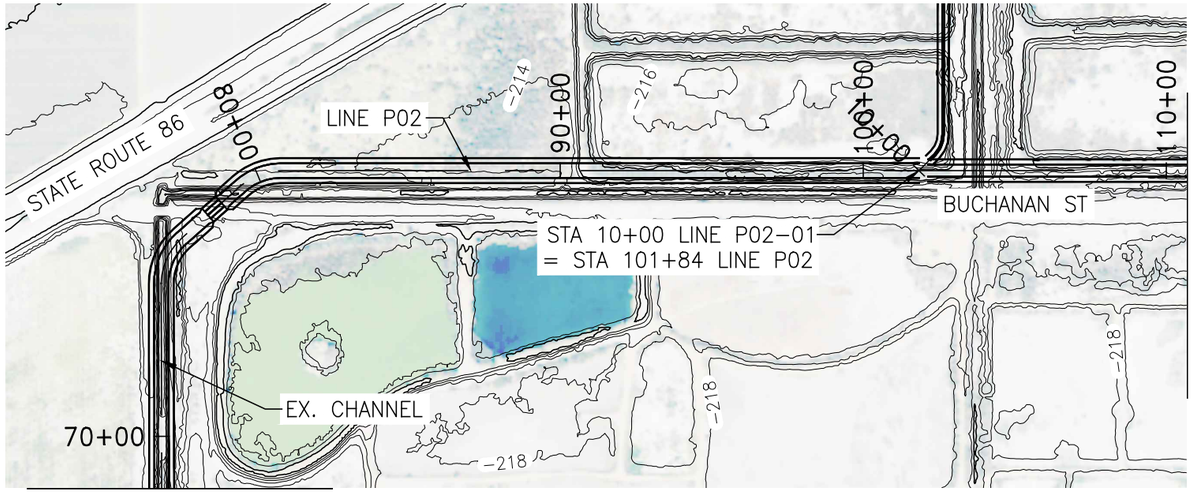

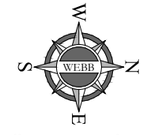

1" = 500'

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 P02
PLAN AND PROFILE

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

APPROVED BY:

ENGINEER, RCE DATE:

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
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RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE P02
STA 70+00 - STA 110+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 8 OF 12

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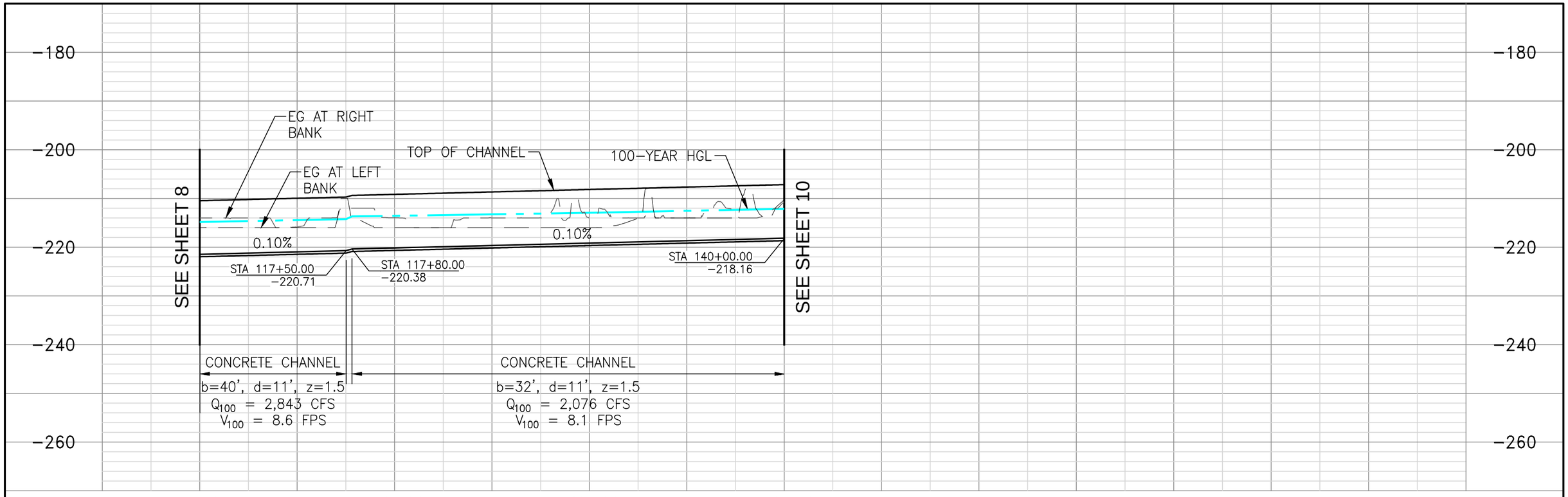
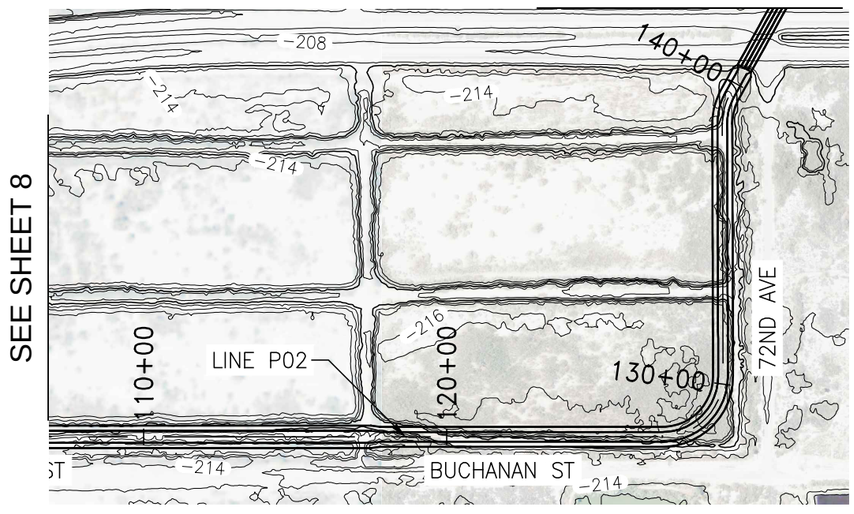
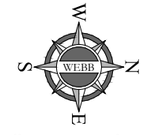


SEE SHEET 10





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 P02
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

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE P02
STA 110+00 - STA 140+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 9 OF 12

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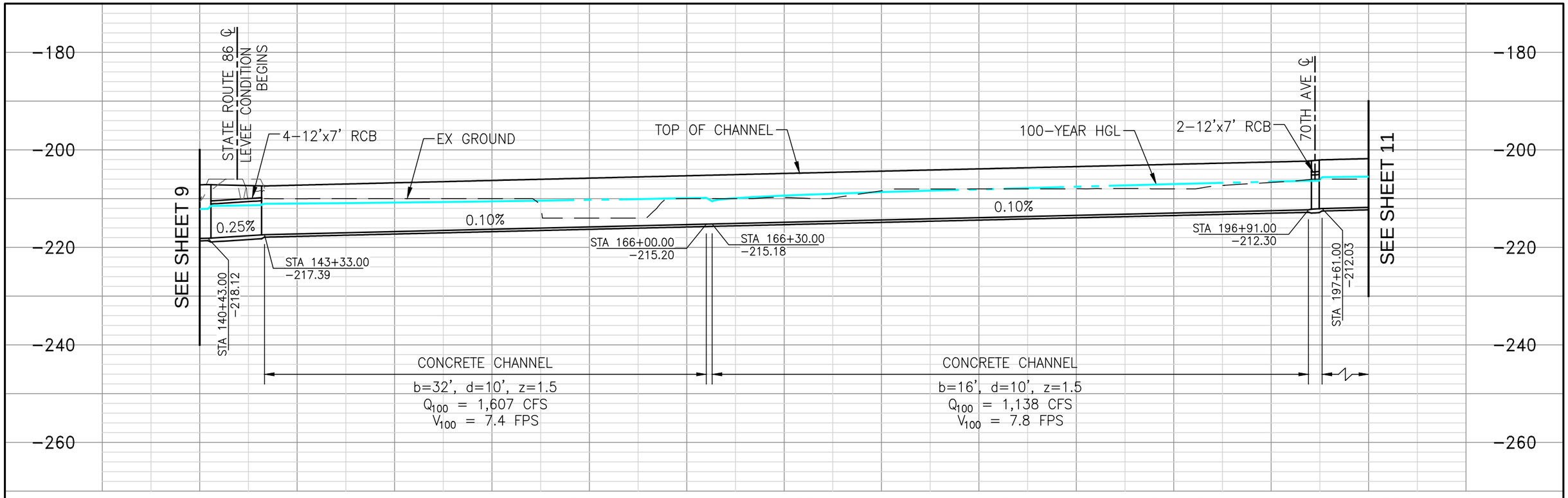

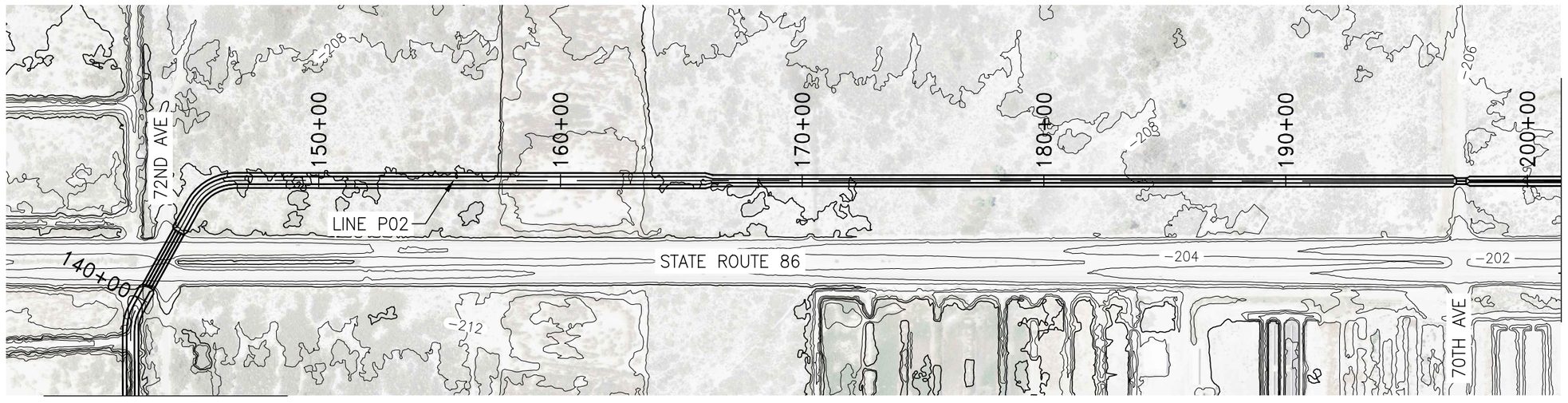

1" = 500'

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 P02
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

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE P02
STA 140+00 - STA 200+00

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 10 OF 12

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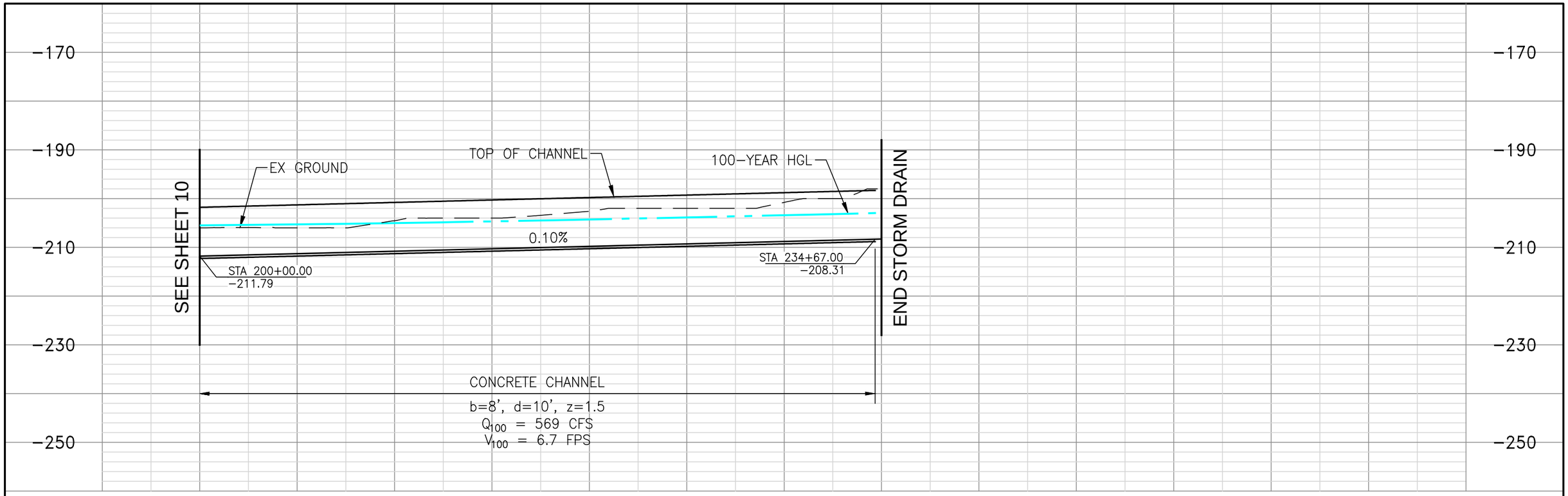

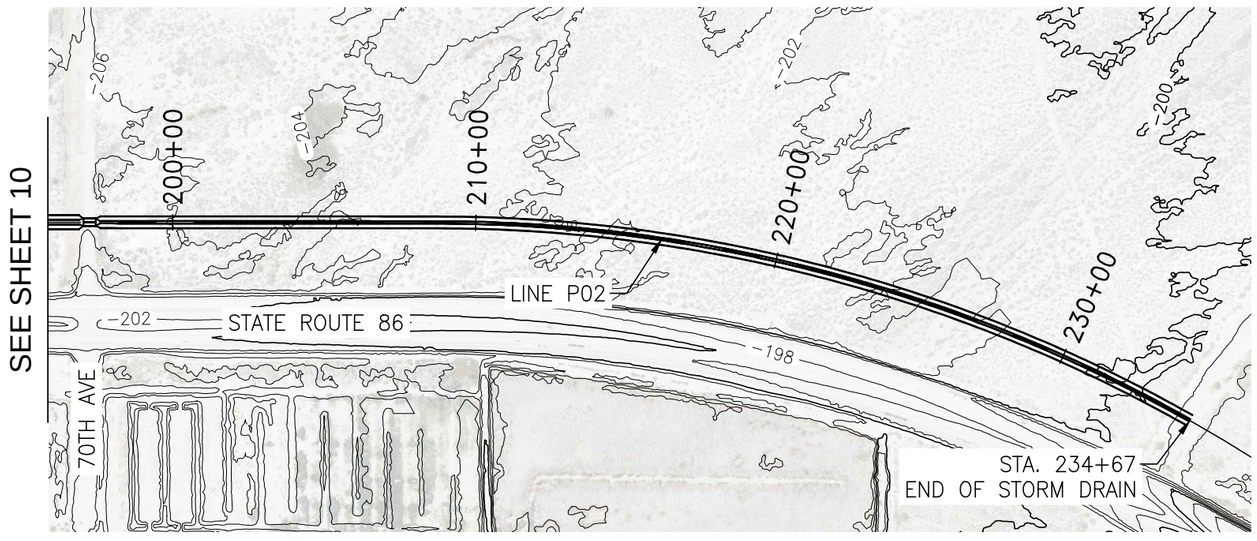

1" = 500'

250 0 500

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

LINE P02
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

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE P02
STA 200+00 - STA 234+67

PROJECT NO. 2012-0001
DRAWING NO. LN001
SHEET NO. 11 OF 12

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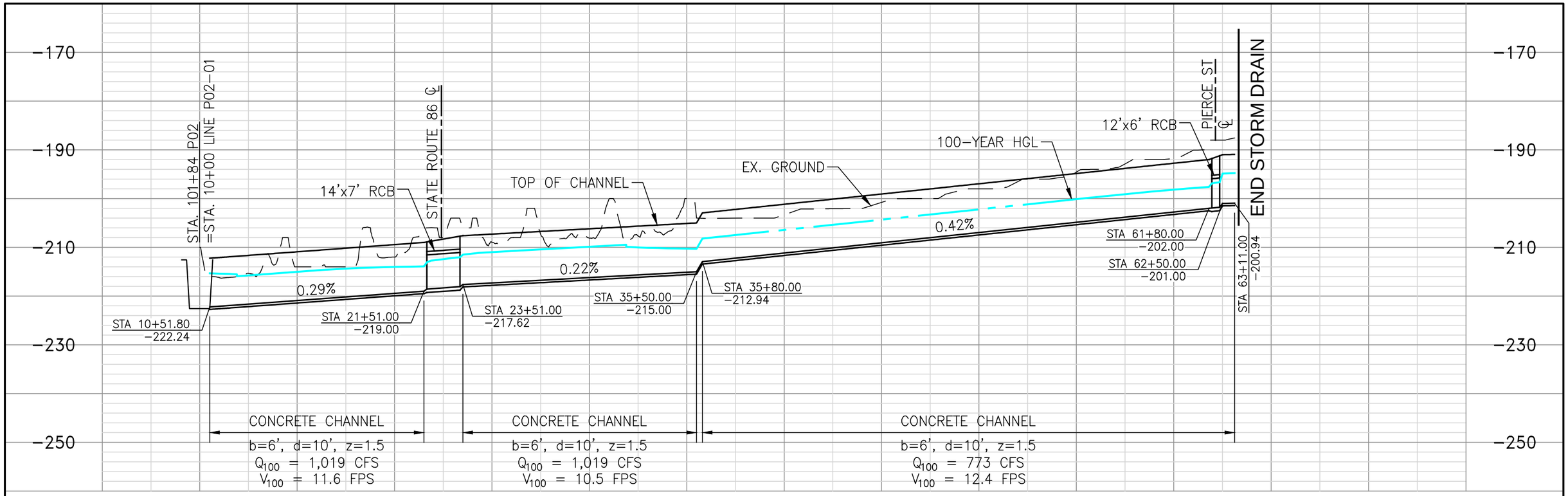

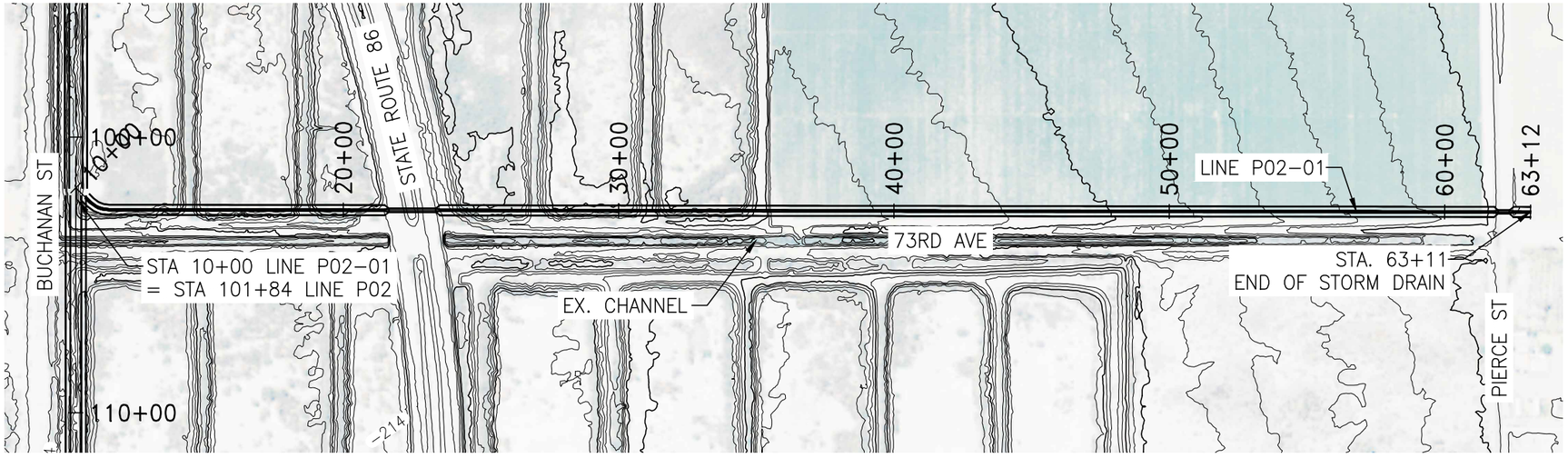

S
E WEBB W
N

1" = 500'

250 0 500

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LINE P02-01
PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
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ENGINEER, RCE DATE:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE P02-01
STA 10+00 - STA 63+11

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

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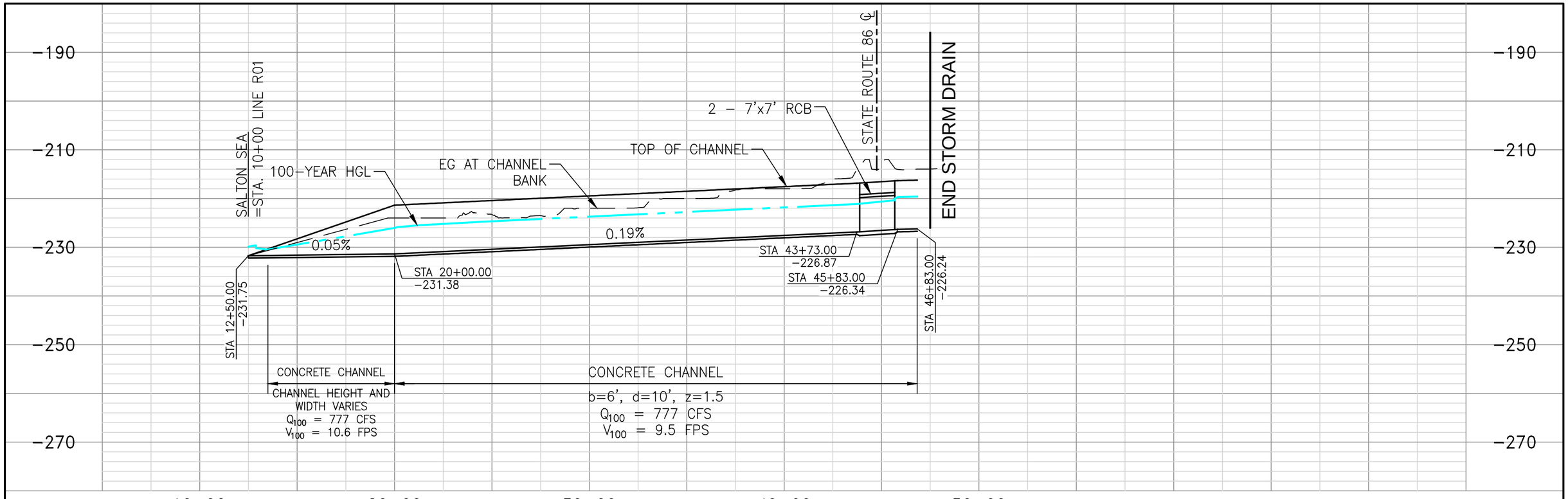

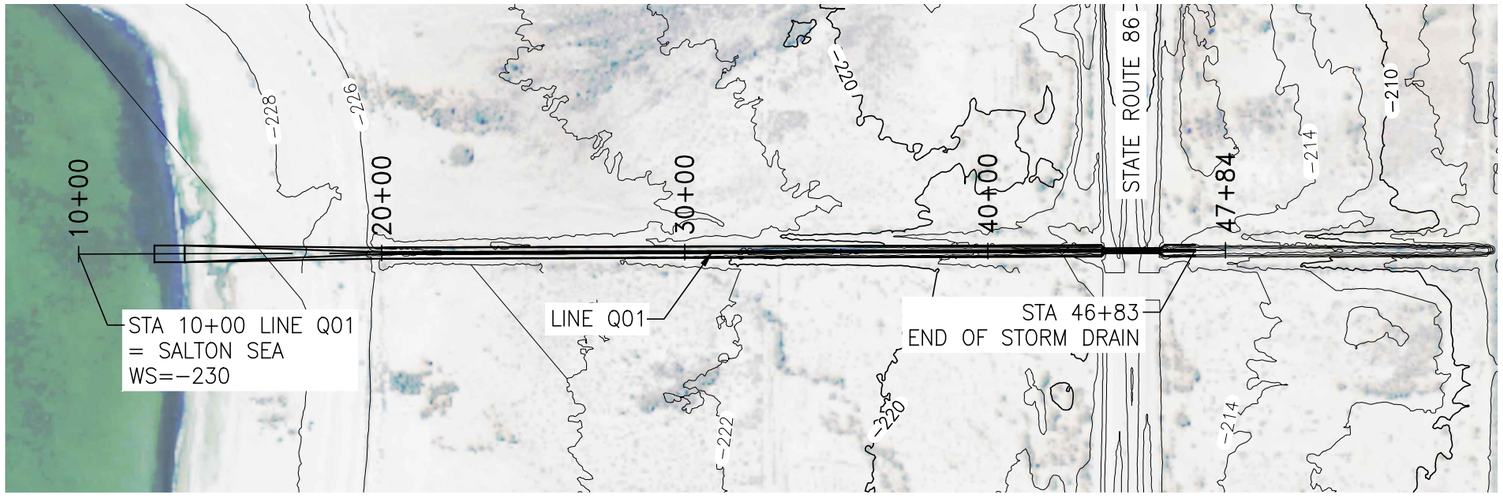

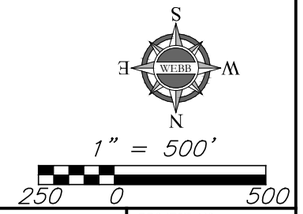

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LINE Q01
PLAN AND PROFILE

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ENGINEER, RCE DATE:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE Q01
STA 10+00 - STA 46+83

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

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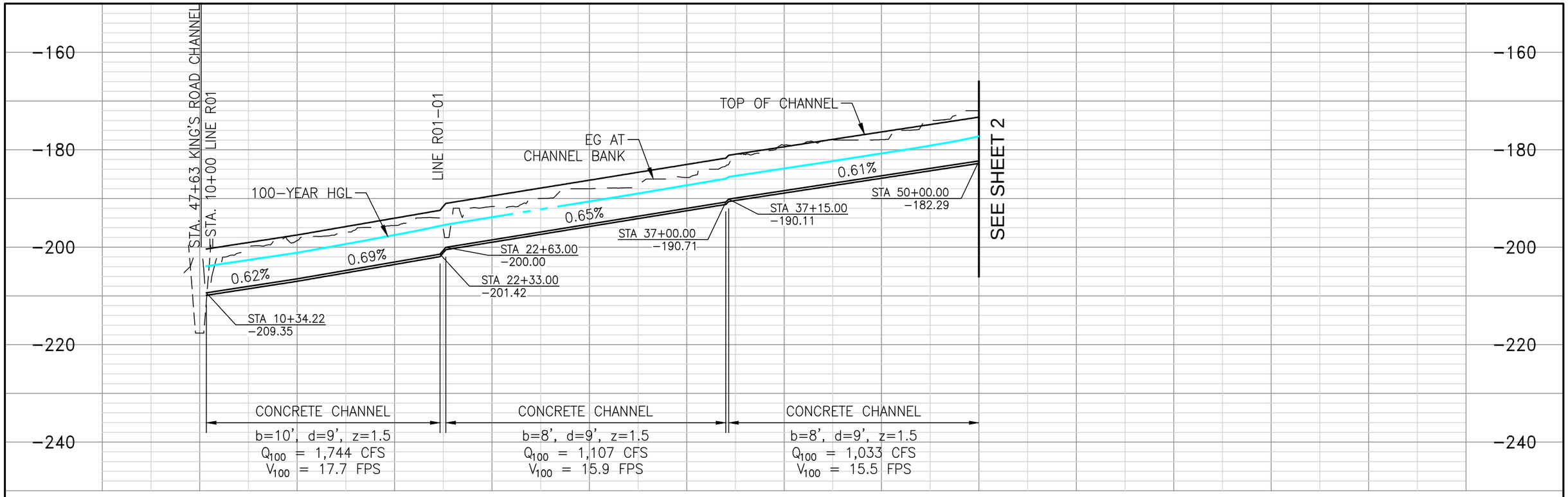

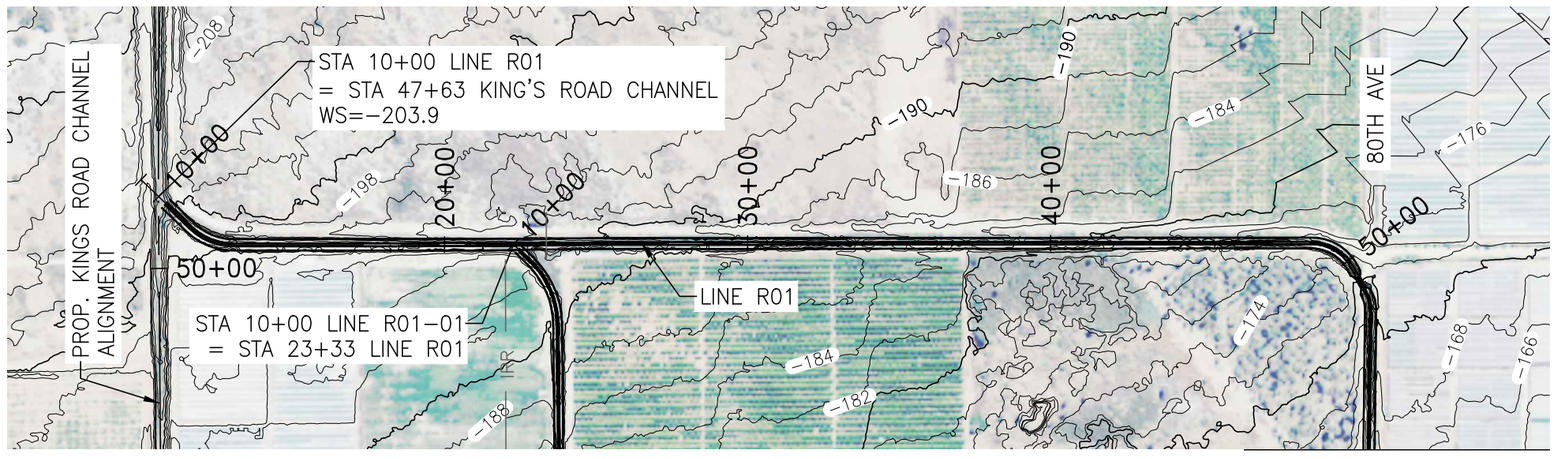

SEE SHEET 2

N E S W WEBB

1" = 500'

250 0 500

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LINE R01
PLAN AND PROFILE

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ENGINEER, RCE DATE:

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE R01
STA 10+00 − STA 50+00

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

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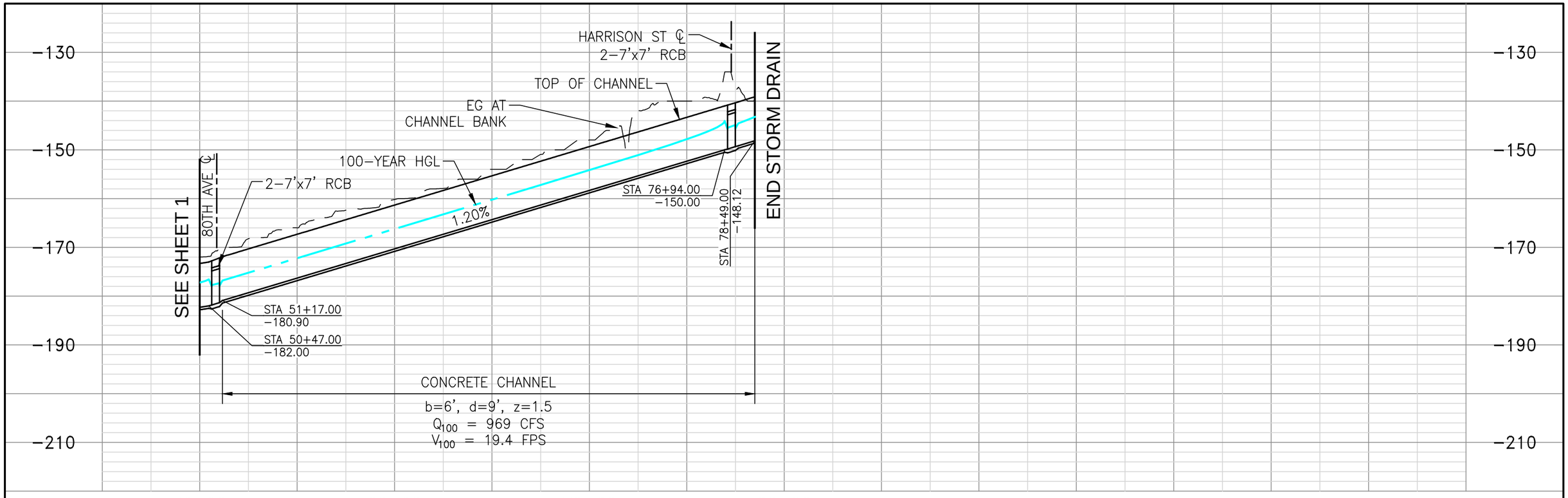
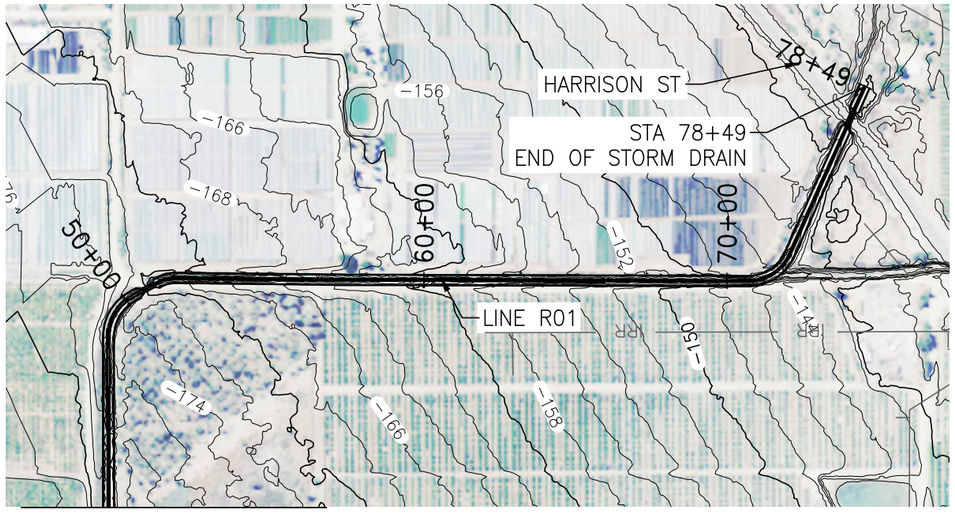
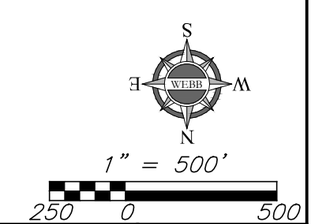




SEE SHEET 1



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LINE R01
PLAN AND PROFILE

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ENGINEER, RCE DATE:

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE R01
STA 50+00 – STA 78+49

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

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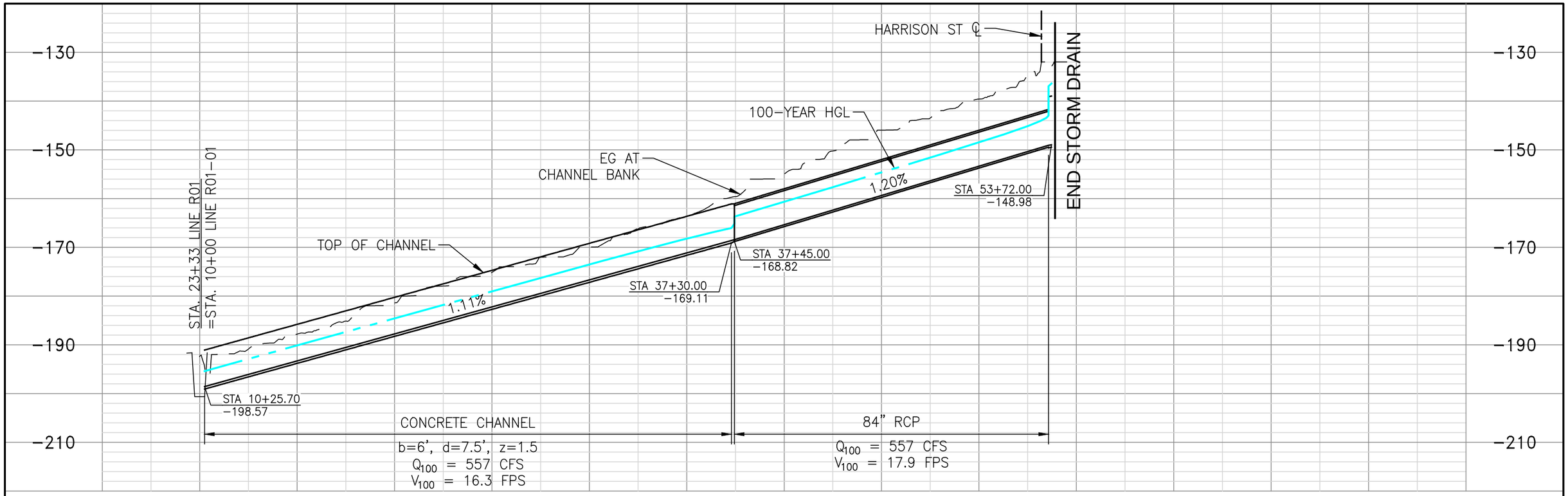

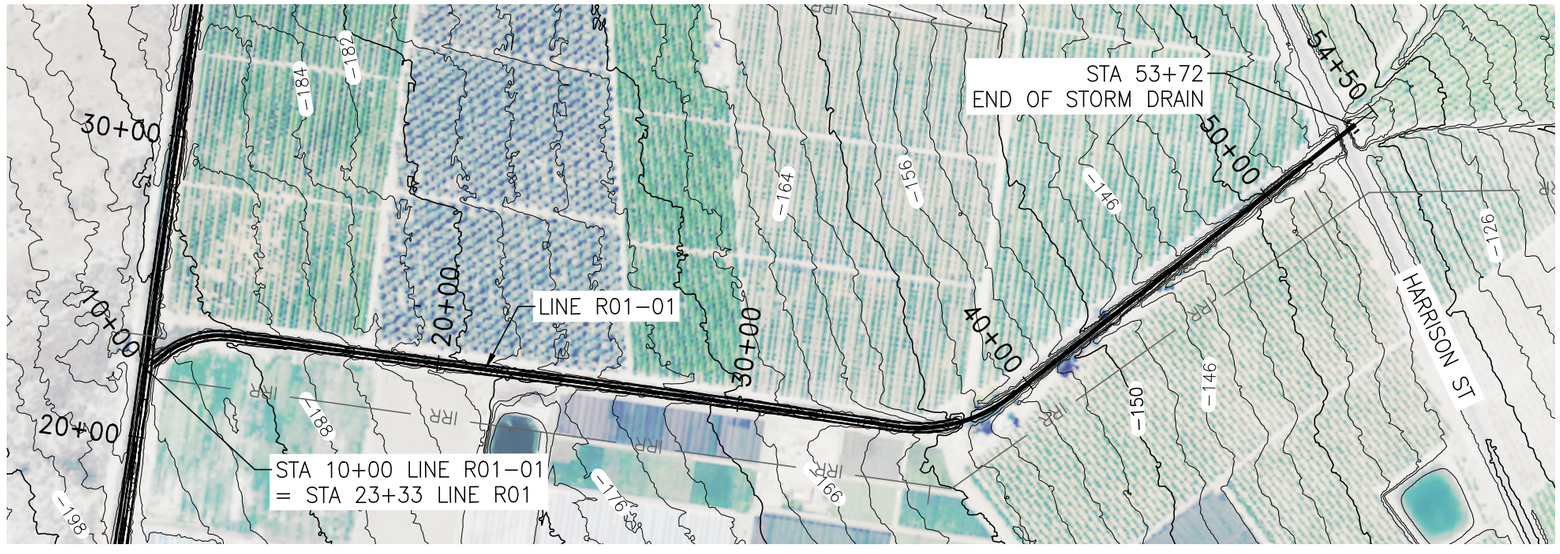

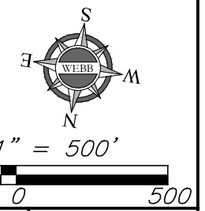

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LINE R01-01
PLAN AND PROFILE

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ENGINEER, RCE DATE:

REF.	REVISIONS	APPR.	DATE

COACHELLA VALLEY WATER DISTRICT
EASTERN COACHELLA VALLEY
STORMWATER MASTER PLAN
LINE R01-01
STA 10+00 - STA 53+72

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

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SECTION 5 – Preliminary Cost Estimates

Oasis/Valley Floor SMP Cost Estimate

Preliminary cost estimates were prepared for the major construction items for the Oasis/Valley Floor Region SMP. Unit costs were based on the 2013 RCFC&WCD Project Planning Costs, Northwest Hydraulic Consultants costs prepared for previous CVWD drainage reports, and WEBB's database of construction prices.

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 right-of-ways (based on available plans) were excluded from the required right-of-way 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 life cycle and converted to a "Net Present Value". An estimated $10 per cubic yard (CY) for sediment removal was used in O&M cost calculations.

The estimated cost of each system is tabulated in Table 5-1 (Estimated System Cost Table).

Table 5-1: Oasis Valley Floor Estimated System Cost

Item	Line L Stormwater System	Line M Stormwater System	Line N Stormwater System	68th Ave Stormwater System	Line O1 Stormwater System	Line O2 Stormwater System	Line O3 Stormwater System	Line P Stormwater System	Line Q Stormwater System	Kings Road Stormwater System	Line R Stormwater System	84th Ave Stormwater System	**Total Cost**
Storm Drain & Earthwork	$35,255,000	$35,876,000	$49,895,000	$97,500,000	$35,914,000	$2,629,000	$10,638,000	$41,940,000	$1,782,000	$81,500,000	$3,807,000	$48,400,000	**$445,136,000**
Contingencies[1]	$5,255,000	$5,381,000	$7,484,000	$14,600,000	$5,387,000	$394,000	$1,596,000	$6,291,000	$267,000	$12,200,000	$571,000	$7,300,000	**$66,726,000**
Engineering and Inspection[2]	$3,526,000	$3,588,000	$4,989,000	$9,700,000	$3,591,000	$263,000	$1,064,000	$4,194,000	$178,000	$8,100,000	$381,000	$4,800,000	**$21,774,000**
Right of Way	$3,060,000	$3,195,000	$2,949,000	$3,100,000	$2,274,000	$288,000	$747,000	$2,304,000	$30,000	$2,800,000	$147,000	$1,500,000	**$22,394,000**
O & M[3]	$534,000	$558,000	$892,000	$8,700,000	$554,000	$$12,000	$39,000	$593,000.	$13,000	$8,000,000	$20,000	$4,400,000	**$24,303,000**
Total Cost	**$47,630,000**	**$48,598,000**	**$66,209,000**	**$123,900,000**	**$47,720,000**	**$3,554,000**	**$14,084,000**	**$55,322,000**	**$2,270,000**	**$104,500,000**	**$4,926,000**	**$61,600,000**	**$580,333,000**

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%

SECTION 6 – Conclusions

Benefits

The regional and subregional flooding of the Oasis/Valley Floor 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 impassable 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 can 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 Oasis/Valley Floor Region is located within the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) area. A biological constraint analysis (Ref. 6) has been prepared to address the impacts associated with the proposed alignments (Alternative 2A from the Preliminary Alternative Development Study) (Ref. 7). The biological resources identified in the CVMSHCP were mapped against the proposed channel alignments associated with Alternative 2A. In general, the proposed facility alignments have the potential to impact permanent breeding and migratory habitat predicted to support Le Conte's Thrasher, Crissal Thrasher, Yellow Warbler, Southwest Willow Flycatcher, Least Bell's Vireo, Summer Tanager and Yellow-Breasted Chat, and associated habitats. Drainage systems P and Q have the potential to impact habitat predicted to support Pup Fish. Minor portions of drainage system M have the potential to impact habitat predicted to support Coachella Valley Round-Tailed Squirrels.

The constraints identified were based on data in the CVMSHCP and may not depict actual site-specific field conditions. Where predicted sensitive resources may be impacted by implementation of the project, a field reconnaissance is recommended to confirm actual field conditions. The reconnaissance survey may recommend focused surveys of the project Area of Potential Effect (APE) for temporary and permanent impacts to the specific resource. As part of project implementation, the level of impact to sensitive biological resources would be determined and mitigation for those losses would be identified.

Actual impacts to these sensitive areas, and other 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 may 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. Coachella Valley Water District Development Design Manual, February 2012

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

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

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

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

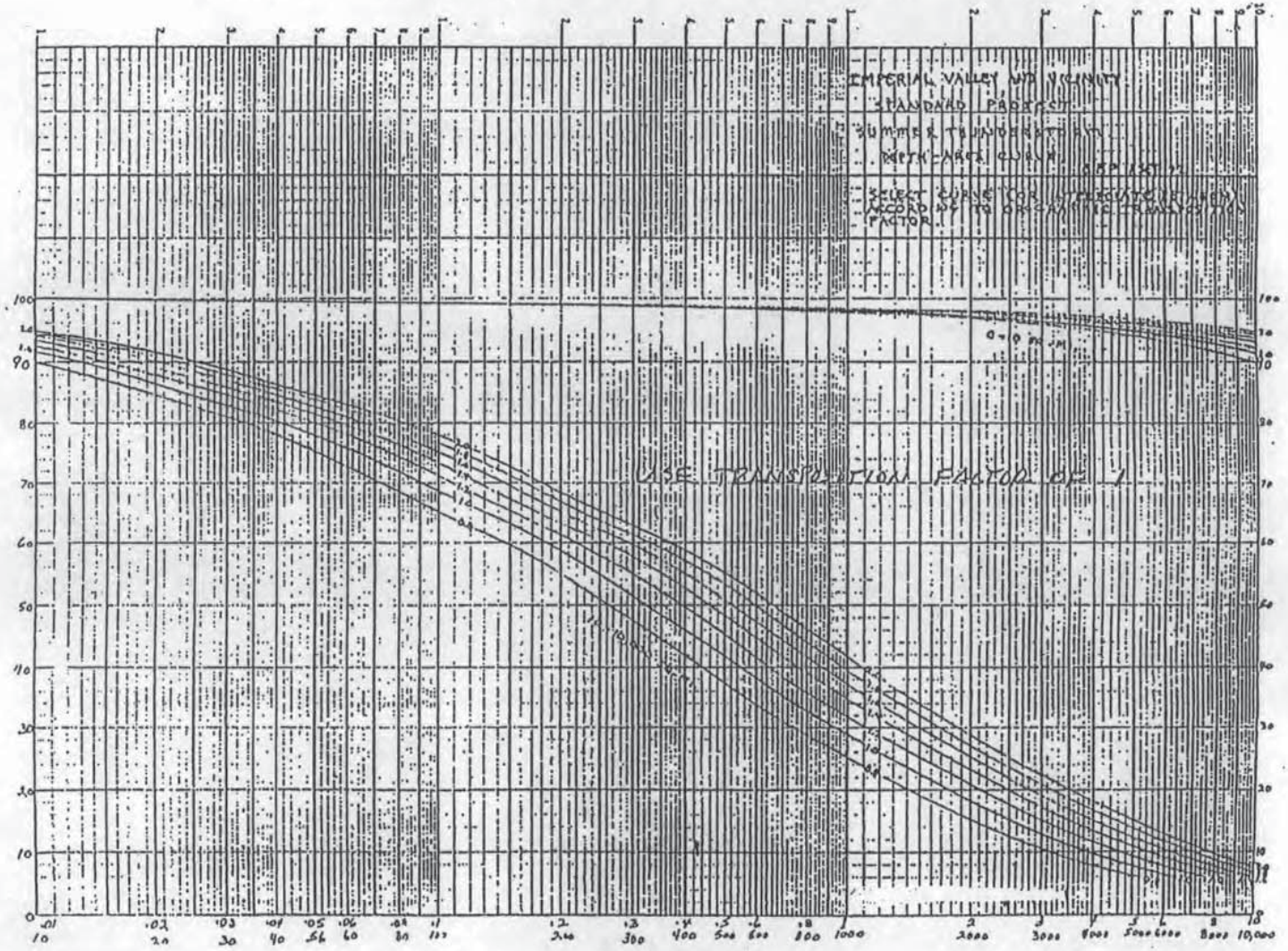
6. Biological Constraints Analysis, Alignments 1 and 2, Oasis/Valley Floor Region Memo, Tetra Tech, November 18, 2012

7. WEBB Associates, "Preliminary Alternative Development Study for the Oasis/Valley Floor Region", March 2014, prepared for the Coachella Valley Water District

8. Tetra Tech, "Alternative Study for Oasis Area Final Report", May 2014, prepared for the Coachella Valley Water District

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

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



Interpolated Values from Plate 17: Rainfall-depth area reduction curve for Coachella Valley

Area Reduction Curve		
Node ID	Area (sq. mi.)	Percent
	11.00	91.40
CP_M9	10.89	91.47
	10.00	92.00
	11.00	91.40
CP_N11	11.46	91.08
	12.00	90.70
	13.00	90.00
CP_N14	13.71	89.72
	14.00	89.60
	14.00	89.60
CP_N15	14.12	89.53
	15.00	89.00
	16.00	88.40
CP_N17	16.91	88.04
	17.00	88.00
	17.00	88.00
CP_N18	17.72	87.42
	18.00	87.20
	11.00	91.40
CP_O1-9	10.56	91.66
	10.00	92.00
	13.00	90.00
CP_P15	13.69	89.72
	14.00	89.60

Input Value from Curve
Interpolated Value

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

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Appendix B
Watershed Lag Time Calculations

EASTERN COACHELLA VALLEY SMP

Watershed Lag Time Calculations for Oasis/Valley Floor 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)*
L2	633.6	0.99	1.569	0.681	-16	-46	30	19.1	4.372978	0.040	0.562
L3	633.6	0.99	1.473	0.674	-40	-70	30	20.4	4.513416	0.040	0.540
L4	691.2	1.08	1.645	0.836	-28	-62	34	20.7	4.546816	0.040	0.609
L5	633.6	0.99	1.865	0.986	-48	-82	34	18.2	4.269454	0.040	0.697
L6	640.0	1.00	1.330	0.654	-72	-94	22	16.5	4.066505	0.040	0.534
L7	646.4	1.01	1.530	0.840	-86	-110	24	15.7	3.960239	0.040	0.626
L8	486.4	0.76	1.269	0.826	-98	-114	16	12.6	3.551118	0.040	0.604
L9	748.8	1.17	2.043	0.898	-108	-132	24	11.7	3.427809	0.040	0.757
M1	646.4	1.01	1.552	0.781	-45	-72	27	17.4	4.170979	0.040	0.600
M2	646.4	1.01	1.639	0.807	-64	-94	30	18.3	4.278245	0.040	0.615
M3	646.4	1.01	1.366	0.671	-82	-108	26	19.0	4.362181	0.040	0.531
M5	684.8	1.07	1.605	0.809	-64	-88	24	15.0	3.866659	0.040	0.634
M6	646.4	1.01	1.560	0.722	-76	-96	20	12.8	3.580256	0.040	0.618
M7	646.4	1.01	1.610	0.915	-94	-112	18	11.2	3.344064	0.040	0.703
M8	2137.6	3.34	2.513	1.192	-94	-140	46	18.3	4.27824	0.040	0.838
M9	915.2	1.43	1.654	0.778	-130	-146	16	9.7	3.109783	0.040	0.687
N1	672.0	1.05	1.473	0.791	-76	-102	26	17.6	4.20072	0.040	0.590
N2	582.4	0.91	2.054	0.974	-6	-108	102	49.7	7.047244	0.040	0.595
N3	428.8	0.67	1.809	0.865	-7	-110	103	56.9	7.545356	0.040	0.528
N4	838.4	1.31	1.581	0.832	400	-118	518	327.7	18.10187	0.040	0.354
N5	646.4	1.01	1.658	0.823	-90	-114	24	14.5	3.805129	0.040	0.650
N6	659.2	1.03	1.548	0.696	-102	-122	20	12.9	3.594033	0.040	0.607
N7	620.8	0.97	1.659	0.805	-76	-128	52	31.4	5.599215	0.040	0.557
N8	640.0	1.00	1.412	0.724	-98	-128	30	21.2	4.609439	0.040	0.542
N9	646.4	1.01	1.384	0.697	-116	-136	20	14.5	3.801317	0.040	0.570
N10	320.0	0.50	1.090	0.584	-83	-136	53	48.6	6.973734	0.040	0.386
N11	646.4	1.01	1.450	0.781	-128	-150	22	15.2	3.895126	0.040	0.600
N12	633.6	0.99	1.371	0.704	-90	-150	60	43.8	6.615197	0.040	0.462
N13	1030.4	1.61	1.480	0.602	-116	-142	26	17.6	4.191596	0.040	0.533
N14	409.6	0.64	1.029	0.507	-142	-154	12	11.7	3.41464	0.040	0.470
N15	262.4	0.41	1.057	0.559	-154	-162	8	7.6	2.751756	0.040	0.535
N16	876.8	1.37	1.643	0.870	-142	-156	14	8.5	2.918778	0.040	0.732
N17	908.8	1.42	1.666	0.902	-152	-164	12	7.2	2.683858	0.040	0.770
N18	518.4	0.81	2.149	0.983	-146	-168	22	10.2	3.199546	0.040	0.820

EASTERN COACHELLA VALLEY SMP

Watershed Lag Time Calculations for Oasis/Valley Floor 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)*
O1-1	1920.0	3.00	2.533	1.087	1880	-68	1948	769.1	27.73297	0.050	0.499
O1-2	812.8	1.27	1.650	0.866	116	-72	188	114.0	10.67482	0.040	0.447
O1-3	704.0	1.10	1.616	0.748	88	-86	174	107.7	10.37594	0.040	0.424
O1-4	499.2	0.78	1.096	0.399	52	-68	120	109.5	10.46344	0.040	0.287
O1-5	313.6	0.49	0.705	0.456	-72	-128	56	79.5	8.9151	0.040	0.272
O1-6	716.8	1.12	1.541	0.646	-56	-164	108	70.1	8.370987	0.040	0.427
O1-7	620.8	0.97	1.380	0.701	-122	-176	54	39.1	6.256045	0.040	0.472
O1-8	633.6	0.99	1.461	0.810	-160	-176	16	11.0	3.30914	0.040	0.650
O1-9	537.6	0.84	1.352	0.681	-170	-182	12	8.9	2.978876	0.050	0.768
O1-10	403.2	0.63	1.367	0.722	-180	-200	20	14.6	3.82521	0.050	0.717
O2-1	480.0	0.75	0.892	0.531	-74	-137	63	70.6	8.402895	0.040	0.322
O2-2	640.0	1.00	1.702	0.631	-74	-170	96	56.4	7.509941	0.040	0.458
O3-1	524.8	0.82	2.321	1.105	500	68	432	186.1	13.6418	0.050	0.636
O3-2	320.0	0.50	1.107	0.582	82	-34	116	104.8	10.23883	0.040	0.335
O3-3	652.8	1.02	1.690	0.865	222	15	207	122.5	11.06801	0.040	0.445
O3-4	646.4	1.01	1.687	0.885	60	-70	130	77.0	8.777314	0.040	0.490
P1	377.6	0.59	1.518	0.670	-66	-96	30	19.8	4.44585	0.040	0.548
P2	576.0	0.90	1.999	1.101	74	-118	192	96.0	9.799255	0.040	0.544
P3	780.8	1.22	1.921	1.015	33	-110	143	74.4	8.628115	0.040	0.545
P4	736.0	1.15	1.365	0.726	-38	-110	72	52.8	7.263548	0.040	0.450
P5	166.4	0.26	0.937	0.459	-122	-146	24	25.6	5.062221	0.040	0.376
P6	742.4	1.16	1.384	0.721	-88	-164	76	54.9	7.409832	0.040	0.448
P7	64.0	0.10	0.404	0.180	-162	-176	14	34.6	5.885333	0.040	0.181
P8	768.0	1.20	1.844	0.927	-144	-216	72	39.1	6.249419	0.040	0.587
P9	403.2	0.63	1.327	0.669	-167	-214	47	35.4	5.9509	0.040	0.466
P10	1158.4	1.81	2.153	1.227	-170	-206	36	16.7	4.08902	0.040	0.813
P11	1145.6	1.79	1.860	0.944	-136	-212	76	40.9	6.392567	0.040	0.587
P12	768.0	1.20	2.510	1.279	-84	-216	132	52.6	7.251915	0.040	0.704
P13	531.2	0.83	1.242	0.670	-126	-188	62	49.9	7.065749	0.040	0.426
P14	320.0	0.50	0.926	0.387	-184	-202	18	19.4	4.409829	0.040	0.370
P15	224.0	0.35	1.190	0.613	-216	-226	10	8.4	2.899156	0.040	0.568
Q1	582.4	0.91	1.430	0.539	-163	-210	47	32.9	5.732936	0.040	0.448
R1	806.4	1.26	2.164	1.102	140	-150	290	134.0	11.57627	0.040	0.527
R2	108.8	0.17	0.671	0.388	-134	-172	38	56.6	7.525517	0.040	0.267
R3	96.0	0.15	0.690	0.313	-134	-178	44	63.8	7.985623	0.040	0.243
R4	454.4	0.71	1.741	0.922	53	-132	185	106.3	10.3079	0.040	0.474
R5	102.4	0.16	0.799	0.354	-132	-192	60	75.1	8.667163	0.040	0.261

Appendix C
NOAA 14 Rainfall Data

NOAA Atlas 14, Volume 6, Version 2
Location name: Thermal, California, US*
Latitude: 33.5801°, Longitude: -116.1746°
Elevation: -140 ft*
* 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	0.062 (0.052–0.075)	0.098 (0.082–0.118)	0.148 (0.123–0.179)	0.191 (0.158–0.234)	0.255 (0.203–0.323)	0.308 (0.240–0.398)	0.365 (0.278–0.484)	0.428 (0.316–0.584)	0.520 (0.369–0.741)	0.598 (0.409–0.884)
10-min	0.089 (0.074–0.107)	0.140 (0.117–0.169)	0.212 (0.176–0.257)	0.274 (0.227–0.336)	0.366 (0.292–0.463)	0.441 (0.344–0.571)	0.523 (0.398–0.694)	0.613 (0.453–0.837)	0.745 (0.528–1.06)	0.858 (0.587–1.27)
15-min	0.108 (0.090–0.130)	0.169 (0.141–0.205)	0.256 (0.213–0.311)	0.332 (0.274–0.406)	0.442 (0.353–0.560)	0.533 (0.416–0.690)	0.632 (0.481–0.839)	0.741 (0.548–1.01)	0.902 (0.639–1.29)	1.04 (0.709–1.53)
30-min	0.151 (0.126–0.182)	0.238 (0.198–0.287)	0.359 (0.299–0.436)	0.465 (0.384–0.569)	0.620 (0.494–0.785)	0.748 (0.584–0.968)	0.887 (0.675–1.18)	1.04 (0.769–1.42)	1.26 (0.896–1.80)	1.45 (0.994–2.15)
60-min	0.211 (0.177–0.255)	0.333 (0.278–0.402)	0.503 (0.419–0.610)	0.651 (0.538–0.797)	0.868 (0.692–1.10)	1.05 (0.817–1.36)	1.24 (0.945–1.65)	1.46 (1.08–1.99)	1.77 (1.25–2.52)	2.04 (1.39–3.01)
2-hr	0.292 (0.244–0.352)	0.435 (0.363–0.526)	0.646 (0.538–0.783)	0.837 (0.691–1.02)	1.13 (0.901–1.43)	1.38 (1.08–1.79)	1.66 (1.27–2.21)	1.99 (1.47–2.71)	2.47 (1.75–3.53)	2.90 (1.98–4.29)
3-hr	0.353 (0.295–0.427)	0.517 (0.431–0.625)	0.762 (0.635–0.924)	0.989 (0.816–1.21)	1.34 (1.07–1.70)	1.65 (1.29–2.14)	2.01 (1.53–2.66)	2.42 (1.79–3.30)	3.05 (2.16–4.35)	3.62 (2.47–5.34)
6-hr	0.465 (0.389–0.562)	0.673 (0.562–0.814)	0.990 (0.824–1.20)	1.29 (1.06–1.57)	1.76 (1.40–2.22)	2.18 (1.70–2.82)	2.66 (2.03–3.53)	3.23 (2.39–4.41)	4.13 (2.92–5.88)	4.93 (3.37–7.29)
12-hr	0.550 (0.460–0.665)	0.814 (0.680–0.985)	1.21 (1.01–1.47)	1.58 (1.31–1.94)	2.16 (1.72–2.74)	2.67 (2.09–3.46)	3.26 (2.48–4.33)	3.94 (2.92–5.38)	5.01 (3.55–7.14)	5.96 (4.07–8.80)
24-hr	0.695 (0.615–0.801)	1.06 (0.937–1.22)	1.60 (1.41–1.85)	2.09 (1.83–2.44)	2.84 (2.41–3.42)	3.49 (2.90–4.29)	4.23 (3.43–5.32)	5.06 (4.00–6.54)	6.34 (4.82–8.53)	7.46 (5.48–10.4)
2-day	0.791 (0.700–0.913)	1.23 (1.08–1.42)	1.85 (1.63–2.15)	2.42 (2.11–2.82)	3.26 (2.76–3.92)	3.97 (3.30–4.88)	4.76 (3.86–5.99)	5.64 (4.46–7.29)	6.96 (5.29–9.36)	8.09 (5.94–11.2)
3-day	0.851 (0.753–0.981)	1.32 (1.17–1.53)	2.00 (1.76–2.32)	2.60 (2.28–3.04)	3.49 (2.96–4.21)	4.24 (3.52–5.21)	5.07 (4.11–6.37)	5.98 (4.72–7.72)	7.33 (5.57–9.86)	8.48 (6.23–11.8)
4-day	0.903 (0.799–1.04)	1.40 (1.24–1.62)	2.12 (1.87–2.46)	2.75 (2.41–3.21)	3.69 (3.12–4.44)	4.47 (3.71–5.49)	5.32 (4.32–6.69)	6.27 (4.95–8.10)	7.66 (5.82–10.3)	8.84 (6.49–12.3)
7-day	0.962 (0.851–1.11)	1.49 (1.31–1.72)	2.23 (1.97–2.58)	2.89 (2.52–3.37)	3.85 (3.26–4.64)	4.66 (3.87–5.72)	5.53 (4.49–6.95)	6.49 (5.13–8.39)	7.91 (6.01–10.6)	9.10 (6.69–12.7)
10-day	0.991 (0.877–1.14)	1.53 (1.35–1.76)	2.29 (2.02–2.65)	2.95 (2.58–3.45)	3.94 (3.34–4.74)	4.75 (3.95–5.84)	5.64 (4.57–7.09)	6.61 (5.22–8.54)	8.04 (6.11–10.8)	9.24 (6.79–12.8)
20-day	1.06 (0.938–1.22)	1.65 (1.45–1.90)	2.47 (2.18–2.86)	3.20 (2.79–3.73)	4.25 (3.60–5.12)	5.13 (4.26–6.30)	6.07 (4.93–7.64)	7.11 (5.62–9.18)	8.61 (6.54–11.6)	9.86 (7.24–13.7)
30-day	1.13 (0.997–1.30)	1.77 (1.56–2.04)	2.68 (2.36–3.10)	3.47 (3.03–4.05)	4.62 (3.92–5.57)	5.57 (4.63–6.85)	6.60 (5.35–8.30)	7.71 (6.09–9.96)	9.32 (7.08–12.5)	10.7 (7.82–14.8)
45-day	1.23 (1.09–1.42)	1.96 (1.73–2.26)	2.99 (2.63–3.46)	3.88 (3.39–4.53)	5.18 (4.39–6.24)	6.25 (5.19–7.68)	7.40 (6.00–9.31)	8.64 (6.83–11.2)	10.4 (7.92–14.0)	11.9 (8.74–16.5)
60-day	1.29 (1.15–1.49)	2.09 (1.85–2.41)	3.21 (2.83–3.72)	4.18 (3.66–4.88)	5.60 (4.74–6.74)	6.75 (5.61–8.30)	8.00 (6.49–10.1)	9.34 (7.37–12.1)	11.3 (8.55–15.1)	12.8 (9.43–17.8)

[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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PF graphical

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			Golf Course 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*	*Soil A*	*Soil B*	*Soil D*	**Total Area**	**Area Average RI**	**Pervious Area Infiltration Rate (in/hr)**	**% Impervious**
L1	0.00	0.00	0.00	0.12	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	83	0.21	0%
L2	0.22	0.75	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.99	83	0.21	2%
L3	0.01	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.99	85	0.19	0%
L4	0.01	0.86	0.00	0.02	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.08	84	0.20	1%
L5	0.02	0.70	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.99	80	0.24	17%
L6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	77	0.28	6%
L7	0.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.01	0.01	0.00	0.00	0.00	0.00	1.01	82	0.22	1%
L8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76	74	0.32	0%
L9	0.01	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.00	0.17	0.00	0.00	0.00	0.00	1.17	76	0.29	7%
M1	0.00	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01	85	0.19	0%
M2	0.00	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01	85	0.19	0%
M3	0.00	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01	85	0.19	0%
M4	0.00	0.00	0.00	0.32	0.57	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94	84	0.20	0%
M5	0.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.07	82	0.22	0%
M6	0.17	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01	81	0.23	0%
M7	0.16	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01	81	0.23	0%
M8	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.93	0.03	0.05	1.88	0.44	0.00	0.00	0.00	0.00	0.00	0.00	3.34	80	0.24	26%
M9	0.02	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.03	0.00	0.00	0.00	0.00	0.00	0.00	1.43	82	0.22	0%
N1	0.02	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.05	0.00	1.05	82	0.22	0%
N2	0.09	0.61	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.03	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.91	82	0.22	0%
N3	0.33	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.67	78	0.27	0%
N4	0.21	0.50	0.01	0.31	0.03	0.13	0.00	0.00	0.00	0.00	0.09	0.03	0.00	0.00	0.00	0.00	0.00	0.00	1.31	82	0.22	0%
N5	0.05	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01	82	0.22	0%
N6	0.00	0.53	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.03	82	0.22	0%
N7	0.06	0.73	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.97	84	0.20	0%
N8	0.11	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	82	0.22	0%
N9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78	0.22	0.00	0.00	0.00	0.00	0.00	0.00	1.01	79	0.26	0%
N10	0.01	0.47	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	85	0.19	0%
N11	0.00	0.92	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01	86	0.18	0%
N12	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.99	78	0.27	0%
N13	0.01	1.36	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.07	0.00	0.00	0.00	0.00	0.00	0.00	1.61	84	0.20	0%
N14	0.04	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64	84	0.20	0%
N15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.41	77	0.28	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	32	56	87	50%
Golf Course	50	68	79	0%

AREA (mi^2)

	Agricultural Cover			Barren Cover			Commercial Cover			Open Brush Cover			Residential Cover			Golf Course 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*	*Soil A*	*Soil B*	*Soil D*	**Total Area**	**Area Average RI**	**Pervious Area Infiltration Rate (in/hr)**	**% Impervious**
N16	0.11	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.14	0.00	0.00	0.00	0.00	0.00	0.00	1.37	83	0.21	0%
N17	0.02	1.25	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.02	0.00	0.00	0.00	0.00	0.00	0.00	1.42	85	0.19	0%
N18	0.00	0.30	0.00	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81	84	0.20	0%
O1-1	0.00	0.00	0.00	2.94	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	78	0.27	0%
O1-2	0.42	0.25	0.00	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27	79	0.26	0%
O1-3	0.70	0.22	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10	78	0.27	0%
O1-4	0.75	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78	76	0.29	0%
O1-5	0.10	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	83	0.21	0%
O1-6	0.01	0.76	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.12	82	0.22	0%
O1-7	0.07	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.32	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.97	81	0.23	0%
O1-8	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.60	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.99	80	0.24	0%
O1-9	0.05	0.77	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84	85	0.19	0%
O1-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.63	84	0.20	0%
O2-1	0.04	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	85	0.19	0%
O2-2	0.19	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	83	0.21	0%
O3-1	0.00	0.00	0.00	0.82	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.82	78	0.27	0%
O3-2	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	76	0.29	0%
O3-3	1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	76	0.29	0%
O3-4	0.99	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01	76	0.29	0%
P1	0.34	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59	80	0.24	0%
P2	0.57	0.30	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	79	0.26	0%
P3	0.70	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.22	80	0.24	0%
P4	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15	76	0.29	0%
P5	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	85	0.19	0%
P6	0.56	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.16	81	0.23	0%
P7	0.00	0.06	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	85	0.19	14%
P8	0.18	0.99	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	84	0.20	0%
P9	0.02	0.29	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	80	0.24	0%
P10	0.21	0.38	0.04	0.01	0.16	0.48	0.00	0.01	0.02	0.00	0.27	0.21	0.00	0.00	0.00	0.00	0.00	0.00	1.81	85	0.19	2%
P11	0.00	0.53	0.00	0.04	0.09	0.23	0.00	0.00	0.04	0.00	0.21	0.66	0.00	0.00	0.00	0.00	0.00	0.00	1.79	86	0.18	2%
P12	0.00	0.66	0.03	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.04	0.43	0.00	0.00	0.00	0.00	0.00	0.00	1.20	86	0.18	0%
P13	0.06	0.70	0.04	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	85	0.19	4%

	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	32	56	87	50%
Golf Course	50	68	79	0%

AREA (mi^2)

	Agricultural Cover			Barren Cover			Commercial Cover			Open Brush Cover			Residential Cover			Golf Course 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*	*Soil A*	*Soil B*	*Soil D*	**Total Area**	**Area Average RI**	**Pervious Area Infiltration Rate (in/hr)**	**% Impervious**
P14	0.00	0.26	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.50	86	0.18	0%
P15	0.00	0.01	0.03	0.04	0.06	0.16	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.35	89	0.14	0%
Q1	0.15	0.38	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.19	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.91	81	0.23	0%
R1	0.96	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.26	76	0.29	0%
R2	0.14	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	78	0.27	0%
R3	0.08	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	78	0.27	0%
R4	0.62	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71	76	0.29	0%
R5	0.04	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	83	0.21	0%
																				#DIV/0!	#DIV/0!	#DIV/0!
																				#DIV/0!	#DIV/0!	#DIV/0!

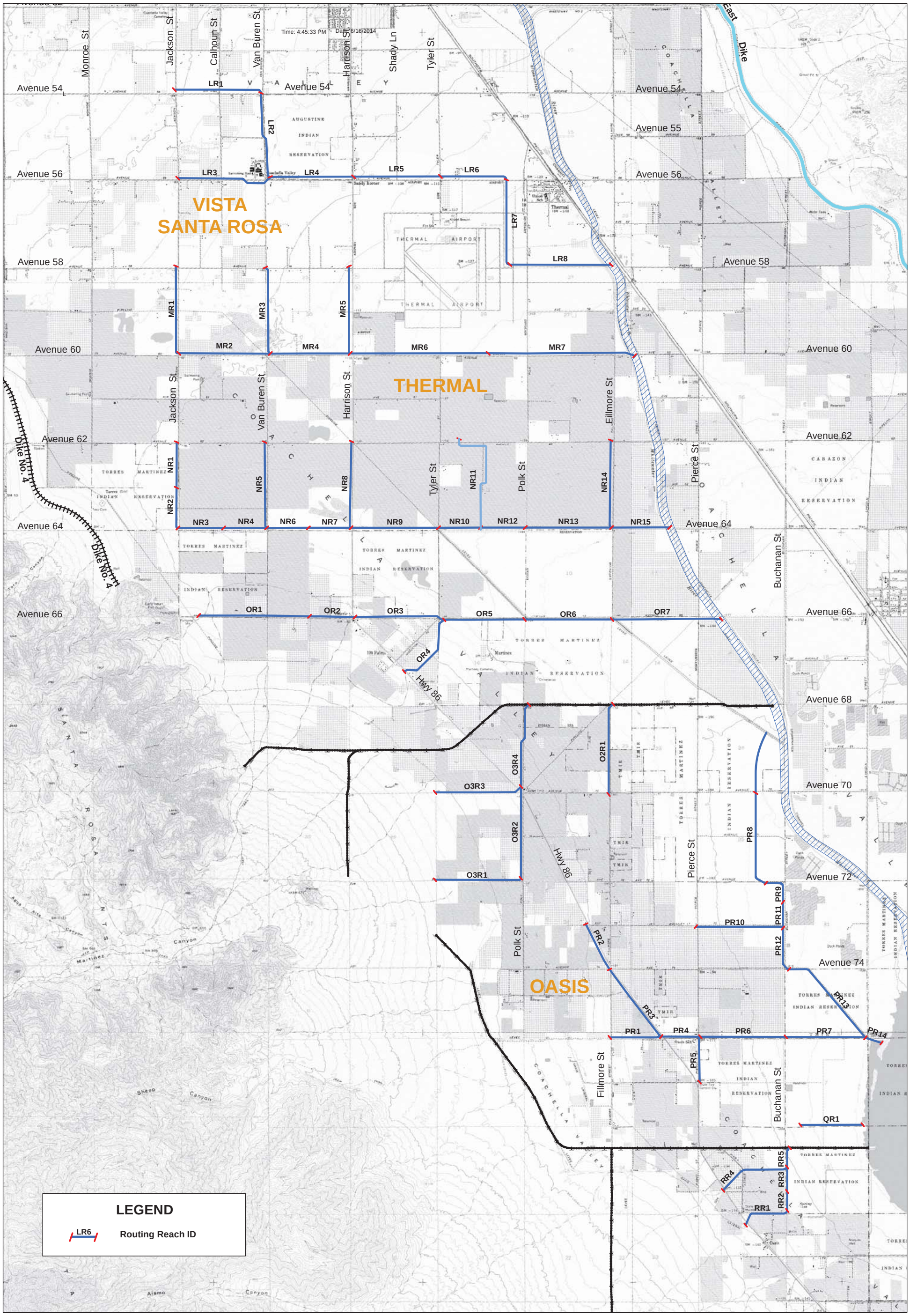
	RI			% Impervious
Cover type	*Soil A*	*Soil B*	*Soil D*	
Agricultural - fallow condition	76	85	92	0%
Barren	78	86	93	0%
Commercial - barren type	78	86	93	90%
Open Brush - poor condition	62	76	88	0%
Residential	32	56	87	50%
Golf Course	50	68	79	0%

Appendix E
HEC-HMS Kinematic Wave Routing Parameter Summary

Eastern Coachella Valley MDP - Oasis/Valley Floor Region

HEC-RAS Kinematic Wave Routing Parameter Summary Table

Reach ID	*Length (ft)*	*Slope (ft/ft)*	*Mannings n-value*	*Shape*	*Bottom Width (ft)*	*Sideslope*
LR1	5358	0.0037	0.015	trap	9	1.5:1
LR2	5261	0.0018	0.015	trap	13	1.5:1
LR3	5809	0.0034	0.015	trap	6	1.5:1
LR4	5134	0.0029	0.015	trap	28	1.5:1
LR5	5274	0.0018	0.015	trap	44	1.5:1
LR6	4042	0.0017	0.015	trap	52	1.5:1
LR7	5260	0.0021	0.015	trap	56	1.5:1
LR8	6156	0.0010	0.015	trap	62	1.5:1
MR1	5413	0.0018	0.015	trap	6	1.5:1
MR2	5296	0.0016	0.015	trap	12	1.5:1
MR3	5278	0.0004	0.015	trap	14	1.5:1
MR4	5024	0.0024	0.015	trap	24	1.5:1
MR5	5300	0.0008	0.015	trap	14	1.5:1
MR6	8362	0.0019	0.015	trap	60	1.5:1
MR7	8849	0.0010	0.015	trap	84	1.5:1
NR1	2762	0.0018	0.015	trap	6	1.5:1
NR2	2505	0.0016	0.015	trap	14	1.5:1
NR3	2769	0.0020	0.015	trap	19	1.5:1
NR4	2591	0.0017	0.015	trap	32	1.5:1
NR5	5216	0.0015	0.015	trap	12	1.5:1
NR6	2558	0.0022	0.015	trap	40	1.5:1
NR7	2561	0.0018	0.015	trap	48	1.5:1
NR8	5252	0.0015	0.015	trap	12	1.5:1
NR9	5335	0.0025	0.015	trap	69	1.5:1
NR10	2555	0.0019	0.015	trap	74	1.5:1
NR11	6788	0.0018	0.015	trap	18	1.5:1
NR12	2710	0.0016	0.015	trap	91	1.5:1
NR13	5194	0.0010	0.015	trap	101	1.5:1
NR14	5313	0.0015	0.015	trap	16	1.5:1
NR15	3724	0.0011	0.015	trap	120	1.5:1
O1R1	6731	0.0014	0.015	trap	24	1.5:1
O1R2	2761	0.0039	0.015	trap	28	1.5:1
O1R3	5436	0.0067	0.015	trap	28	1.5:1
O1R4	4342	0.0129	0.015	trap	6	1.5:1
O1R5	4925	0.0060	0.015	trap	41	1.5:1
O1R6	5306	0.0019	0.015	trap	63	1.5:1
O1R7	6631	0.0010	0.015	trap	78	1.5:1
O2R1	5576	0.0054	0.015	trap	6	1.5:1
O3R1	5310	0.0190	0.013	pipe	ϕ = 7	---
O3R2	5411	0.0067	0.015	trap	6	1.5:1
O3R3	5316	0.0160	0.015	trap	6	1.5:1
O3R4	5341	0.0090	0.015	trap	10	1.5:1
PR1	3140	0.0109	0.015	trap	8	1.5:1
PR2	3112	0.0072	0.013	pipe	ϕ = 7.5	---
PR3	5148	0.0041	0.015	trap	9	1.5:1
PR4	2375	0.0111	0.015	trap	18	1.5:1
PR5	2783	0.0043	0.015	trap	6	1.5:1
PR6	5191	0.0067	0.015	trap	38	1.5:1
PR7	4787	0.0013	0.015	trap	55	1.5:1
PR8	5540	0.0010	0.015	trap	24	1.5:1
PR9	2581	0.0010	0.015	trap	36	1.5:1
PR10	5312	0.0060	0.015	trap	6	1.5:1
PR11	1568	0.0010	0.015	trap	40	1.5:1
PR12	2680	0.0010	0.015	trap	48	1.5:1
PR13	6503	0.0010	0.015	trap	49	1.5:1
PR14	1070	0.0050	0.015	trap	Varies	1.5:1
QR1	3784	0.0048	0.015	trap	6	1.5:1
RR1	2530	0.0120	0.015	trap	6	1.5:1
RR2	1125	0.0061	0.015	trap	8	1.5:1
RR3	1465	0.0065	0.015	trap	8	1.5:1
RR4	4524	0.0115	0.015	trap	6	1.5:1
RR5	1233	0.0062	0.015	trap	10	1.5:1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Date: 6/16/2014
VISTA SANTA ROSA
THERMAL
OASIS
Avenue 54
Avenue 55
Avenue 56
Avenue 58
Avenue 60
Avenue 62
Avenue 64
Avenue 66
Avenue 68
Avenue 70
Avenue 72
Avenue 74
Monroe St
Jackson St
Calhoun St
Van Buren St
Harrison St
Shady Ln
Tyler St
Polk St
Pierce St
Fillmore St
Buchanan St
East Dike
Dike No. 4
Hwy 86
Hwy 86
LR1
LR2
LR3
LR4
LR5
LR6
LR7
LR8
MR1
MR2
MR3
MR4
MR5
MR6
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O3R4
O2R1
O3R3
O3R2
O3R1
PR1
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PR11
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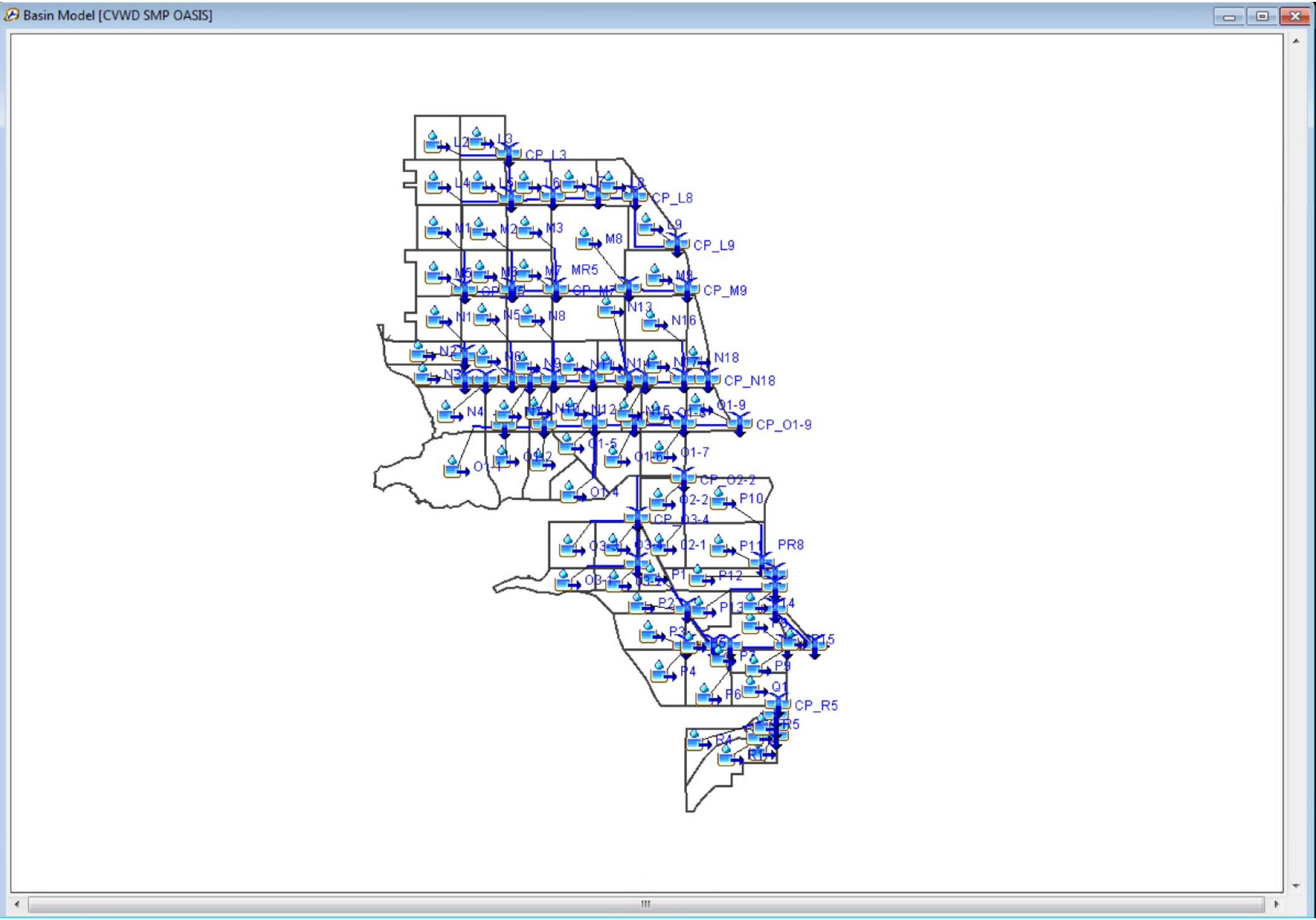
PR13
PR14
QR1
RR1
RR2
RR3
RR4
RR5
AUGUSTINE INDIAN RESERVATION
TORRES MARTINEZ INDIAN RESERVATION
CABAZON INDIAN RESERVATION
COACHELLA VALLEY
THERMAL AIRPORT
Sheep Canyon
Martinez Canyon
Alamo Canyon
LEGEND
LR6
Routing Reach ID
N
W
E
S
0
3,500
7,000
Feet
Routing Reach Map
Oasis/Valley Floor Region
Prepared for:
Coachella Valley Water District
Prepared by:
Albert A. Webb Associates
In association with
Tetra Tech
Olson Engineering
Path: G:\2012\12-0001\GIS\12-0001-Oasis Routing Reaches.mxd

Appendix F
HEC-HMS Summary Output Table


Basin Model [CVWD SMP OASIS]
L2
L3
CP_L3
L4
L5
L6
L7
L8
CP_L8
M1
M2
M3
M8
L9
CP_L9
M5
M6
M7
MR5
M9
CP_M9
N1
N5
N8
N13
N16
N2
N6
N9
N11
N14
N17
N18
N3
CP_N18
N4
N7
N10
N12
N15
O1-9
CP_O1-9
O1-5
O1-6
O1-7
O1-1
O1-2
CP_O2-2
O1-4
O2-2
P10
CP_O3-4
O3-3
O3-4
O2-1
P11
PR8
O3-1
O3-2
P1
P12
P2
P13
P14
P3
P5
P15
P7
P9
P4
P6
Q1
CP_R5
R5
R4
R1

Project: CVWD-SMP Simulation Run: 100-Year Storm Oasis Area (DARF = 1.0)

Start of Run: 20Mar2013, 00:00
End of Run: 20Mar2013, 16:00
Compute Time: 06Jun2014, 09:55:51

Basin Model: CVWD SMP OASIS
Meteorologic Model: 100-Year Storm Oasis
Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
02-1	0.75	790.7	20Mar2013, 03:15	60.9
03-2	0.50	470.7	20Mar2013, 03:15	30.4
CP_L3	1.98	1476.1	20Mar2013, 03:30	156.7
CP_L5	4.05	2919.5	20Mar2013, 03:35	322.7
CP_L6	5.05	3395.6	20Mar2013, 03:35	389.5
CP_L7	6.06	3964.1	20Mar2013, 03:40	463.9
CP_L8	6.82	4263.1	20Mar2013, 03:45	505.8
CP_L9	7.99	4648.8	20Mar2013, 03:55	580.1
CP_M5	2.08	1437.5	20Mar2013, 03:35	160.5
CP_M6	4.10	2755.0	20Mar2013, 03:35	314.0
CP_M7	6.12	4067.3	20Mar2013, 03:40	467.2
CP_M8	9.46	5932.7	20Mar2013, 03:45	759.7
CP_M9	10.89	6492.7	20Mar2013, 03:50	859.5
CP_N11 (1)	11.46	~~7312.3~~	20Mar2013, 03:35	835.7
CP_N14 (2)	13.71	~~8834.2~~	20Mar2013, 03:35	1011.3
CP_N15 (2)	14.12	~~8931.3~~	20Mar2013, 03:40	1036.3
CP_N17 (3)	16.91	~~10544.6~~	20Mar2013, 03:40	1252.2
CP_N18 (4)	17.72	~~10991.5~~	20Mar2013, 03:45	1313.7
CP_N2	1.96	1425.0	20Mar2013, 03:30	144.1
CP_N3	2.63	1808.8	20Mar2013, 03:30	186.9
CP_N4	3.94	2565.7	20Mar2013, 03:30	283.0
CP_N6	5.98	3873.6	20Mar2013, 03:35	432.5
CP_N7	6.95	4483.4	20Mar2013, 03:35	508.4
CP_N9	9.46	6119.5	20Mar2013, 03:35	688.3
CP_O1-2	4.27	3145.0	20Mar2013, 03:30	274.1
CP_O1-3	5.37	3771.9	20Mar2013, 03:30	344.5

Note:
(1) Line N node CP_N11 = 6508.8 cfs from DARF = 0.911 analysis
(2) Line N node CP_N14 = 7659.5 cfs and node CP_N15 = 7779.5 from DARF = 0.897 analysis
(3) Line N node CP_N17 = 8979.1 cfs from DARF = 0.880 analysis
(4) Line N node CP_N18 = 9191.2 cfs from DARF = 0.874 analysis

Project: CVWD-SMP Simulation Run: 100-Year Storm Oasis Area (DARF = 1.0)

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
CP_O1-5	6.64	4429.4	20Mar2013, 03:30	428.6
CP_O1-6	7.76	5096.1	20Mar2013, 03:30	510.3
CP_O1-8	9.72	6297.6	20Mar2013, 03:35	647.1
CP_O1-9	10.56	6791.6	20Mar2013, 03:40	711.1
CP_O2-2	1.75	1618.7	20Mar2013, 03:20	136.8
CP_O3-2	1.32	815.7	20Mar2013, 03:30	82.8
CP_O3-4	3.35	2399.9	20Mar2013, 03:25	206.1
CP_P11	3.60	2075.5	20Mar2013, 03:40	301.6
CP_P12	4.80	2843.4	20Mar2013, 03:35	402.5
CP_P13	6.13	3672.2	20Mar2013, 03:35	514.0
CP_P14	6.13	3625.1	20Mar2013, 03:35	513.6
CP_P15 (5)	13.69	~~8539.4~~	20Mar2013, 03:35	1049.0
CP_P2	1.49	1098.2	20Mar2013, 03:25	100.0
CP_P4	2.37	1844.6	20Mar2013, 03:25	154.5
CP_P5	4.12	2975.2	20Mar2013, 03:30	275.6
CP_P7	5.38	3892.4	20Mar2013, 03:30	367.4
CP_P9	7.21	5204.6	20Mar2013, 03:30	504.6
CP_R2	1.43	1033.1	20Mar2013, 03:25	87.5
CP_R3	1.58	1106.9	20Mar2013, 03:25	97.2
CP_R4	2.45	1743.8	20Mar2013, 03:25	152.4
CP_R5	2.45	1714.0	20Mar2013, 03:25	152.5
L2	0.99	762.5	20Mar2013, 03:25	76.4
L3	0.99	807.7	20Mar2013, 03:25	80.4
L4	1.08	799.0	20Mar2013, 03:30	85.4
L5	0.99	668.7	20Mar2013, 03:30	80.8
L6	1.00	778.9	20Mar2013, 03:25	67.2
L7	1.01	734.5	20Mar2013, 03:30	75.0
L8	0.76	506.9	20Mar2013, 03:30	42.6
L9	1.17	720.4	20Mar2013, 03:35	77.8
LR1	0.99	740.9	20Mar2013, 03:30	76.3
LR2	1.98	1463.9	20Mar2013, 03:35	156.6

Note:
(5) Line P node CP_P15 = 7451.5 cfs from DARF = 0.897 analysis

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
LR3	1.08	791.4	20Mar2013, 03:35	85.3
LR4	4.05	2875.7	20Mar2013, 03:40	322.3
LR5	5.05	3378.8	20Mar2013, 03:40	388.9
LR6	6.06	3936.3	20Mar2013, 03:45	463.3
LR7	6.82	4235.4	20Mar2013, 03:50	505.0
LR8	6.82	4190.0	20Mar2013, 03:55	502.3
M1	1.01	753.9	20Mar2013, 03:30	82.0
M2	1.01	752.3	20Mar2013, 03:30	82.0
M3	1.01	834.5	20Mar2013, 03:25	82.0
M5	1.07	770.9	20Mar2013, 03:30	78.7
M6	1.01	727.5	20Mar2013, 03:30	72.1
M7	1.01	655.0	20Mar2013, 03:35	72.1
M8	3.34	2094.6	20Mar2013, 03:40	294.5
M9	1.43	966.8	20Mar2013, 03:30	105.2
MR1	1.01	743.1	20Mar2013, 03:35	81.8
MR2	2.08	1435.6	20Mar2013, 03:40	160.3
MR3	1.01	729.1	20Mar2013, 03:40	81.7
MR4	4.10	2751.9	20Mar2013, 03:40	313.6
MR5	1.01	798.8	20Mar2013, 03:35	81.6
MR6	6.12	4027.6	20Mar2013, 03:45	465.2
MR7	9.46	5864.1	20Mar2013, 03:55	754.3
N1	1.05	771.6	20Mar2013, 03:30	77.2
N10	0.50	488.2	20Mar2013, 03:20	40.6
N11	1.01	760.2	20Mar2013, 03:30	85.1
N12	0.99	792.2	20Mar2013, 03:20	63.4
N13	1.61	1317.0	20Mar2013, 03:25	126.3
N14	0.64	537.4	20Mar2013, 03:25	50.2
N15	0.41	314.6	20Mar2013, 03:25	25.6
N16	1.37	906.8	20Mar2013, 03:35	104.0
N17	1.42	929.4	20Mar2013, 03:35	115.3
N18	0.81	496.8	20Mar2013, 03:35	63.5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
N2	0.91	665.6	20Mar2013, 03:30	66.9
N3	0.67	522.5	20Mar2013, 03:25	42.9
N4	1.31	1254.6	20Mar2013, 03:20	96.3
N5	1.01	716.9	20Mar2013, 03:30	74.3
N6	1.03	747.9	20Mar2013, 03:30	75.7
N7	0.97	758.2	20Mar2013, 03:25	76.1
N8	1.00	793.8	20Mar2013, 03:25	73.5
N9	1.01	732.1	20Mar2013, 03:25	66.3
NR1	1.05	759.5	20Mar2013, 03:30	77.2
NR10	11.46	7191.7	20Mar2013, 03:40	835.5
NR11	1.61	1251.5	20Mar2013, 03:35	125.6
NR12	13.71	8725.5	20Mar2013, 03:40	1010.7
NR13	14.12	8881.3	20Mar2013, 03:45	1033.2
NR14	1.37	883.9	20Mar2013, 03:40	103.6
NR15	16.91	10539.8	20Mar2013, 03:45	1250.2
NR2	1.96	1385.9	20Mar2013, 03:35	144.0
NR3	2.63	1799.8	20Mar2013, 03:35	186.6
NR4	3.94	2528.7	20Mar2013, 03:35	282.7
NR5	1.01	688.4	20Mar2013, 03:40	74.0
NR6	5.98	3849.0	20Mar2013, 03:35	432.3
NR7	6.95	4455.7	20Mar2013, 03:35	508.2
NR8	1.00	755.9	20Mar2013, 03:35	73.2
NR9	9.46	6066.7	20Mar2013, 03:35	687.2
O1-1	3.00	2372.8	20Mar2013, 03:25	192.0
O1-2	1.27	1063.2	20Mar2013, 03:20	83.4
O1-3	1.10	968.6	20Mar2013, 03:20	70.4
O1-4	0.78	845.3	20Mar2013, 03:15	47.4
O1-5	0.49	570.2	20Mar2013, 03:15	37.2
O1-6	1.12	1013.6	20Mar2013, 03:20	82.4
O1-7	0.97	796.5	20Mar2013, 03:25	69.2
O1-8	0.99	690.8	20Mar2013, 03:30	68.6

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
O1-9	0.84	550.7	20Mar2013, 03:35	68.2
O1R1	3.00	2279.4	20Mar2013, 03:30	190.7
O1R2	4.27	3049.2	20Mar2013, 03:30	274.1
O1R3	5.37	3697.9	20Mar2013, 03:35	344.1
O1R4	0.78	772.3	20Mar2013, 03:20	47.3
O1R5	6.64	4385.1	20Mar2013, 03:35	428.0
O1R6	7.76	5082.8	20Mar2013, 03:35	509.3
O1R7	9.72	6271.1	20Mar2013, 03:40	642.9
O2-2	1.00	845.5	20Mar2013, 03:20	75.9
O2R1	0.75	773.2	20Mar2013, 03:20	60.9
O3-1	0.82	565.4	20Mar2013, 03:30	52.5
O3-3	1.02	839.6	20Mar2013, 03:20	62.0
O3-4	1.01	794.1	20Mar2013, 03:25	61.4
O3R1	0.82	546.2	20Mar2013, 03:35	52.4
O3R2	1.32	809.7	20Mar2013, 03:35	82.8
O3R3	1.02	822.3	20Mar2013, 03:25	61.9
O3R4	3.35	2319.8	20Mar2013, 03:30	205.9
P1	0.59	455.2	20Mar2013, 03:25	40.9
P10	1.81	1137.9	20Mar2013, 03:35	149.2
P11	1.79	1366.1	20Mar2013, 03:30	152.9
P12	1.20	814.9	20Mar2013, 03:35	101.1
P13	0.83	772.9	20Mar2013, 03:20	69.4
P14	0.50	492.2	20Mar2013, 03:20	42.1
P15	0.35	280.8	20Mar2013, 03:25	34.0
P2	0.90	689.5	20Mar2013, 03:25	59.1
P3	1.22	947.3	20Mar2013, 03:25	84.6
P4	1.15	934.6	20Mar2013, 03:20	69.9
P5	0.26	254.2	20Mar2013, 03:20	21.1
P6	1.16	990.2	20Mar2013, 03:20	82.8
P7	0.10	142.3	20Mar2013, 03:10	9.0
P8	1.20	898.0	20Mar2013, 03:30	94.1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
P9	0.63	512.8	20Mar2013, 03:25	43.7
PR1	2.37	1797.4	20Mar2013, 03:25	154.5
PR10	0.83	761.5	20Mar2013, 03:25	69.4
PR11	4.80	2809.5	20Mar2013, 03:40	402.4
PR12	6.13	3625.1	20Mar2013, 03:35	513.6
PR13	6.13	3620.9	20Mar2013, 03:45	511.5
PR14	13.69	8535.3	20Mar2013, 03:40	1049.1
PR2	0.59	439.2	20Mar2013, 03:30	40.9
PR3	1.49	1093.4	20Mar2013, 03:30	99.9
PR4	4.12	2959.7	20Mar2013, 03:30	275.7
PR5	1.16	968.4	20Mar2013, 03:25	82.7
PR6	5.38	3866.3	20Mar2013, 03:30	366.8
PR7	7.21	5135.5	20Mar2013, 03:35	503.5
PR8	1.81	1132.0	20Mar2013, 03:45	148.7
PR9	3.60	2065.7	20Mar2013, 03:45	301.3
Q1	0.91	776.8	20Mar2013, 03:20	64.9
R1	1.26	968.9	20Mar2013, 03:25	76.6
R2	0.17	192.5	20Mar2013, 03:15	10.9
R3	0.15	170.0	20Mar2013, 03:15	9.6
R4	0.71	557.1	20Mar2013, 03:25	43.2
R5	0.16	187.8	20Mar2013, 03:15	12.1
RR1	1.26	916.2	20Mar2013, 03:25	76.6
RR2	1.43	1007.7	20Mar2013, 03:25	87.6
RR3	1.58	1081.1	20Mar2013, 03:25	97.2
RR4	0.71	547.8	20Mar2013, 03:25	43.1
RR5	2.45	1714.0	20Mar2013, 03:25	152.5

Project: CVWD-SMP Simulation Run: Oasis 100_Yr DARF=0.911

Start of Run: 20Mar2013, 00:00
End of Run: 20Mar2013, 16:00
Compute Time: 23May2014, 11:49:05

Basin Model: CVWD SMP OASIS
Meteorologic Model: 100-Yr Oasis DARF=0.911
Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
02-1	0.75	715.4	20Mar2013, 03:15	52.5
03-2	0.50	422.8	20Mar2013, 03:15	25.8
CP_L3	1.98	1325.5	20Mar2013, 03:30	135.1
CP_L5	4.05	2618.8	20Mar2013, 03:35	279.3
CP_L6	5.05	3041.5	20Mar2013, 03:40	336.9
CP_L7	6.06	3512.2	20Mar2013, 03:40	400.9
CP_L8	6.82	3787.3	20Mar2013, 03:45	436.2
CP_L9	7.99	4096.7	20Mar2013, 03:55	499.4
CP_M5	2.08	1291.4	20Mar2013, 03:35	138.2
CP_M6	4.10	2460.9	20Mar2013, 03:35	270.3
CP_M7	6.12	3645.0	20Mar2013, 03:40	402.3
CP_M8	9.46	5303.1	20Mar2013, 03:45	660.4
CP_M9	10.89	5774.9	20Mar2013, 03:55	745.7
CP_N11	11.46	6508.8	20Mar2013, 03:35	718.8
CP_N14	13.71	7858.3	20Mar2013, 03:35	869.9
CP_N15	14.12	7974.4	20Mar2013, 03:40	891.1
CP_N17	16.91	9410.3	20Mar2013, 03:45	1077.2
CP_N18	17.72	9758.8	20Mar2013, 03:45	1129.1
CP_N2	1.96	1280.6	20Mar2013, 03:30	124.1
CP_N3	2.63	1617.4	20Mar2013, 03:30	160.7
CP_N4	3.94	2288.4	20Mar2013, 03:30	243.5
CP_N6	5.98	3461.5	20Mar2013, 03:35	372.2
CP_N7	6.95	4001.7	20Mar2013, 03:35	437.5
CP_N9	9.46	5463.6	20Mar2013, 03:35	592.2
CP_O1-2	4.27	2804.1	20Mar2013, 03:30	235.1
CP_O1-3	5.37	3349.1	20Mar2013, 03:30	295.4

Note:
Node CP_N11 drainage area = 11.46 sq.mi, use DARF = 0.911

Project: CVWD-SMP Simulation Run: Oasis 100_Yr DARF=0.897

Start of Run: 20Mar2013, 00:00 Basin Model: CVWD SMP OASIS
End of Run: 20Mar2013, 16:00 Meteorologic Model: 100-Yr Oasis DARF=0.897
Compute Time: 28May2014, 11:47:33 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
02-1	0.75	699.8	20Mar2013, 03:15	50.8
03-2	0.50	413.0	20Mar2013, 03:15	24.9
CP_L3	1.98	1295.4	20Mar2013, 03:30	130.8
CP_L5	4.05	2558.9	20Mar2013, 03:35	270.5
CP_L6	5.05	2968.3	20Mar2013, 03:40	326.1
CP_L7	6.06	3454.5	20Mar2013, 03:40	388.4
CP_L8	6.82	3721.2	20Mar2013, 03:45	422.3
CP_L9	7.99	3995.6	20Mar2013, 03:55	483.1
CP_M5	2.08	1261.1	20Mar2013, 03:35	133.7
CP_M6	4.10	2404.7	20Mar2013, 03:40	261.6
CP_M7	6.12	3560.4	20Mar2013, 03:40	389.3
CP_M8	9.46	5178.5	20Mar2013, 03:45	640.4
CP_M9	10.89	5629.4	20Mar2013, 03:55	723.2
CP_N11	11.46	6349.8	20Mar2013, 03:35	695.2
CP_N14	13.71	7659.5	20Mar2013, 03:35	841.4
CP_N15	14.12	7779.5	20Mar2013, 03:40	861.8
CP_N17	16.91	9222.8	20Mar2013, 03:45	1042.0
CP_N18	17.72	9549.5	20Mar2013, 03:45	1092.6
CP_N2	1.96	1251.3	20Mar2013, 03:30	120.1
CP_N3	2.63	1579.4	20Mar2013, 03:30	155.4
CP_N4	3.94	2232.2	20Mar2013, 03:30	235.6
CP_N6	5.98	3378.5	20Mar2013, 03:35	360.1
CP_N7	6.95	3905.5	20Mar2013, 03:35	423.3
CP_N9	9.46	5333.3	20Mar2013, 03:35	573.0
CP_O1-2	4.27	2740.2	20Mar2013, 03:30	226.8
CP_O1-3	5.37	3266.2	20Mar2013, 03:30	284.9

Note:
Node CP_N14 drainage area = 13.71 sq.mi., use DARF = 0.897
Node CP_N15 drainage area = 14.12 sq.mi., use DARF = 0.897

Project: CVWD-SMP Simulation Run: Oasis 100_Yr DARF = 0.897

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
CP_O1-5	6.64	3814.4	20Mar2013, 03:30	354.1
CP_O1-6	7.76	4376.2	20Mar2013, 03:30	422.2
CP_O1-8	9.72	5424.5	20Mar2013, 03:35	535.8
CP_O1-9	10.56	5834.6	20Mar2013, 03:40	588.4
CP_O2-2	1.75	1444.8	20Mar2013, 03:20	114.1
CP_O3-2	1.32	708.3	20Mar2013, 03:30	68.3
CP_O3-4	3.35	2089.9	20Mar2013, 03:25	169.2
CP_P11	3.60	1800.5	20Mar2013, 03:40	251.9
CP_P12	4.80	2481.7	20Mar2013, 03:35	335.9
CP_P13	6.13	3209.4	20Mar2013, 03:35	429.2
CP_P14	6.13	3167.2	20Mar2013, 03:40	428.8
CP_P15	13.69	7451.5	20Mar2013, 03:40	874.1
CP_P2	1.49	961.2	20Mar2013, 03:25	83.2
CP_P4	2.37	1615.9	20Mar2013, 03:25	127.7
CP_P5	4.12	2598.7	20Mar2013, 03:30	228.4
CP_P7	5.38	3404.2	20Mar2013, 03:30	305.0
CP_P9	7.21	4548.9	20Mar2013, 03:30	419.2
CP_R2	1.43	893.8	20Mar2013, 03:25	71.7
CP_R3	1.58	961.2	20Mar2013, 03:25	79.7
CP_R4	2.45	1517.8	20Mar2013, 03:25	125.2
CP_R5	2.45	1491.9	20Mar2013, 03:25	125.3
L2	0.99	671.2	20Mar2013, 03:25	63.9
L3	0.99	712.5	20Mar2013, 03:25	67.0
L4	1.08	703.3	20Mar2013, 03:30	71.3
L5	0.99	588.3	20Mar2013, 03:30	68.9
L6	1.00	682.6	20Mar2013, 03:25	55.9
L7	1.01	645.4	20Mar2013, 03:30	62.6
L8	0.76	440.6	20Mar2013, 03:30	34.7
L9	1.17	628.2	20Mar2013, 03:35	64.6
LR1	0.99	647.7	20Mar2013, 03:30	63.8
LR2	1.98	1283.0	20Mar2013, 03:35	130.5

Note:
Node CP_P15 drainage area = 13.69 sq.mi., use DARF = 0.897

Project: CVWD-SMP Simulation Run: Oasis 100_Yr DARF =0.880

Start of Run: 20Mar2013, 00:00 Basin Model: CVWD SMP OASIS
End of Run: 20Mar2013, 16:00 Meteorologic Model: 100-Yr Oasis DARF=0
Compute Time: 23May2014, 13:05:28 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
N12	0.99	677.9	20Mar2013, 03:20	0.960
CP_N11	11.46	6190.3	20Mar2013, 03:35	1.102
NR10	11.46	6116.7	20Mar2013, 03:40	1.101
N13	1.61	1135.1	20Mar2013, 03:25	1.188
NR11	1.61	1089.2	20Mar2013, 03:35	1.181
N14	0.64	463.3	20Mar2013, 03:25	1.188
CP_N14	13.71	7467.3	20Mar2013, 03:35	1.115
NR12	13.71	7415.3	20Mar2013, 03:40	1.113
N15	0.41	268.7	20Mar2013, 03:25	0.930
CP_N15	14.12	7588.2	20Mar2013, 03:40	1.108
NR13	14.12	7561.5	20Mar2013, 03:45	1.104
N17	1.42	798.6	20Mar2013, 03:35	1.230
N16	1.37	777.8	20Mar2013, 03:35	1.149
NR14	1.37	754.9	20Mar2013, 03:40	1.145
CP_N17	16.91	8979.1	20Mar2013, 03:45	1.118
NR15	16.91	8870.7	20Mar2013, 03:45	1.115
N18	0.81	425.9	20Mar2013, 03:35	1.188
CP_N18	17.72	9256.8	20Mar2013, 03:45	1.119
P3	1.22	812.8	20Mar2013, 03:25	1.050
P4	1.15	798.3	20Mar2013, 03:20	0.901
CP_P4	2.37	1578.1	20Mar2013, 03:25	0.978
PR1	2.37	1535.5	20Mar2013, 03:25	0.978
P2	0.90	590.3	20Mar2013, 03:25	0.990
P1	0.59	390.5	20Mar2013, 03:25	1.050
PR2	0.59	377.0	20Mar2013, 03:30	1.049
CP_P2	1.49	938.4	20Mar2013, 03:25	1.013
PR3	1.49	926.8	20Mar2013, 03:30	1.012

Note:
Node CP_N17 drainage area = 16.91 sq.mi., use DARF = 0.880

Project: CVWD-SMP Simulation Run: Oasis 100_Yr DARF=0.874

Start of Run: 20Mar2013, 00:00
End of Run: 20Mar2013, 16:00
Compute Time: 23May2014, 13:11:37

Basin Model: CVWD SMP OASIS
Meteorologic Model: 100-Yr Oasis DARF=0.874
Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
N12	0.99	671.9	20Mar2013, 03:20	0.947
CP_N11	11.46	6124.6	20Mar2013, 03:35	1.088
NR10	11.46	6056.2	20Mar2013, 03:40	1.088
N13	1.61	1125.7	20Mar2013, 03:25	1.174
NR11	1.61	1075.9	20Mar2013, 03:35	1.167
N14	0.64	459.5	20Mar2013, 03:25	1.174
CP_N14	13.71	7386.8	20Mar2013, 03:35	1.101
NR12	13.71	7340.5	20Mar2013, 03:40	1.100
N15	0.41	266.4	20Mar2013, 03:25	0.917
CP_N15	14.12	7511.6	20Mar2013, 03:40	1.094
NR13	14.12	7486.3	20Mar2013, 03:45	1.091
N17	1.42	791.8	20Mar2013, 03:35	1.215
N16	1.37	771.0	20Mar2013, 03:35	1.135
NR14	1.37	748.6	20Mar2013, 03:40	1.131
CP_N17	16.91	8891.6	20Mar2013, 03:45	1.105
NR15	16.91	8808.5	20Mar2013, 03:45	1.101
N18	0.81	422.2	20Mar2013, 03:35	1.174
CP_N18	17.72	9191.2	20Mar2013, 03:45	1.105
P3	1.22	805.8	20Mar2013, 03:25	1.037
P4	1.15	791.2	20Mar2013, 03:20	0.889
CP_P4	2.37	1564.2	20Mar2013, 03:25	0.965
PR1	2.37	1521.8	20Mar2013, 03:25	0.965
P2	0.90	585.1	20Mar2013, 03:25	0.977
P1	0.59	387.2	20Mar2013, 03:25	1.037
PR2	0.59	373.7	20Mar2013, 03:30	1.036
CP_P2	1.49	930.0	20Mar2013, 03:25	1.000

Note:
Node CP_N18 drainage area = 17.72 sq.mi., use DARF = 0.874

Appendix G
Oasis/Valley Floor Cost Estimation Worksheets

Drain System L Cost Estimate Breakdown

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Concrete Trapezoidal Channel				
1	Excavation	CY	733,039	$7.50	$5,497,793
2	3" Aggregate Base (2-20' foot maintenance roads)	SF	1,644,036	$0.70	$1,150,825
3	Trap Channel Concrete	CY	56,484	$430.00	$24,288,120
4	Levee Fill	CY		$10.40	$0
	RCB Culvert				
4	Excavation	CY	29,690	$7.50	$222,675
5	RCB Concrete (including steel)	CY	4,797	$820.00	$3,933,540
6	Structural Backfill	CY	15,593	$10.40	$162,167
	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		$5,600.00	$0
	Subtotal				$35,255,120
	15% Contingencies				$5,288,268
	10% Engineering and Inspection				$3,525,512
	Right-of-Way Acquisition	AC	102.0	$30,000.00	$3,060,000
	40 Years O&M	LS	1	$534,000.00	$534,000
	Grand Total				$47,662,900

Drain System M Cost Estimate Breakdown

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Concrete Trapezoidal Channel				
1	Excavation	CY	767,289	$7.50	$5,754,668
2	3" Aggregate Base (2-15' foot maintenance roads)	SF	1,712,588	$0.70	$1,198,812
3	Trap Channel Concrete	CY	59,012	$430.00	$25,375,160
4	Levee Fill	CY		$10.40	$0
	RCB Culvert				
4	Excavation	CY	22,626	$7.50	$169,695
5	RCB Concrete (including steel)	CY	3,979	$820.00	$3,262,780
6	Structural Backfill	CY	11,085	$10.40	$115,284
	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				$35,876,398
	15% Contingencies				$5,381,460
	10% Engineering and Inspection				$3,587,640
	Right-of-Way Acquisition	AC	106.5	$30,000.00	$3,195,000
	40 Years O&M	LS	1	$1,034,295.00	$558,112
	Grand Total				$48,598,610

Drain System N Cost Estimate Breakdown

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Concrete Trapezoidal Channel				
1	Excavation	CY	1,138,958	$7.50	$8,542,185
2	3" Aggregate Base (2-15' foot maintenance roads)	SF	2,000,248	$0.70	$1,400,174
3	Trap Channel Concrete	CY	80,353	$430.00	$34,551,790
4	Levee Fill	CY		$10.40	$0
	RCB Culvert				
4	Excavation	CY	32,811	$7.50	$246,083
5	RCB Concrete (including steel)	CY	6,131	$820.00	$5,027,420
6	Structural Backfill	CY	12,188	$10.40	$126,755
	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				$49,894,406
	15% Contingencies				$7,484,161
	10% Engineering and Inspection				$4,989,441
	Right-of-Way Acquisition	AC	98.3	$30,000.00	$2,949,000
	40 Years O&M	LS	1	$1,653,157.00	$892,055
	Grand Total				$66,209,063

Drain System O01 Cost Estimate Breakdown

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Concrete Trapezoidal Channel				
1	Excavation	CY	856,183	$7.50	$6,421,373
2	3" Aggregate Base (2-15' foot maintenance roads)	SF	1,417,044	$0.70	$991,931
3	Trap Channel Concrete	CY	54,650	$430.00	$23,499,500
4	Levee Fill	CY	80,716	$10.40	$839,446
	RCB Culvert				
4	Excavation	CY	25,884	$7.50	$194,130
5	RCB Concrete (including steel)	CY	4,720	$820.00	$3,870,400
6	Structural Backfill	CY	9,294	$10.40	$96,658
	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				$35,913,437
	15% Contingencies				$5,387,016
	10% Engineering and Inspection				$3,591,344
	Right-of-Way Acquisition	AC	75.8	$30,000.00	$2,274,000
	40 Years O&M	LS	1	$1,026,856.00	$554,098
	Grand Total				$47,719,895

Drain System O02 Cost Estimate Breakdown

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Concrete Trapezoidal Channel				
1	Excavation	CY	37,318	$7.50	$279,885
2	3" Aggregate Base (2-15' foot maintenance roads)	SF	209,480	$0.70	$146,636
3	Trap Channel Concrete	CY	4,385	$430.00	$1,885,550
4	Levee Fill	CY		$10.40	$0
	RCB Culvert				
4	Excavation	CY	2,346	$7.50	$17,595
5	RCB Concrete (including steel)	CY	350	$820.00	$287,000
6	Structural Backfill	CY	1,178	$10.40	$12,251
	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				$2,628,917
	15% Contingencies				$394,338
	10% Engineering and Inspection				$262,892
	Right-of-Way Acquisition	AC	9.6	$30,000.00	$288,000
	40 Years O&M	LS	1	$22,819.00	$12,313
	Grand Total				$3,586,460

Drain System O03 Cost Estimate Breakdown

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Concrete Trapezoidal Channel				
1	Excavation	CY	109,795	$7.50	$823,463
2	3" Aggregate Base (2-15' foot maintenance roads)	SF	526,292	$0.70	$368,404
3	Trap Channel Concrete	CY	11,838	$430.00	$5,090,340
4	Levee Fill	CY		$10.40	$0
	RCB Culvert				
4	Excavation	CY	2,545	$7.50	$19,088
5	RCB Concrete (including steel)	CY	409	$820.00	$335,380
6	Structural Backfill	CY	1,091	$10.40	$11,346
	Concrete Pipe (diameter in inches)				
7	Excavation	CY	39,494	$7.50	$296,205
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	4,850	$433.00	$2,100,050
16	90	LF		$483.00	$0
17	96	LF	2,780	$533.00	$1,481,740
18	Manholes (400' spacing)	EA	20	$5,600.00	$112,000
	Subtotal				$10,638,016
	15% Contingencies				$1,595,702
	10% Engineering and Inspection				$1,063,802
	Right-of-Way Acquisition	AC	24.9	$30,000.00	$747,000
	40 Years O&M	LS	1	$71,959.00	$38,829
	Grand Total				$14,083,349

Drain System P Cost Estimate Breakdown

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Concrete Trapezoidal Channel				
1	Excavation	CY	858,223	$7.50	$6,436,673
2	3" Aggregate Base (2-15' foot maintenance roads)	SF	2,039,476	$0.70	$1,427,633
3	Trap Channel Concrete	CY	67,473	$430.00	$29,013,390
4	Levee Fill	CY		$10.40	$0
	RCB Culvert				
4	Excavation	CY	18,801	$7.50	$141,008
5	RCB Concrete (including steel)	CY	3,912	$820.00	$3,207,840
6	Structural Backfill	CY	6,951	$10.40	$72,290
	Concrete Pipe (diameter in inches)				
7	Excavation	CY	16,148	$7.50	$121,110
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	3,054	$483.00	$1,475,082
17	96	LF		$533.00	$0
18	Manholes (400' spacing)	EA	8	$5,600.00	$44,800
	Subtotal				$41,939,826
	15% Contingencies				$6,290,974
	10% Engineering and Inspection				$4,193,983
	Right-of-Way Acquisition	AC	76.8	$30,000.00	$2,304,000
	40 Years O&M	LS	1	$1,098,701.00	$592,867
	Grand Total				$55,321,649

Drain System Q Cost Estimate Breakdown

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Concrete Trapezoidal Channel				
1	Excavation	CY	26,371	$7.50	$197,783
2	3" Aggregate Base (2-15' foot maintenance roads)	SF	130,120	$0.70	$91,084
3	Trap Channel Concrete	CY	2,948	$430.00	$1,267,640
4	Levee Fill	CY		$10.40	$0
	RCB Culvert				
4	Excavation	CY	1,533	$7.50	$11,498
5	RCB Concrete (including steel)	CY	253	$820.00	$207,460
6	Structural Backfill	CY	627	$10.40	$6,521
	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				$1,781,985
	15% Contingencies				$267,298
	10% Engineering and Inspection				$178,198
	Right-of-Way Acquisition	AC	1	$30,000.00	$30,000
	40 Years O&M	LS	1	$24,523.00	$13,233
	Grand Total				$2,270,714

Drain System R Cost Estimate Breakdown

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Concrete Trapezoidal Channel				
1	Excavation	CY	46,630	$7.50	$349,725
2	3" Aggregate Base (2-15' foot maintenance roads)	SF	265,391	$0.70	$185,774
3	Trap Channel Concrete	CY	5,533	$430.00	$2,379,190
4	Levee Fill	CY		$10.40	$0
	RCB Culvert				
4	Excavation	CY	682	$7.50	$5,115
5	RCB Concrete (including steel)	CY	113	$820.00	$92,660
6	Structural Backfill	CY	279	$10.40	$2,902
	Concrete Pipe (diameter in inches)				
7	Excavation	CY	7,894	$7.50	$59,205
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	1,627	$433.00	$704,491
16	90	LF		$483.00	$0
17	96	LF		$533.00	$0
18	Manholes (400' spacing)	EA	5	$5,600.00	$28,000
	Subtotal				$3,807,061
	15% Contingencies				$571,059
	10% Engineering and Inspection				$380,706
	Right-of-Way Acquisition	AC	4.9	$30,000.00	$147,000
	40 Years O&M	LS	1	$36,545.00	$19,720
	Grand Total				$4,925,547

RCB QUANTITY SUMMARY SHEET

Eastern Coachella Valley Stormwater Master Plan
MDP / ADP

Oasis/Valley Floor Regions (sht. 1 of 3)
FACILITY

June10,2014
DATE

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 L01 at CVSC Levee/Ave58	4	7.0	14.0	44.4	383.8	12.0		8.50	59.34	2524.6	20.5	Shored		18456.1	11286.8	82.4	0.73			
2	Line L01 at Polk St.	4	7.0	14.0	44.4	40.0	4.0		8.50	59.34	263.1	12.5	Shored		1172.9	425.7	78.1	0.07			
3	Line L01-01 at Airport Boulevard	4	7.0	14.0	44.4	75.0	3.0		8.50	59.34	493.3	11.5	Shored		2023.2	622.2	77.5	0.13			
4	Line L01 at Tyler St	4	7.0	12.0	32.9	40.0	3.0		8.50	51.34	194.7	11.5	Shored		942.7	296.3	69.5	0.06			
5	Line L01 at Shady Lane	4	6.0	12.0	31.8	40.0	5.0		7.50	51.34	188.4	12.5	Shored		1024.7	454.3	70.1	0.06			
6	Line L01 at Harrison St.	3	7.0	14.0	44.4	60.0	3.0		8.50	44.67	296.0	11.5	Shored		1243.7	400.0	62.9	0.09			
7	Line L01 at Van Buren St	2	6.0	12.0	31.8	110.0	4.0		7.50	26.00	259.1	11.5	Shored		1405.6	611.1	44.2	0.11			
8	Line L01 at 54TH Ave.	2	6.0	12.0	31.8	40.0	4.0		7.50	26.00	94.2	11.5	Shored		511.1	222.2	44.2	0.04			
9	Line L01 at Calhoun 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			
10	Line L01 at Jackson St	1	6.0	12.0	33.2	40.0	4.0		7.50	13.33	49.2	11.5	Shored		295.3	147.2	31.5	0.03			
11	Line L01-01 at Van Buren St	2	7.0	8.0	21.6	100.0	4.0		8.50	18.00	160.0	12.5	Shored		1018.6	451.9	36.8	0.08			
12	Line L01-01 at Airport Boulevard	2	7.0	8.0	21.6	60.0	3.0		8.50	18.00	96.0	11.5	Shored		562.2	222.2	36.2	0.05			
13	Line L01-01 at Calhoun St	1	7.0	12.0	34.7	40.0	3.0		8.50	13.33	51.4	11.5	Shored		295.3	127.4	31.5	0.03			
14	Line L01-01 at Jackson St	1	7.0	12.0	34.7	40.0	3.0		8.50	13.33	51.4	11.5	Shored		295.3	127.4	31.5	0.03			
15	Line M01 at CVSC Levee/Ave60	6	7.0	14.0	44.4	249.0	10.0		8.50	88.67	2456.4	18.5	Shored		15807.8	8858.3	110.7	0.63			
16	Line M01 at Fillmore St	6	7.0	14.0	44.4	40.0	2.0		8.50	88.67	394.7	10.5	Shored		1441.5	324.9	106.3	0.10			
17	Line M01 at Polk St	6	7.0	14.0	44.4	40.0	3.0		8.50	88.67	394.7	11.5	Shored		1578.8	462.2	106.9	0.10			
18	Line M01 at Harrison St	3	7.0	14.0	44.4	60.0	3.0		8.50	44.67	296.0	11.5	Shored		1243.7	400.0	62.9	0.09			
19	Line M01 at Van Buren St	2	7.0	12.0	32.9	60.0	3.0		8.50	26.00	146.0	11.5	Shored		766.7	275.6	44.2	0.06			
20	Line M01 at Jackson St	2	7.0	10.0	26.6	40.0	4.0		8.50	22.00	78.8	12.5	Shored		481.5	204.5	40.8	0.04			
rev. 11/15/2012						1,598					8,564				51,010	26,119		2.6	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

June 10,2014
DATE

Oasis/Valley Floor Regions (sht. 2 of 3)
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 M01 at Avenue 58	1	7.0	10.0	29.2	40.0	4.0	0.0	8.50	11.33	43.3	12.5	Shored		284.0	141.2	30.1	0.03			
2	Line M01-01 at Avenue 58	2	7.0	7.0	19.0	40.0	3.0	0.0	8.50	16.00	56.3	11.5	Shored		340.8	139.3	34.2	0.03			
3	Line M01-02 at Avenue 58	2	7.0	7.0	19.0	80.0	3.0	0.0	8.50	16.00	112.6	11.5	Shored		681.5	278.5	34.2	0.06			
4	Line N01 AT CVSC/Ave 64	9	9.0	14.0	44.0	284.9	6.0	0.0	10.50	132.67	4178.8	16.5	Shored		23796.7	9096.5	153.6	1.00			
5	Line N01 at Fillmore St	8	7.0	14.0	44.4	40.0	4.0	0.0	8.50	118.00	526.2	12.5	Shored		2259.3	773.4	136.8	0.13			
6	Line N01 at Tyler St	6	7.0	14.0	44.4	40.0	3.0	0.0	8.50	88.67	394.7	11.5	Shored		1578.8	462.2	106.9	0.10			
7	Line N01 at Harrison St.	6	7.0	12.0	32.9	60.0	4.0	0.0	8.50	76.67	438.0	12.5	Shored		2240.8	792.6	95.4	0.13			
8	Line N01 at Van Buren St	4	7.0	14.0	44.4	40.0	2.0	0.0	8.50	59.34	263.1	10.5	Shored		985.2	238.0	77.0	0.07			
9	Line N01 at Jackson St	2	7.0	12.0	32.9	40.0	3.0	0.0	8.50	26.00	97.3	11.5	Shored		511.1	183.7	44.2	0.04			
10	Line N01 at Ave 62	1	7.0	14.0	42.9	40.0	4.0	0.0	8.50	15.33	63.6	12.5	Shored		358.0	164.9	34.1	0.03			
11	Line N01-01 at Ave 62	2	7.0	7.0	19.0	40.0	4.0	0.0	8.50	16.00	56.3	12.5	Shored		370.4	168.9	34.8	0.03			
12	Line N01-02 at Ave 62	2	7.0	7.0	19.0	40.0	4.0	0.0	8.50	16.00	56.3	12.5	Shored		370.4	168.9	34.8	0.03			
13	Line N01-03 at Ave 62	2	7.0	7.0	19.0	40.0	3.0	0.0	8.50	16.00	56.3	11.5	Shored		340.8	139.3	34.2	0.03			
14	Line O01 at CVSC Levee/Ave 66	4	11.0	14.0	49.0	335.1	6.0	0.0	12.50	59.34	2432.6	18.5	Shored		14542.1	5336.9	81.3	0.63			
15	Line O01 at Pierce St	6	10.0	14.0	46.7	40.0	6.0	0.0	11.50	88.67	415.1	17.5	Shored		2402.5	891.9	110.1	0.10			
16	Line O01 at Fillmore St.	6	8.0	14.0	42.0	40.0	5.0	0.0	9.50	88.67	373.3	14.5	Shored		1990.7	742.7	108.5	0.10			
17	Line O01 at Polk St	5	7.0	12.0	32.9	40.0	3.0	0.0	8.50	64.00	243.3	11.5	Shored		1158.6	352.6	82.2	0.08			
18	Line O01 at Martinez Rd	5	7.0	10.0	26.6	55.0	4.0	0.0	8.50	54.00	270.9	12.5	Shored		1476.9	541.9	72.8	0.09			
19	Line O01 at Tyler St	3	7.0	14.0	44.4	100.0	3.0		8.50	44.67	493.3	11.5	Shored		2072.9	666.7	62.9	0.14			
20	Line O01 at Harrison St	3	7.0	14.0	44.4	60.0	3.0		8.50	44.67	296.0	11.5	Shored		1243.7	400.0	62.9	0.09			
rev. 11/15/2012						1,495					10,867				59,005	21,680		2.9	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

Oasis/Valley Floor Regions (sht. 3 of 3)
FACILITY

June 10,2014
DATE

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 O01 at Van Buren St	3	7.0	12.0	32.9	40.0	3.0		8.50	38.67	146.0	11.5	Shored		726.9	240.0	56.9	0.05			
2	Line O02 at Fillmore St	2	6.0	8.0	20.0	203.8	5.0		7.50	18.00	301.2	12.5	Shored		2076.1	1056.9	36.8	0.17			
3	Line O02 at Ave 70	1	6.0	12.0	33.2	40.0	3.0		7.50	13.33	49.2	10.5	Shored		269.6	121.5	31.0	0.03			
4	Line O03 at Polk St	2	7.0	10.0	26.6	60.0	4.0		8.50	22.00	118.2	12.5	Shored		722.3	306.7	40.8	0.06			
5	Line O03 at Harrison St	2	7.0	7.0	19.0	160.0	3.0		8.50	16.00	225.2	11.5	Shored		1363.0	557.1	34.2	0.13			
6	Line O03-01 at Harrison St.	2	6.0	6.0	14.8	60.0	4.0		7.50	14.00	65.6	11.5	Shored		460.0	226.7	32.2	0.04			
7	Line Q01 at Hwy 86	2	7.0	7.0	19.0	180.0	3.0		8.50	16.00	253.3	11.5	Shored		1533.4	626.7	34.2	0.14			
8	Line R01 at Ave 80	2	7.0	7.0	19.0	40.0	3.0		8.50	16.00	56.3	11.5	Shored		340.8	139.3	34.2	0.03			
9	Line R01 at Harrison Ave	2	7.0	7.0	19.0	40.0	3.0		8.50	16.00	56.3	11.5	Shored		340.8	139.3	34.2	0.03			
10	Line P01 at Hwy 86	4	7.0	14.0	44.4	189.0	4.0		8.50	59.34	1243.2	12.5	Shored		5541.8	2011.4	78.1	0.34			
11	Line P01 at Pierce St	2	7.0	14.0	44.4	40.0	3.0		8.50	30.00	131.6	11.5	Shored		579.3	201.5	48.2	0.04			
12	Line P01 at Harrison St	2	7.0	14.0	44.4	100.0	3.0		8.50	30.00	328.9	11.5	Shored		1448.2	503.7	48.2	0.11			
13	Line P01 at Fillmore St	2	7.0	14.0	44.4	40.0	3.0		8.50	30.00	131.6	11.5	Shored		579.3	201.5	48.2	0.04			
14	Line P02 at Buchanan St	4	7.0	14.0	44.4	60.0	4.0		8.50	59.34	394.7	12.5	Shored		1759.3	638.5	78.1	0.11			
15	Line P02 at Hwy 86	4	7.0	12.0	32.9	260.0	4.0		8.50	51.34	1265.3	12.5	Shored		6660.7	2458.8	70.1	0.42			
16	Line P02 at Ave 70	2	7.0	12.0	32.9	40.0	3.0		8.50	26.00	97.3	11.5	Shored		511.1	183.7	44.2	0.04			
17	Line P02-01 at Hwy 86	1	7.0	14.0	42.9	170.0	3.0		8.50	15.33	270.1	11.5	Shored		1399.9	579.3	33.5	0.13			
18	Line P02-01 at Pierce St	1	6.0	12.0	33.2	40.0	5.0		7.50	13.33	49.2	12.5	Shored		321.0	172.8	32.1	0.03			
19	Line O01-01 at Harrison St	1	6.0	12.0	33.2	40.0	3.0		7.50	13.33	49.2	10.5	Shored		269.6	121.5	31.0	0.03			
20									0.00	0.00		0.0			0.0	0.0	0.0				
rev. 11/15/2012						1,803					5,232				26,903	10,487		2.0	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 L (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)
L01	L01 Storm Drain	4-14'X7' RCB	11+71.20	15+55.00	383.80													6.58	2524.6	18456.1	11286.8											
L01	L01 Storm Drain	Open Channel	15+55.00	35+30.00	1975.00	64	126400	1.5	10.0	94	1.95	3842	790	57787	79000														139		6.3
L01	L01 Storm Drain	Open Channel	35+30.00	60+70.00	2540.00	60	152400	1.5	10.0	90	1.87	4753	750	70556	101600														135		7.9
L01	L01 Storm Drain	4-14'X7' RCB	60+70.00	61+10.00	40.00													6.58	263.1	1172.9	425.7											
L01	L01 Storm Drain	Open Channel	61+10.00	123+18.00	6208.00	56	347648	1.5	10.0	86	1.80	11158	710	163247	248320														131		18.7
L01	L01 Storm Drain	4-14'X7' RCB	123+18.00	123+93.00	75.00													6.58	493	2023.2	622.2											
L01	L01 Storm Drain	Open Channel	123+93.00	127+30.00	337.00	56	18872	1.5	10.0	86	1.80	606	710	8862	13480														131		1.0
L01	L01 Storm Drain	Open Channel	127+30.00	165+02.00	3772.00	52	196144	1.5	10.0	82	1.72	6500	670	93601	150880														127		11.0
L01	L01 Storm Drain	4-12'X7' RCB	165+02.00	165+42.00	40.00													4.87	195	942.7	296.3											
L01	L01 Storm Drain	Open Channel	165+42.00	191+50.00	2608.00	52	135616	1.5	10.0	82	1.72	4494	670	64717	104320														127		7.6
L01	L01 Storm Drain	4-12'X6' RCB	191+50.00	191+90.00	40.00													4.71	188	1024.7	454.3											
L01	L01 Storm Drain	Open Channel	191+90.00	217+78.00	2588.00	36	93168	1.5	10.0	66	1.43	3693	510	48884	103520														111		6.6
L01	L01 Storm Drain	3-14'X7' RCB	217+78.00	218+38.00	60.00													4.93	296.0	1243.7	400.0											
L01	L01 Storm Drain	Open Channel	218+38.00	245+30.00	2692.00	30	80760	1.5	10.0	60	1.32	3542	450	44867	107680														105		6.5
L01	L01 Storm Drain	Open Channel	245+30.00	268+43.00	2313.00	25	57825	1.5	10.0	55	1.22	2829	400	34267	92520														100		5.3
L01	L01 Storm Drain	Open Channel	268+43.00	293+25.00	2482.00	14	34748	1.5	10.0	44	1.02	2531	290	26659	99280														89		5.1
L01	L01 Storm Drain	2-12'X6' RCB	293+25.00	294+35.00	110.00													2.36	259.1	1405.6	611.1											
L01	L01 Storm Drain	Open Channel	294+35.00	320+50.00	2615.00	12	31380	1.5	10.0	42	0.98	2569	270	26150	104600														87		5.2
L01	L01 Storm Drain	2-12'X6' RCB	320+50.00	320+90.00	40.00													2.36	94.2	511.1	222.2											
L01	L01 Storm Drain	Open Channel	320+90.00	347+35.00	2645.00	12	31740	1.5	10.0	42	0.98	2599	270	26450	105800														87		5.3
L01	L01 Storm Drain	2-10'X6' RCB	347+35.00	347+75.00	40.00													1.89	75.7	443.0	198.5											
L01	L01 Storm Drain	Open Channel	347+75.00	373+70.00	2595.00	6	15570	1.5	10.0	36	0.87	2261	210	20183	103800														81		4.8
L01	L01 Storm Drain	12'X6' RCB	373+70.00	374+10.00	40.00													1.23	49.2	295.3	147.2											
L01	L01 Storm Drain	Open Channel	374+10.00	374+85.00	75.00	6	450	1.5	10.0	36	0.87	65	210	583	3000														81		0.1
L01-01	L01-01 Storm Drain	Open Channel	10+55.10	13+76.00	320.90	8	2567	1.5	10.0	38	0.91	292	230	2734	12836														83		0.6
L01-01	L01-01 Storm Drain	2-8'X7' RCB	13+76.00	14+76.00	100.00													1.60	160.0	1018.6	451.9											
L01-01	L01-01 Storm Drain	Open Channel	14+76.00	27+87.00	1311.00	8	10488	1.5	10.0	38	0.91	1191	230	11168	52440														83		2.5
L01-01	L01-01 Storm Drain	2-8'X7' RCB	27+87.00	28+47.00	60.00													1.60	96.0	562.2	222.2											
L01-01	L01-01 Storm Drain	Open Channel	28+47.00	42+33.00	1386.00	8	11088	1.5	10.0	38	0.91	1259	230	11807	55440														83		2.6
L01-01	L01-01 Storm Drain	12'X7' RCB	42+33.00	42+73.00	40.00													1.29	51.4	295.3	127.4											
L01-01	L01-01 Storm Drain	Open Channel	42+73.00	68+62.00	2589.00	6	15534	1.5	10.0	36	0.87	2256	210	20137	103560														81		4.8
L01-01	L01-01 Storm Drain	12'X7' RCB	68+62.00	69+02.00	40.00													1.29	51.4	295.3	127.4											
L01-01	L01-01 Storm Drain	Open Channel	69+02.00	69+51.00	49.00	6	294	1.5	10.0	36	0.87	43	210	381	1960														81		0.1
TOTALS		**SUM**			**42210**		**1362692**					**56484**		**733039**	**1644036**		**0**		**4797**	**29690**	**15593.2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			**102.0**

Notes:

1. CVSC = Coachella Valley Stormwater Channel
2. Channel Right of Way width = Channel top width + 35' for two maintenance roads
3. TRM = Turf Reinforcement Mat (used where open channel velocities exceed 6 fps)
4. 6" Aggregate base for 2-15' wide maintenance roads

Line M (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)
M01	M01 Storm Drain	6-14'X7' RCB	12+31.04	14+80.00	248.96													9.87	2456.4	15807.8	8858.3											
M01	M01 Storm Drain	Open Channel	14+80.00	22+00.00	720.00	85	61200	1.5	10.0	115	2.33	1681	1000	26667	28800														160		2.6
M01	M01 Storm Drain	6-14'X7' RCB	22+00.00	22+40.00	40.00													9.87	394.7	1441.5	324.9											
M01	M01 Storm Drain	Open Channel	22+40.00	60+30.00	3790.00	85	322150	1.5	10.0	115	2.33	8847	1000	140370	151600														160		13.9
M01	M01 Storm Drain	Open Channel	60+30.00	75+25.00	1495.00	82	122590	1.5	10.0	112	2.28	3407	970	53709	59800														157		5.4
M01	M01 Storm Drain	6-14'X7' RCB	75+25.00	75+65.00	40.00													9.87	394.7	1578.8	462.2											
M01	M01 Storm Drain	Open Channel	75+65.00	97+80.00	2215.00	82	181630	1.5	10.0	112	2.28	5048	970	79576	88600														157		8.0
M01	M01 Storm Drain	Open Channel	97+80.00	135+30.00	3750.00	68	255000	1.5	10.0	98	2.02	7573	830	115278	150000														143		12.3
M01	M01 Storm Drain	Open Channel	135+30.00	180+68.00	4538.00	31	140678	1.5	10.0	61	1.33	6055	460	77314	181520														106		11.0
M01	M01 Storm Drain	3-14'X7' RCB	180+68.00	181+28.00	60.00													4.93	296.0	1243.7	400.0											
M01	M01 Storm Drain	Open Channel	181+28.00	183+30.00	202.00	31	6262	1.5	10.0	61	1.33	270	460	3441	8080														106		0.5
M01	M01 Storm Drain	Open Channel	183+30.00	208+15.00	2485.00	25	62125	1.5	10.0	55	1.22	3040	400	36815	99400														100		5.7
M01	M01 Storm Drain	Open Channel	208+15.00	231+80.00	2365.00	23	54395	1.5	10.0	53	1.19	2805	380	33285	94600														98		5.3
M01	M01 Storm Drain	Open Channel	231+80.00	233+48.00	168.00	14	2352	1.5	10.0	44	1.02	171	290	1804	6720														89		0.3
M01	M01 Storm Drain	2-12'X7' RCB	233+48.00	234+08.00	60.00													2.43	146.0	766.7	275.6											
M01	M01 Storm Drain	Open Channel	234+08.00	261+15.00	2707.00	14	37898	1.5	10.0	44	1.02	2760	290	29075	108280														89		5.5
M01	M01 Storm Drain	Open Channel	261+15.00	286+85.00	2570.00	10	25700	1.5	10.5	42	0.98	2516	270	25736	102800														87		5.1
M01	M01 Storm Drain	2-10'X7' RCB	286+85.00	287+25.00	40.00													1.97	78.8	481.5	204.5											
M01	M01 Storm Drain	Open Channel	287+25.00	289+55.00	230.00	10	2300	1.5	10.0	40	0.95	217	250	2130	9200														85		0.4
M01	M01 Storm Drain	Open Channel	289+55.00	315+30.00	2575.00	6	15450	1.5	10.0	36	0.87	2244	210	20028	103000														81		4.8
M01	M01 Storm Drain	Open Channel	315+30.00	339+88.00	2458.00	6	14748	1.5	10.0	36	0.87	2142	210	19118	98320														81		4.6
M01	M01 Storm Drain	10'X7' RCB	339+88.00	340+28.00	40.00													1.08	43.3	284.0	141.2											
M01	M01 Storm Drain	Open Channel	340+28.00	341+19.00	91.00	6	546	1.5	10.0	36	0.87	79	210	708	3640														81		0.2
M01-01	M01-01 Storm Drain	Open Channel	10+38.80	35+20.00	2481.20	14	34737	1.5	10.0	44	1.02	2530	290	26650	99248														89		5.1
M01-01	M01-01 Storm Drain	Open Channel	35+20.00	61+93.00	2673.00	9	24057	1.5	10.0	39	0.93	2478	240	23760	106920														84		5.2
M01-01	M01-01 Storm Drain	2-7'X7' RCB	61+93.00	62+33.00	40.00													1.41	56.3	340.8	139.3											
M01-01	M01-01 Storm Drain	Open Channel	62+33.00	63+12.00	79.00	9	711	1.5	10.0	39	0.93	73	240	702	3160														84		0.2
M01-02	M01-02 Storm Drain	Open Channel	10+31.50	35+70.00	2538.50	14	35539	1.5	10.0	44	1.02	2588	290	27265	101540														89		5.2
M01-02	M01-02 Storm Drain	Open Channel	35+70.00	62+19.00	2649.00	9	23841	1.5	10.0	39	0.93	2456	240	23547	105960														84		5.1
M01-02	M01-02 Storm Drain	2-7'X7' RCB	62+19.00	62+99.00	80.00													1.41	112.6	681.5	278.5											
M01-02	M01-02 Storm Drain	Open Channel	62+99.00	63+34.00	35.00	9	315	1.5	10.0	39	0.93	32	240	311	1400														84		0.1
TOTALS		**SUM**			**43464**		**1424224**					**59012**		**767289**	**1712588**		**0**		**3979**	**22626**	**11084.5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			**106.5**

Notes:

1. CVSC = Coachella Valley Stormwater Channel
2. Channel Right of Way width = Channel top width + 35' for two maintenance roads
3. TRM = Turf Reinforcement Mat (used where open channel velocities exceed 6 fps)
4. 6" Aggregate base for 2-15' wide maintenance roads

Line N (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)
N01	N01 Storm Drain	9-14'X9' RCB	11+55.08	14+40.00	284.92													14.67	4178.8	23796.7	9096.5											
N01	N01 Storm Drain	Open Channel	14+40.00	30+00.00	1560.00	125	195000	1.5	12.0	161	3.21	5005	1716	99147	62400														206	60	5.2
N01	N01 Storm Drain	Open Channel	30+00.00	44+90.00	1490.00	115	171350	1.5	10.0	145	2.89	4306	1300	71741	59600														190	60	4.4
N01	N01 Storm Drain	8-14'X7' RCB	44+90.00	45+30.00	40.00													13.16	526.2	2259.3	773.4											
N01	N01 Storm Drain	Open Channel	45+30.00	71+50.00	2620.00	105	275100	1.5	10.0	135	2.70	7086	1200	116444	104800														180	60	7.2
N01	N01 Storm Drain	Open Channel	71+50.00	97+60.00	2610.00	96	250560	1.5	10.0	126	2.54	6624	1110	107300	104400														171	60	6.7
N01	N01 Storm Drain	Open Channel	97+60.00	125+00.00	2740.00	91	249340	1.5	10.0	121	2.45	6701	1060	107570	109600														166	60	6.7
N01	N01 Storm Drain	Open Channel	125+00.00	150+20.00	2520.00	74	186480	1.5	10.0	104	2.13	5369	890	83067	100800														149	60	5.1
N01	N01 Storm Drain	6-14'X7' RCB	150+20.00	150+60.00	40.00													9.87	394.7	1578.8	462.2											
N01	N01 Storm Drain	Open Channel	150+60.00	175+15.00	2455.00	71	174305	1.5	10.0	101	2.08	5094	860	78196	98200														146	60	4.8
N01	N01 Storm Drain	Open Channel	175+15.00	202+65.00	2750.00	67	184250	1.5	10.0	97	2.00	5503	820	83519	110000														142	60	5.2
N01	N01 Storm Drain	6-12'X7' RCB	202+65.00	203+25.00	60.00													7.30	438.0	2240.8	792.6											
N01	N01 Storm Drain	Open Channel	203+25.00	230+00.00	2675.00	48	128400	1.5	10.0	78	1.65	4412	630	62417	107000														123	60	3.9
N01	M01 Storm Drain	Open Channel	230+00.00	254+07.00	2407.00	40	96280	1.5	10.0	70	1.50	3613	550	49031	96280														115	60	3.0
N01	N01 Storm Drain	4-14'X7' RCB	254+07.00	254+47.00	40.00													6.58	263.1	985.2	238.0											
N01	N01 Storm Drain	Open Channel	254+47.00	281+40.00	2693.00	32	86176	1.5	10.0	62	1.35	3643	470	46878	107720														107	60	2.9
N01	N01 Storm Drain	Open Channel	281+40.00	307+78.00	2638.00	19	50122	1.5	10.0	49	1.11	2934	340	33219	105520														94	60	2.1
N01	N01 Storm Drain	2-12'X7' RCB	307+78.00	308+18.00	40.00													2.43	97.3	511.1	183.7											
N01	N01 Storm Drain	Open Channel	308+18.00	333+65.00	2547.00	14	35658	1.5	10.0	44	1.02	2597	290	27357	101880														89		5.2
N01	N01 Storm Drain	Open Channel	333+65.00	360+14.00	2649.00	6	15894	1.5	10.0	36	0.87	2308	210	20603	105960														81		4.9
N01	N01 Storm Drain	14'X7' RCB	360+14.00	360+54.00	40.00													1.59	63.6	358.0	164.9											
N01	N01 Storm Drain	Open Channel	360+54.00	361+15.00	61.00	6	366	1.5	10.0	36	0.87	53	210	474	2440														81		0.1
N01-01	N01-01 Storm Drain	Open Channel	10+74.00	35+65.00	2491.00	14	34874	1.5	10.0	44	1.02	2540	290	26755	99640														89		5.1
N01-01	N01-01 Storm Drain	Open Channel	35+65.00	62+39.00	2674.00	9	24066	1.5	10.0	39	0.93	2479	240	23769	106960														84		5.2
N01-01	N01-01 Storm Drain	2-7'X7' RCB	62+39.00	62+79.00	40.00													1.41	56.3	370.4	168.9											
N01-01	N01-01 Storm Drain	Open Channel	62+79.00	63+39.00	60.00	9	540	1.5	10.0	39	0.93	56	240	533	2400														84		0.1
N01-02	N01-02 Storm Drain	Open Channel	10+55.90	35+20.00	2464.10	14	34497	1.5	10.0	44	1.02	2512	290	26466	98564														89		5.0
N01-02	N01-02 Storm Drain	Open Channel	35+20.00	61+73.00	2653.00	9	23877	1.5	10.0	39	0.93	2459	240	23582	106120														84		5.1
N01-02	N01-02 Storm Drain	2-7'X7' RCB	61+73.00	62+13.00	40.00										1600			1.41	56.3	370.4	168.9											
N01-02	N01-02 Storm Drain	Open Channel	62+13.00	62+71.00	58.00	9	522	1.5	10.0	39	0.93	54	240	516	2320														84		0.1
N01-03	N01-03 Storm Drain	Open Channel	10+43.90	35+20.00	2476.10	14	34665	1.5	10.0	44	1.02	2524	290	26595	99044														89		5.1
N01-03	N01-03 Storm Drain	Open Channel	35+20.00	61+45.00	2625.00	9	23625	1.5	10.0	39	0.93	2433	240	23333	105000														84		5.1
N01-03	N01-03 Storm Drain	2-7'X7' RCB	61+45.00	61+85.00	40.00													1.41	56.3	340.7	139.3											
N01-03	N01-03 Storm Drain	Open Channel	61+85.00	62+35.00	50.00	9	450	1.5	10.0	39	0.93	46	240	444	2000														84		0.1
TOTALS		**SUM**			**50631**		**2276398**					**80353**		**1138958**	**2000248**		**0**		**6131**	**32811**	**12188.4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			**98.3**

Notes:

1. CVSC = Coachella Valley Stormwater Channel
2. Channel Right of Way width = Channel top width + 35' for two maintenance roads
3. TRM = Turf Reinforcement Mat (used where open channel velocities exceed 6 fps)
4. 6" Aggregate base for 2-15' wide maintenance roads

Line O1 (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)
O01	O01 Storm Drain	4-14'X11' RCB	11+02.90	14+38.00	335.10													7.26	2432.6	14542.1	5336.9											
O01	O01 Storm Drain	Open Channel	14+38.00	23+55.00	917.00	80	73360	1.5	16.5	130	2.68	2454	1728	58701	36680	16	14621												175		3.7
O01	O01 Storm Drain	6-14'X10' RCB	23+55.00	23+95.00	40.00													10.38	415.1	2402.5	891.9											
O01	O01 Storm Drain	Open Channel	23+95.00	49+99.00	2604.00	80	208320	1.5	16.5	130	2.68	6968	1728	166692	104160	13	32870												175		10.4
O01	O01 Storm Drain	Open Channel	49+99.00	76+13.00	2614.00	76	198664	1.5	14.0	118	2.43	6364	1358	131475	104560	13	33225												163		9.8
O01	O01 Storm Drain	6-14'X8' RCB	76+13.00	76+53.00	40.00													9.33	373.3	1990.7	742.7											
O01	O01 Storm Drain	Open Channel	76+53.00	100+30.00	2377.00	72	171144	1.5	10.5	104	2.13	5056	921	81115	95080														149	60	4.8
O01	O01 Storm Drain	Open Channel	100+30.00	129+18.00	2888.00	54	155952	1.5	10.0	84	1.76	5084	690	73804	115520														129	60	4.6
O01	O01 Storm Drain	5-12'X7' RCB	129+18.00	129+58.00	40.00													6.08	243.3	1158.6	352.6											
O01	O01 Storm Drain	Open Channel	129+58.00	151+06.00	2148.00	45	96660	1.5	10.0	75	1.59	3423	600	47733	85920														120	60	3.0
O01	O01 Storm Drain	5-10'X7' RCB	151+06.00	151+61.00	55.00													4.93	270.9	1476.9	541.9											
O01	O01 Storm Drain	Open Channel	151+61.00	178+62.00	2701.00	36	97236	1.5	10.0	66	1.43	3854	510	51019	108040														111	60	3.2
O01	O01 Storm Drain	Open Channel	178+62.00	181+05.00	243.00	30	7290	1.5	10.0	60	1.32	320	450	4050	9720														105	60	0.3
O01	O01 Storm Drain	3-14'X7' RCB	181+05.00	182+05.00	100.00													4.93	493.3	2072.9	666.7											
O01	O01 Storm Drain	Open Channel	182+05.00	207+70.00	2565.00	28	71820	1.5	10.0	58	1.28	3280	430	40850	102600														103		6.1
O01	O01 Storm Drain	Open Channel	207+70.00	232+70.00	2500.00	28	70000	1.5	10.0	58	1.28	3197	430	39815	100000														103		5.9
O01	O01 Storm Drain	3-14'X7' RCB	232+70.00	233+30.00	60.00													4.93	296.0	1243.7	400.0											
O01	O01 Storm Drain	Open Channel	233+30.00	260+20.00	2690.00	28	75320	1.5	10.0	58	1.28	3440	430	42841	107600														103		6.4
O01	O01 Storm Drain	Open Channel	260+20.00	285+80.00	2560.00	24	61440	1.5	10.0	54	1.20	3084	390	36978	102400														99		5.8
O01	O01 Storm Drain	3-12'X7' RCB	285+80.00	286+20.00	40.00													3.65	146.0	726.9	240.0											
O01	O01 Storm Drain	Open Channel	286+20.00	327+90.00	4170.00	24	100080	1.5	10.0	54	1.20	5024	390	60233	166800														99		9.5
O01-01	O01-01 Storm Drain	Open Channel	10+51.90	28+00.00	1748.10	6	10489	1.5	8.0	30	0.74	1290	144	9323	69924														75	50	1.0
O01-01	O01-01 Storm Drain	Open Channel	28+00.00	54+08.00	2608.00	6	15648	1.5	7.0	27	0.67	1750	116	11156	104320														72	50	1.3
O01-01	O01-01 Storm Drain	12'X6' RCB	54+08.00	54+48.00	40.00													1.23	49.2	269.6	121.5											
O01-01	O01-01 Storm Drain	Open Channel	54+48.00	55+41.00	93.00	6	558	1.5	7.0	27	0.67	62	116	398	3720														72		0.2
TOTALS		**SUM**			**36176**		**1413981**					**54650**		**856183**	**1417044**		**80716**		**4720**	**25884**	**9294.2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			**75.8**

Notes:

1. CVSC = Coachella Valley Stormwater Channel
2. Channel Right of Way width = Channel top width + 35' for two maintenance roads
3. TRM = Turf Reinforcement Mat (used where open channel velocities exceed 6 fps)
4. 6" Aggregate base for 2-15' wide maintenance roads

Line O02 (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)
O02	O02 Storm Drain	2- 8'X6' RCB	10+46.17	12+50.00	203.83													1.48	301.2	2076.1	1056.9											
O02	O02 Storm Drain	Open Channel	12+50.00	38+15.00	2565.00	6	15390	1.5	10.0	36	0.87	2235	210	19950	102600														81		4.8
O02	O02 Storm Drain	Open Channel	38+15.00	64+40.00	2625.00	6	15750	1.5	9.0	33	0.80	2112	176	17063	105000														78		4.7
O02	O02 Storm Drain	12'X6' RCB	64+40.00	64+80.00	40.00													1.23	49.2	269.6	121.5											
O02	O02 Storm Drain	Open Channel	64+80.00	65+27.00	47.00	6	282	1.5	9.0	33	0.80	38	176	306	1880														78		0.1
TOTALS		**SUM**			**5481**		**31422**					**4385**		**37318**	**209480**		**0**		**350**	**2346**	**1178.4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			**9.6**

Notes:

1. CVSC = Coachella Valley Stormwater Channel
2. Channel Right of Way width = Channel top width + 35' for two maintenance roads
3. TRM = Turf Reinforcement Mat (used where open channel velocities exceed 6 fps)
4. 6" Aggregate base for 2-15' wide maintenance roads

Line O03 (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)
O03	O03 Storm Drain	Open Channel	10+76.20	32+57.00	2180.80	10	21808	1.5	10.0	40	0.95	2062	250	20193	87232														85		4.3
O03	O03 Storm Drain	2-10'X7' RCB	32+57.00	33+17.00	60.00													1.97	118.2	722.3	306.7										
O03	O03 Storm Drain	Open Channel	33+17.00	61+72.00	2855.00	10	28550	1.5	10.0	40	0.95	2699	250	26435	114200														85		5.6
O03	O03 Storm Drain	Open Channel	61+72.00	64+25.00	253.00	6	1518	1.5	10.0	36	0.87	220	210	1968	10120														81		0.5
O03	O03 Storm Drain	2-7'X7' RCB	64+25.00	65+85.00	160.00													1.41	225.2	1363.0	557.1										
O03	O03 Storm Drain	Open Channel	65+85.00	92+20.00	2635.00	6	15810	1.5	10.0	36	0.87	2296	210	20494	105400														81		4.9
O03	O03 Storm Drain	Open Channel	92+20.00	120+20.00	2800.00	6	16800	1.5	10.0	36	0.87	2440	210	21778	112000														81		5.2
O03	O03 Storm Drain	84" RCP	120+20.00	168+70.00	4850.00																					4850			23533			
O03-01	O03-01 Storm Drain	Open Channel	10+26.50	11+95.00	168.50	6	1011	1.5	10.0	36	0.87	147	210	1311	6740														81		0.3
O03-01	O03-01 Storm Drain	2-6'X6' RCB	11+95.00	12+55.00	60.00													1.09	65.6	460.0	226.7										
O03-01	O03-01 Storm Drain	Open Channel	12+55.00	35+20.00	2265.00	6	13590	1.5	10.0	36	0.87	1974	210	17617	90600														81		4.2
O03-01	O03-01 Storm Drain	96" RCP	35+20.00	63+00.00	2780.00																						2780	15961			
TOTALS		**SUM**			**21067**		**99087**					**11838**		**109795**	**526292**		**0**		**409**	**2545**	**1090.5**	**0**	**0**	**0**	**0**	**4850**	**0**	**2780**	**39494**			**24.9**

Notes:

1. CVSC = Coachella Valley Stormwater Channel
2. Channel Right of Way width = Channel top width + 35' for two maintenance roads
3. TRM = Turf Reinforcement Mat (used where open channel velocities exceed 6 fps)
4. 6" Aggregate base for 2-15' wide maintenance roads

Line P (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)
P01	P01 Storm Drain	Open Channel	12+66.91	21+45.94	879.03	200	175806	1.5	7.0	221	4.26	3748	1474	47972	35161															266		5.4
P01	P01 Storm Drain	Open Channel	21+45.94	55+91.00	3445.06	55	189478	1.5	10.0	85	1.78	6128	700	89316	137802															130	70	4.7
P01	P01 Storm Drain	4-14'X7' RCB	55+91.00	57+80.00	189.00													6.58	1243.2	5541.8	2011.4											
P01	P01 Storm Drain	Open Channel	57+80.00	90+30.00	3250.00	40	130000	1.5	10.0	70	1.50	4878	550	66204	130000															115	70	3.4
P01	P01 Storm Drain	Open Channel	90+30.00	121+80.00	3150.00	35	110250	1.5	10.0	65	1.41	4437	500	58333	126000															110	70	2.9
P01	P01 Storm Drain	2-14'X7' RCB	121+80.00	122+20.00	40.00													3.29	131.6	579.3	201.5											
P01	P01 Storm Drain	Open Channel	122+20.00	142+65.00	2045.00	18	36810	1.5	10.0	48	1.09	2236	330	24994	81800															93		4.4
P01	P01 Storm Drain	2- 14'X7' RCB	142+65.00	143+65.00	100.00													3.29	328.9	1448.2	503.7											
P01	P01 Storm Drain	Open Channel	143+65.00	174+70.00	3105.00	8	24840	1.5	10.0	38	0.91	2821	230	26450	124200															83	60	1.6
P01	P01 Storm Drain	2- 14'X7' RCB	174+70.00	175+10.00	40.00													3.29	131.6	579.3	201.5											
P01	P01 Storm Drain	Open Channel	175+10.00	175+64.00	54.00	8	432	1.5	10.0	38	0.91	49	230	460	2160															83		0.1
P01-01	P01-01 Storm Drain	Open Channel	10+38.70	20+20.00	981.30	14	13738	1.5	10.0	44	1.02	1000	290	10540	39252															89		2.0
P01-01	P01-01 Storm Drain	Open Channel	20+20.00	37+83.00	1763.00	12	21156	1.5	10.0	42	0.98	1732	270	17630	70520															87		3.5
P01-02	P01-02 Storm Drain	Open Channel	10+37.00	37+70.00	2733.00	10	27330	1.5	10.0	40	0.95	2584	250	25306	109320															85		5.3
P01-02	P01-02 Storm Drain	Open Channel	37+70.00	61+54.00	2384.00	8	19072	1.5	10.0	38	0.91	2166	230	20308	95360															83		4.5
P01-02	P01-02 Storm Drain	90" RCP	61+54.00	92+08.00	3054.00																					3054		16148			
P01-02	P01-02 Storm Drain	Open Channel	92+08.00	92+60.00	52.00	6	312	1.5	10.0	36	0.87	45	210	404	2080															81		0.1
P02	P02 Storm Drain	Open Channel	10+10.68	40+15.00	3004.32	50	150216	1.5	11.0	83	1.75	5267	732	81395	120173	7	21364													128	70	4.0
P02	P02 Storm Drain	Open Channel	40+15.00	77+88.00	3773.00	48	181104	1.5	11.0	81	1.72	6474	710	99146	150920	7	13415													126	70	4.9
P02	P02 Storm Drain	4- 14'X7' RCB	77+88.00	78+48.00	60.00													6.58	394.7	1759.3	638.5											
P02	P02 Storm Drain	Open Channel	78+48.00	102+14.00	2366.00	48	113568	1.5	11.0	81	1.72	4060	710	62173	94640	13	29969													126	60	3.6
P02	P02 Storm Drain	Open Channel	102+14.00	117+80.00	1566.00	40	62640	1.5	11.0	73	1.57	2455	622	36047	62640	13	19836													118	60	2.1
P02	P02 Storm Drain	Open Channel	117+80.00	140+58.00	2278.00	32	72896	1.5	11.0	65	1.42	3234	534	45012	91120	13	28855													110	60	2.6
P02	P02 Storm Drain	4- 12'X7' RCB	140+58.00	143+18.00	260.00													4.87	1265.3	6660.7	2458.8											
P02	P02 Storm Drain	Open Channel	143+18.00	166+30.00	2312.00	32	73984	1.5	10.0	62	1.35	3128	470	40246	92480															107		5.7
P02	P02 Storm Drain	Open Channel	166+30.00	197+06.00	3076.00	16	49216	1.5	10.0	46	1.06	3250	310	35317	123040															91		6.4
P02	P02 Storm Drain	2- 12'X7' RCB	197+06.00	197+46.00	40.00													2.43	97.3	511.1	183.7											
P02	P02 Storm Drain	Open Channel	197+46.00	234+67.00	3721.00	8	29768	1.5	10.0	38	0.91	3380	230	31697	148840															83		7.1
P02-01	P02-01 Storm Drain	Open Channel	10+51.80	21+66.00	1114.20	6	6685	1.5	10.0	36	0.87	971	210	8666	44568															81	60	0.5
P02-01	P02-01 Storm Drain	14'X7' RCB	21+66.00	23+36.00	170.00													1.59	270.1	1399.9	579.3											
P02-01	P01-01 Storm Drain	Open Channel	23+36.00	35+80.00	1244.00	6	7464	1.5	10.0	36	0.87	1084	210	9676	49760															81	60	0.6
P02-01	P02-01 Storm Drain	Open Channel	35+80.00	61+95.00	2615.00	6	15690	1.5	10.0	36	0.87	2279	210	20339	104600															81	60	1.3
P02-01	P02-01 Storm Drain	12'X6' RCB	61+95.00	62+35.00	40.00													1.23	49.2	321.0	172.8											
P02-01	P02-01 Storm Drain	Open Channel	62+35.00	63+11.00	76.00	6	456	1.5	10.0	36	0.87	66	210	591	3040															81		0.1
TOTALS		**SUM**			**54980**		**1512912**					**67473**		**858223**	**2039476**		**113439**		**3912**	**18801**	**6951.2**	**0**	**0**	**0**	**0**	**0**	**3054**	**0**	**16148**			**76.8**

Notes:

1. CVSC = Coachella Valley Stormwater Channel
2. Channel Right of Way width = Channel top width + 35' for two maintenance roads
3. TRM = Turf Reinforcement Mat (used where open channel velocities exceed 6 fps)
4. 6" Aggregate base for 2-15' wide maintenance roads

Line Q (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)
Q01	Q01 Storm Drain	Open Channel	12+50.00	20+00.00	750.00	25	18750	1.5	7.0	46	1.02	767	249	6903	30000														91	70	0.4
Q01	Q01 Storm Drain	Open Channel	20+00.00	43+88.00	2388.00	6	14328	1.5	10.0	36	0.87	2081	210	18573	95520														81	70	0.6
Q01	Q01 Storm Drain	2-7'X7' RCB	43+88.00	45+68.00	180.00													1.41	253.3	1533.4	626.7										
Q01	Q01 Storm Drain	Open Channel	45+68.00	46+83.00	115.00	6	690	1.5	10.0	36	0.87	100	210	894	4600														81	70	0.0
TOTALS		**SUM**			**3433**		**33768**					**2948**		**26371**	**130120**		**0**		**253**	**1533**	**626.7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			**1.0**

Notes:

1. CVSC = Coachella Valley Stormwater Channel
2. Channel Right of Way width = Channel top width + 35' for two maintenance roads
3. TRM = Turf Reinforcement Mat (used where open channel velocities exceed 6 fps)
4. 6" Aggregate base for 2-15' wide maintenance roads

Line R (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)
R01	R01 Storm Drain	Open Channel	10+34.22	22+63.00	1228.78	10	12288	1.5	9.0	37	0.88	1080	212	9625	49151															82	70	0.3
R01	R01 Storm Drain	Open Channel	22+63.00	37+15.00	1452.00	8	11616	1.5	9.0	35	0.84	1222	194	10406	58080															80	70	0.3
R01	R01 Storm Drain	Open Channel	37+15.00	50+62.00	1347.00	8	10776	1.5	9.0	35	0.84	1134	194	9654	53880															80	70	0.3
R01	R01 Storm Drain	2-7'X7' RCB	50+62.00	51+02.00	40.00													1.41	56.3	340.8	139.3											
R01	R01 Storm Drain	Open Channel	51+02.00	77+09.00	2607.00	6	15642	1.5	9.0	33	0.80	2098	176	16946	104280															68	70	0.0
R01	R01 Storm Drain	2-7'X7' RCB	77+09.00	77+49.00	40.00													1.41	56.3	340.8	139.3											
R01	R01 Storm Drain	Open Channel	77+49.00	78+49.00	100.00	6	600	1.5	9.0	33	0.80	80	176	650	4000															68	70	0.0
R01-01	R01-01 Storm Drain	Open Channel	10+25.70	37+45.00	2719.30	6	16316	1.5	7.5	29	0.70	1916	129	13030	108772															64		4.0
R01-01	R01-01 Storm Drain	84" RCP	37+45.00	53+72.00	1627.00																				1627			7894			
TOTALS		**SUM**			**6715**		**50322**					**5533**		**46630**	**265391**		**0**		**113**	**682**	**278.6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7894**			**4.9**

Notes:

1. CVSC = Coachella Valley Stormwater Channel
2. Channel Right of Way width = Channel top width + 35' for two maintenance roads
3. TRM = Turf Reinforcement Mat (used where open channel velocities exceed 6 fps)
4. 6" Aggregate base for 2-15' wide maintenance roads

Drainage System "L" O&M Cost Estimate Worksheet

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

Area of Channel Bottom		1,362,692	sf
Assumed Sediment Depth		0.5	ft
Sediment Volume		681,346	CF
		25,235	CY
Sediment removed per year		2,524	
Cost per yard to remove	$	10.00	/cy
Cost Per Year	$	25,235	
Inflation Rate		2%	
Discount Rate		5.5%	

Cost over 40 Years
Assumptions
Year

1	$	25,235	Net Present Value	$534,000
2	$	25,740		
3	$	26,255		
4	$	26,780		
5	$	27,315		
6	$	27,862		
7	$	28,419		
8	$	28,987		
9	$	29,567		
10	$	30,158		
11	$	30,761		
12	$	31,377		
13	$	32,004		
14	$	32,644		
15	$	33,297		
16	$	33,963		
17	$	34,642		
18	$	35,335		
19	$	36,042		
20	$	36,763		
21	$	37,498		
22	$	38,248		
23	$	39,013		
24	$	39,793		
25	$	40,589		
26	$	41,401		
27	$	42,229		
28	$	43,073		
29	$	43,935		
30	$	44,814		
31	$	45,710		
32	$	46,624		
33	$	47,556		
34	$	48,508		
35	$	49,478		
36	$	50,467		
37	$	51,477		
38	$	52,506		
39	$	53,556		
40	$	54,627		

Drainage System "M" O&M Cost Estimate Worksheet

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

Area of Channel Bottom		1,424,224	sf
Assumed Sediment Depth		0.5	ft
Sediment Volume		712,112	CF
		26,375	CY
Sediment removed per year		2,637	
Cost per yard to remove	$	10.00	/cy
Cost Per Year	$	26,375	
Inflation Rate		2%	
Discount Rate		5.5%	

Cost over 40 Years

Assumptions

Year				
1	$	26,375	Net Present Value	$558,112
2	$	26,902		
3	$	27,440		
4	$	27,989		
5	$	28,549		
6	$	29,120		
7	$	29,702		
8	$	30,296		
9	$	30,902		
10	$	31,520		
11	$	32,150		
12	$	32,793		
13	$	33,449		
14	$	34,118		
15	$	34,801		
16	$	35,497		
17	$	36,207		
18	$	36,931		
19	$	37,669		
20	$	38,423		
21	$	39,191		
22	$	39,975		
23	$	40,774		
24	$	41,590		
25	$	42,422		
26	$	43,270		
27	$	44,136		
28	$	45,018		
29	$	45,919		
30	$	46,837		
31	$	47,774		
32	$	48,729		
33	$	49,704		
34	$	50,698		
35	$	51,712		
36	$	52,746		
37	$	53,801		
38	$	54,877		
39	$	55,975		
40	$	57,094		

Drainage System "N" O&M Cost Estimate Worksheet

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

Area of Channel Bottom		2,276,398	sf
Assumed Sediment Depth		0.5	ft
Sediment Volume		1,138,199	CF
		42,156	CY
Sediment removed per year		4,216	
Cost per yard to remove	$	10.00	/cy
Cost Per Year	$	42,156	
Inflation Rate		2%	
Discount Rate		5.5%	

Cost over 40 Years

Assumptions

Year				
1	$	42,156	Net Present Value	$892,055
2	$	42,999		
3	$	43,859		
4	$	44,736		
5	$	45,630		
6	$	46,543		
7	$	47,474		
8	$	48,423		
9	$	49,392		
10	$	50,380		
11	$	51,387		
12	$	52,415		
13	$	53,463		
14	$	54,533		
15	$	55,623		
16	$	56,736		
17	$	57,870		
18	$	59,028		
19	$	60,208		
20	$	61,413		
21	$	62,641		
22	$	63,894		
23	$	65,172		
24	$	66,475		
25	$	67,805		
26	$	69,161		
27	$	70,544		
28	$	71,955		
29	$	73,394		
30	$	74,862		
31	$	76,359		
32	$	77,886		
33	$	79,444		
34	$	81,033		
35	$	82,653		
36	$	84,306		
37	$	85,993		
38	$	87,712		
39	$	89,467		
40	$	91,256		

Drainage System "O1" O&M Cost Estimate Worksheet

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

Area of Channel Bottom		1,413,981	sf
Assumed Sediment Depth		0.5	ft
Sediment Volume		706,990	CF
		26,185	CY
Sediment removed per year		2,618	
Cost per yard to remove	$	10.00	/cy
Cost Per Year	$	26,185	
Inflation Rate		2%	
Discount Rate		5.5%	

Cost over 40 Years

Assumptions

Year				
1	$	26,185	Net Present Value	$554,098
2	$	26,709		
3	$	27,243		
4	$	27,788		
5	$	28,343		
6	$	28,910		
7	$	29,488		
8	$	30,078		
9	$	30,680		
10	$	31,293		
11	$	31,919		
12	$	32,558		
13	$	33,209		
14	$	33,873		
15	$	34,550		
16	$	35,241		
17	$	35,946		
18	$	36,665		
19	$	37,398		
20	$	38,146		
21	$	38,909		
22	$	39,687		
23	$	40,481		
24	$	41,291		
25	$	42,117		
26	$	42,959		
27	$	43,818		
28	$	44,695		
29	$	45,588		
30	$	46,500		
31	$	47,430		
32	$	48,379		
33	$	49,346		
34	$	50,333		
35	$	51,340		
36	$	52,367		
37	$	53,414		
38	$	54,482		
39	$	55,572		
40	$	56,683		

Drainage System "O2" O&M Cost Estimate Worksheet

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

Area of Channel Bottom		31,422	sf
Assumed Sediment Depth		0.5	ft
Sediment Volume		15,711	CF
		582	CY
Sediment removed per year		58	
Cost per yard to remove	$	10.00	/cy
Cost Per Year	$	582	
Inflation Rate		2%	
Discount Rate		5.5%	

Cost over 40 Years

Assumptions

Year				
1	$	582	Net Present Value	$12,313
2	$	594		
3	$	605		
4	$	618		
5	$	630		
6	$	642		
7	$	655		
8	$	668		
9	$	682		
10	$	695		
11	$	709		
12	$	724		
13	$	738		
14	$	753		
15	$	768		
16	$	783		
17	$	799		
18	$	815		
19	$	831		
20	$	848		
21	$	865		
22	$	882		
23	$	900		
24	$	918		
25	$	936		
26	$	955		
27	$	974		
28	$	993		
29	$	1,013		
30	$	1,033		
31	$	1,054		
32	$	1,075		
33	$	1,097		
34	$	1,119		
35	$	1,141		
36	$	1,164		
37	$	1,187		
38	$	1,211		
39	$	1,235		
40	$	1,260		

Drainage System "O3" O&M Cost Estimate Worksheet

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

Area of Channel Bottom		99,087	sf
Assumed Sediment Depth		0.5	ft
Sediment Volume		49,544	CF
		1,835	CY
Sediment removed per year		183	
Cost per yard to remove	$	10.00	/cy
Cost Per Year	$	1,835	
Inflation Rate		2%	
Discount Rate		5.5%	

Cost over 40 Years

Assumptions

Year				
1	$	1,835	Net Present Value	$38,829
2	$	1,872		
3	$	1,909		
4	$	1,947		
5	$	1,986		
6	$	2,026		
7	$	2,066		
8	$	2,108		
9	$	2,150		
10	$	2,193		
11	$	2,237		
12	$	2,282		
13	$	2,327		
14	$	2,374		
15	$	2,421		
16	$	2,470		
17	$	2,519		
18	$	2,569		
19	$	2,621		
20	$	2,673		
21	$	2,727		
22	$	2,781		
23	$	2,837		
24	$	2,894		
25	$	2,951		
26	$	3,010		
27	$	3,071		
28	$	3,132		
29	$	3,195		
30	$	3,259		
31	$	3,324		
32	$	3,390		
33	$	3,458		
34	$	3,527		
35	$	3,598		
36	$	3,670		
37	$	3,743		
38	$	3,818		
39	$	3,894		
40	$	3,972		

Drainage System "P" O&M Cost Estimate Worksheet

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

Area of Channel Bottom		1,512,912	sf
Assumed Sediment Depth		0.5	ft
Sediment Volume		756,456	CF
		28,017	CY
Sediment removed per year		2,802	
Cost per yard to remove	$	10.00	/cy
Cost Per Year	$	28,017	
Inflation Rate		2%	
Discount Rate		5.5%	

Cost over 40 Years

Assumptions

Year				
1	$	28,017	Net Present Value	$592,867
2	$	28,577		
3	$	29,149		
4	$	29,732		
5	$	30,326		
6	$	30,933		
7	$	31,552		
8	$	32,183		
9	$	32,826		
10	$	33,483		
11	$	34,152		
12	$	34,835		
13	$	35,532		
14	$	36,243		
15	$	36,968		
16	$	37,707		
17	$	38,461		
18	$	39,230		
19	$	40,015		
20	$	40,815		
21	$	41,632		
22	$	42,464		
23	$	43,314		
24	$	44,180		
25	$	45,063		
26	$	45,965		
27	$	46,884		
28	$	47,822		
29	$	48,778		
30	$	49,754		
31	$	50,749		
32	$	51,764		
33	$	52,799		
34	$	53,855		
35	$	54,932		
36	$	56,031		
37	$	57,151		
38	$	58,294		
39	$	59,460		
40	$	60,649		

Drainage System "Q" O&M Cost Estimate Worksheet

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

Area of Channel Bottom		33,768	sf
Assumed Sediment Depth		0.5	ft
Sediment Volume		16,884	CF
		625	CY
Sediment removed per year		63	
Cost per yard to remove	$	10.00	/cy
Cost Per Year	$	625	
Inflation Rate		2%	
Discount Rate		5.5%	

Cost over 40 Years

Assumptions

Year				
1	$	625	Net Present Value	$13,233
2	$	638		
3	$	651		
4	$	664		
5	$	677		
6	$	690		
7	$	704		
8	$	718		
9	$	733		
10	$	747		
11	$	762		
12	$	778		
13	$	793		
14	$	809		
15	$	825		
16	$	842		
17	$	858		
18	$	876		
19	$	893		
20	$	911		
21	$	929		
22	$	948		
23	$	967		
24	$	986		
25	$	1,006		
26	$	1,026		
27	$	1,046		
28	$	1,067		
29	$	1,089		
30	$	1,110		
31	$	1,133		
32	$	1,155		
33	$	1,178		
34	$	1,202		
35	$	1,226		
36	$	1,251		
37	$	1,276		
38	$	1,301		
39	$	1,327		
40	$	1,354		

Drainage System "R" O&M Cost Estimate Worksheet

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

Area of Channel Bottom		50,322	sf
Assumed Sediment Depth		0.5	ft
Sediment Volume		25,161	CF
		932	CY
Sediment removed per year		93	
Cost per yard to remove	$	10.00	/cy
Cost Per Year	$	932	
Inflation Rate		2%	
Discount Rate		5.5%	

Cost over 40 Years

Assumptions

Year				
1	$	932	Net Present Value	$19,720
2	$	951		
3	$	970		
4	$	989		
5	$	1,009		
6	$	1,029		
7	$	1,049		
8	$	1,070		
9	$	1,092		
10	$	1,114		
11	$	1,136		
12	$	1,159		
13	$	1,182		
14	$	1,205		
15	$	1,230		
16	$	1,254		
17	$	1,279		
18	$	1,305		
19	$	1,331		
20	$	1,358		
21	$	1,385		
22	$	1,412		
23	$	1,441		
24	$	1,469		
25	$	1,499		
26	$	1,529		
27	$	1,559		
28	$	1,591		
29	$	1,622		
30	$	1,655		
31	$	1,688		
32	$	1,722		
33	$	1,756		
34	$	1,791		
35	$	1,827		
36	$	1,864		
37	$	1,901		
38	$	1,939		
39	$	1,978		
40	$	2,017		

Appendix H
WSPG Input/Output Files

```
T1 CVWD                                                                  0
T2 MDP
T3 L01
SO   1171.200-148.548  1      .014               -142.200
R    1555.000-147.589  1      .014                            .000
WE   1555.000-147.589  2      .500
TS   1590.000-146.189  3      .015
R    3500.000-144.279  3      .015
JX   3530.000-144.249 10 16   .015  193.000         -143.249         45.0
R    6055.000-141.729 10      .015
TS   6070.000-141.692  4      .015
WX   6070.000-141.692  5
R    6110.000-141.592  5      .014
WE   6110.000-141.592  4      .500
TS   6125.000-140.954 11      .015
R   12303.000-128.030 11      .015
TS  12318.000-128.010 20      .015
WX  12318.000-128.010 21      .015
R   12393.000-127.690 21      .014
WE  12393.000-127.690 20      .015
TS  12423.000-126.310 11      .015
R   12730.000-125.888 11      .015
JX  12760.000-125.841 12 16   .015  299.000         -123.985         45.0
R   16460.000-120.054 12      .015
R   16487.000-120.030 12      .015
JX  16502.000-119.720 30 16   .015  284.000         -118.960         45.0
WX  16502.000-119.720 31
R   16542.000-119.280 31      .014
WE  16542.000-119.280 30      .500
TS  16557.000-118.537 12      .015
R   19135.000-114.500 12      .015
JX  19150.000-114.470 40 16   .015  284.000         -112.960         45.0
WX  19150.000-114.470 41
R   19190.000-114.400 41      .014
WE  19190.000-114.400 40      .500
TS  19205.000-113.100 13      .015
R   21763.000-108.200 13      .015
JX  21778.000-108.000 50 16   .015  238.000         -106.960         45.0
WX  21778.000-108.000 51
R   21838.000-107.220 51      .014
WE  21838.000-107.220 50      .500
TS  21853.000-107.030 14      .015
R   24500.000-099.757 14      .015
JX  24530.000-099.667 15 16   .015  238.000         -098.667         45.0
R   26760.000-092.949 15      .015
JX  26843.000-091.449 17 18   .015 1110.000         -091.449         30.0
R   29310.000-085.400 17      .015
TS  29325.000-084.380 60      .015
WX  29325.000-084.380 61
R   29435.000-083.820 61      .014
WE  29435.000-083.820 60      .500
JX  29450.000-082.900 22 16   .015  334.000         -082.000         45.0
R   32035.000-079.700 22      .015
TS  32050.000-079.210 70      .015
WX  32050.000-079.210 71
R   32090.000-077.890 71      .014
WE  32090.000-077.890 70      .500
JX  32105.000-077.400 22 16   .015  357.000         -075.000         45.0
R   34720.000-071.470 22      .015
TS  34735.000-071.050 80      .015
WX  34735.000-071.050 81
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R   34775.000-069.900 81      .014
WE  34775.000-069.900 80      .500
JX  34790.000-069.470 23 16   .015  356.000         -069.000         45.0
R   37355.000-056.610 23      .015
TS  37370.000-056.530 90      .015
WX  37370.000-056.530 91
R   37410.000-056.330 91      .014
WE  37410.000-056.330 90      .500
TS  37425.000-056.260 23      .015
R   37485.930-056.040 23      .015
SH  37485.930-056.040 23
CD   1  3   3    .670   7.000   58.010  .000  .000   .00
CD   2  2   0    .000  11.000   58.010  .000  .000   .00
CD   3  1   0    .000  10.000   64.000 1.500 1.500   .00
CD   4  2   0    .000  10.000   58.010  .000  .000   .00
CD   5  3   3    .670   7.000   58.010  .000  .000   .00
CD   6  1   0    .000  10.000   60.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   40.000 1.500 1.500   .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  1   0    .000  10.000   60.000 1.500 1.500   .00
CD  11  1   0    .000  10.000   56.000 1.500 1.500   .00
CD  12  1   0    .000  10.000   52.000 1.500 1.500   .00
CD  13  1   0    .000  10.000   36.000 1.500 1.500   .00
CD  14  1   0    .000  10.000   30.000 1.500 1.500   .00
CD  15  1   0    .000  10.000   25.000 1.500 1.500   .00
CD  16  4   1           8.000     .000  .000  .000   .00
CD  17  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   10.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   58.010  .000  .000   .00
CD  21  3   3    .670   7.000   58.010  .000  .000   .00
CD  22  1   0    .000  10.000   12.000 1.500 1.500   .00
CD  23  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   50.010  .000  .000   .00
CD  31  3   3    .670   7.000   50.010  .000  .000   .00
CD  40  2   0    .000  10.000   50.010  .000  .000   .00
CD  41  3   3    .670   6.000   50.010  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   24.670  .000  .000   .00
CD  61  3   1    .670   6.000   24.670  .000  .000   .00
CD  70  2   0    .000  10.000   24.670  .000  .000   .00
CD  71  3   1    .670   6.000   24.670  .000  .000   .00
CD  80  2   0    .000  10.000   20.670  .000  .000   .00
CD  81  3   1    .670   6.000   20.670  .000  .000   .00
CD  90  2   0    .000  10.000   12.000  .000  .000   .00
CD  91  3   0    .000   6.000   12.000  .000  .000   .00
Q           763.000   .0
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FILE: L01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 6- 2-2014 Time:11: 0:29

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	3	.670	7.000	58.010	.000	.000	.00										
CD	2	2	0	.000	11.000	58.010			.00										
CD	3	1	0	.000	10.000	64.000	1.500	1.500	.00										
CD	4	2	0	.000	10.000	58.010			.00										
CD	5	3	3	.670	7.000	58.010	.000	.000	.00										
CD	6	1	0	.000	10.000	60.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	40.000	1.500	1.500	.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	1	0	.000	10.000	60.000	1.500	1.500	.00										
CD	11	1	0	.000	10.000	56.000	1.500	1.500	.00										
CD	12	1	0	.000	10.000	52.000	1.500	1.500	.00										
CD	13	1	0	.000	10.000	36.000	1.500	1.500	.00										
CD	14	1	0	.000	10.000	30.000	1.500	1.500	.00										
CD	15	1	0	.000	10.000	25.000	1.500	1.500	.00										
CD	16	4	1		8.000														
CD	17	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	10.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	58.010			.00										
CD	21	3	3	.670	7.000	58.010	.000	.000	.00										
CD	22	1	0	.000	10.000	12.000	1.500	1.500	.00										
CD	23	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	50.010			.00										
CD	31	3	3	.670	7.000	50.010	.000	.000	.00										
CD	40	2	0	.000	10.000	50.010			.00										
CD	41	3	3	.670	6.000	50.010	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	24.670			.00										
CD	61	3	1	.670	6.000	24.670	.000	.000	.00										
CD	70	2	0	.000	10.000	24.670			.00										
CD	71	3	1	.670	6.000	24.670	.000	.000	.00										
CD	80	2	0	.000	10.000	20.670			.00										
CD	81	3	1	.670	6.000	20.670	.000	.000	.00										
CD	90	2	0	.000	10.000	12.000			.00										
CD	91	3	0	.000	6.000	12.000	.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 -
L01

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
	1171.200	-148.548	1	-142.200

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
	1555.000	-147.589	1	.014	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1555.000	-147.589	2	.500

ELEMENT NO 4 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	1590.000	-146.189	3	.015	.000	.000

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3500.000	-144.279	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
	3530.000	-144.249	10	16	0	.015	193.000	.000	-143.249	.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
	6055.000	-141.729	10	.015	.000	.000	.000	0

ELEMENT NO 8 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	6070.000	-141.692	4	.015	.000	.000

ELEMENT NO 9 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	6070.000	-141.692	5

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6110.000	-141.592	5	.014	.000	.000	.000	0

ELEMENT NO 11 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	6110.000	-141.592	4	.500

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 12 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	6125.000	-140.954	11	.015	.000	.000

ELEMENT NO 13 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	12303.000	-128.030	11	.015	.000	.000	.000	0

ELEMENT NO 14 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	12318.000	-128.010	20	.015	.000	.000

ELEMENT NO 15 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	12318.000	-128.010	21

ELEMENT NO 16 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	12393.000	-127.690	21	.014	.000	.000	.000	0

ELEMENT NO 17 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	12393.000	-127.690	20	.015

ELEMENT NO 18 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	12423.000	-126.310	11	.015	.000	.000

ELEMENT NO 19 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	12730.000	-125.888	11	.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
	12760.000	-125.841	12	16	0	.015	299.000	.000	-123.985	.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

ELEMENT NO 21 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H

```
                              16460.000 -120.054   12              .015                          .000     .000      .000     0
 ELEMENT NO  22 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              16487.000 -120.030   12              .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
                              16502.000 -119.720   30    16     0   .015   284.000      .000  -118.960      .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  24 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                              16502.000 -119.720   31
 ELEMENT NO  25 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              16542.000 -119.280   31              .014                          .000     .000      .000     0
 ELEMENT NO  26 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT             FP
                              16542.000 -119.280   30              .500
 ELEMENT NO  27 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                              16557.000 -118.537   12              .015                          .000     .000
 ELEMENT NO  28 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              19135.000 -114.500   12              .015                          .000     .000      .000     0
 ELEMENT NO  29 IS A JUNCTION         *         *     *     *                *                  *              *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                              19150.000 -114.470   40    16     0   .015   284.000      .000  -112.960      .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  30 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                              19150.000 -114.470   41
 ELEMENT NO  31 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              19190.000 -114.400   41              .014                          .000     .000      .000     0
 ELEMENT NO  32 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT             FP
                              19190.000 -114.400   40              .500
 ELEMENT NO  33 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                              19205.000 -113.100   13              .015                          .000     .000
 ELEMENT NO  34 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              21763.000 -108.200   13              .015                          .000     .000      .000     0
 ELEMENT NO  35 IS A JUNCTION         *         *     *     *                *                  *              *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                              21778.000 -108.000   50    16     0   .015   238.000      .000  -106.960      .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  36 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                              21778.000 -108.000   51
 ELEMENT NO  37 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
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                              21838.000 -107.220   51              .014                          .000     .000      .000     0
 ELEMENT NO  38 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT              FP
                              21838.000 -107.220   50              .500
 ELEMENT NO  39 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS   ANGLE
                              21853.000 -107.030   14              .015                          .000     .000
 ELEMENT NO  40 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                              24500.000  -99.757   14              .015                          .000     .000      .000     0
 ELEMENT NO  41 IS A JUNCTION          *         *     *     *                  *                  *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                              24530.000  -99.667   15    16     0   .015   238.000      .000   -98.667      .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  42 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                              26760.000  -92.949   15              .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
                              26843.000  -91.449   17    18     0   .015  1110.000      .000   -91.449      .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 REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                              29310.000  -85.400   17              .015                          .000     .000      .000     0
 ELEMENT NO  45 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS   ANGLE
                              29325.000  -84.380   60              .015                          .000     .000
                                                       W S P G W                                                   PAGE NO   6
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  46 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                              29325.000  -84.380   61
 ELEMENT NO  47 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                              29435.000  -83.820   61              .014                          .000     .000      .000     0
 ELEMENT NO  48 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT              FP
                              29435.000  -83.820   60              .500
 ELEMENT NO  49 IS A JUNCTION          *         *     *     *                  *                  *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                              29450.000  -82.900   22    16     0   .015   334.000      .000   -82.000      .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  50 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                              32035.000  -79.700   22              .015                          .000     .000      .000     0
 ELEMENT NO  51 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS   ANGLE
                              32050.000  -79.210   70              .015                          .000     .000
 ELEMENT NO  52 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                              32050.000  -79.210   71
 ELEMENT NO  53 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                              32090.000  -77.890   71              .014                          .000     .000      .000     0
 ELEMENT NO  54 IS A  WALL  ENTRANCE                  *
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                                                                L01
                    U/S DATA   STATION    INVERT  SECT              FP
                               32090.000  -77.890   70              .500
 ELEMENT NO  55 IS A JUNCTION          *         *     *     *                 *                 *              *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                               32105.000  -77.400   22    16     0   .015   357.000      .000   -75.000      .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   7
                           WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  56 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                               34720.000  -71.470   22              .015                           .000     .000      .000     0
 ELEMENT NO  57 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS   ANGLE
                               34735.000  -71.050   80              .015                           .000     .000
 ELEMENT NO  58 IS A  WALL  EXIT                       *
                    U/S DATA   STATION    INVERT  SECT
                               34735.000  -71.050   81
 ELEMENT NO  59 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                               34775.000  -69.900   81              .014                           .000     .000      .000     0
 ELEMENT NO  60 IS A  WALL  ENTRANCE                   *
                    U/S DATA   STATION    INVERT  SECT              FP
                               34775.000  -69.900   80              .500
 ELEMENT NO  61 IS A JUNCTION          *         *     *     *                 *                 *              *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                               34790.000  -69.470   23    16     0   .015   356.000      .000   -69.000      .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  62 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                               37355.000  -56.610   23              .015                           .000     .000      .000     0
 ELEMENT NO  63 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS   ANGLE
                               37370.000  -56.530   90              .015                           .000     .000
 ELEMENT NO  64 IS A  WALL  EXIT                       *
                    U/S DATA   STATION    INVERT  SECT
                               37370.000  -56.530   91
 ELEMENT NO  65 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                               37410.000  -56.330   91              .014                           .000     .000      .000     0
 ELEMENT NO  66 IS A  WALL  ENTRANCE                   *
                    U/S DATA   STATION    INVERT  SECT              FP
                               37410.000  -56.330   90              .500
 ELEMENT NO  67 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS   ANGLE
                               37425.000  -56.260   23              .015                           .000     .000
                                                        W S P G W                                                        PAGE NO   8
                           WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  68 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                               37485.930  -56.040   23              .015                           .000     .000      .000     0
 ELEMENT NO  69 IS A SYSTEM HEADWORKS                  *                     *
                    U/S DATA   STATION    INVERT  SECT                                   W S ELEV
                               37485.930  -56.040   23                                       .000
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CVWD
MDP
L01

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
1171.200	-148.548	6.348	-142.200	4456.00	12.53	2.44	-139.76	.00	5.81	58.01	7.000	58.010	.00	3 .7
383.800	.0025					.0025	.97	6.35	.89	6.63	.014	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1555.000	-147.589	6.590	-140.999	4456.00	12.07	2.26	-138.74	.00	5.81	58.01	7.000	58.010	.00	3 .7
WALL	ENTRANCE													
		---------- WARNING - Flow depth near top of box conduit ----------												
1555.000	-147.589	8.006	-139.583	4456.00	9.59	1.43	-138.15	.00	5.68	58.01	11.000	58.010	.00	0 .0
TRANS STR	.0400					.0008	.03	8.01	.60		.015	.00	.00	RECTANG
1590.000	-146.189	6.930	-139.259	4456.00	8.64	1.16	-138.10	.00	5.10	84.79	10.000	64.000	1.50	0 .0
793.926	.0010					.0008	.63	6.93	.62	6.32	.015	.00	1.50	TRAP
2383.926	-145.395	6.646	-138.749	4456.00	9.06	1.28	-137.47	.00	5.10	83.94	10.000	64.000	1.50	0 .0
1116.074	.0010					.0009	1.00	6.65	.66	6.32	.015	.00	1.50	TRAP
3500.000	-144.279	6.429	-137.850	4456.00	9.41	1.38	-136.47	.00	5.10	83.29	10.000	64.000	1.50	0 .0
JUNCT STR	.0010					.0009	.03	6.43	.70		.015	.00	1.50	TRAP
3530.000	-144.249	6.506	-137.743	4263.00	9.39	1.37	-136.37	.00	5.16	79.52	10.000	60.000	1.50	0 .0
1951.615	.0010					.0010	1.89	6.51	.69	6.39	.015	.00	1.50	TRAP

CVWD
MDP
L01

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
5481.615	-142.301	6.393	-135.908	4263.00	9.58	1.43	-134.48	.00	5.16	79.18	10.000	60.000	1.50	0 .0

525.617	.0010					.0010	.52	6.39	.71	6.39	.015	.00	1.50	TRAP	
6007.232	-141.777	6.393	-135.383	4263.00	9.58	1.43	-133.96	.00	5.16	79.18	10.000	60.000	1.50	0	.0
HYDRAULIC JUMP															
6007.232	-141.777	4.079	-137.698	4263.00	15.81	3.88	-133.82	.00	5.16	72.24	10.000	60.000	1.50	0	.0
47.768	.0010					.0049	.23	4.08	1.44	6.39	.015	.00	1.50	TRAP	
6055.000	-141.729	3.926	-137.803	4263.00	16.48	4.22	-133.59	.00	5.16	71.78	10.000	60.000	1.50	0	.0
TRANS STR	.0025					.0040	.06	3.93	1.53		.015	.00	1.50	TRAP	
6070.000	-141.692	5.283	-136.409	4263.00	13.91	3.00	-133.40	.00	5.52	58.01	10.000	58.010	.00	0	.0
WALL EXIT															
6070.000	-141.692	5.645	-136.047	4263.00	13.49	2.82	-133.22	.00	5.65	58.01	7.000	58.010	.00	3	.7
23.019	.0025					.0031	.07	5.65	1.02	6.41	.014	.00	.00	BOX	
6093.019	-141.634	5.921	-135.714	4263.00	12.86	2.57	-133.15	.00	5.65	58.01	7.000	58.010	.00	3	.7
16.981	.0025					.0030	.05	5.92	.95	6.41	.014	.00	.00	BOX	
6110.000	-141.592	5.985	-135.607	4263.00	12.72	2.51	-133.09	.00	5.65	58.01	7.000	58.010	.00	3	.7
WALL ENTRANCE															
6110.000	-141.592	6.861	-134.731	4263.00	10.71	1.78	-132.95	.00	5.52	58.01	10.000	58.010	.00	0	.0
TRANS STR	.0425					.0011	.02	6.86	.72		.015	.00	.00	RECTANG	

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 6- 2-2014 Time:11: 0:39

CVWD
MDP
L01

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	
6125.000	-140.954	6.500	-134.454	4263.00	9.97	1.54	-132.91	.00	5.37	75.50	10.000	56.000	1.50	0	.0
118.122	.0021				.0012	.14	6.50	.74	5.35	.015	.00	1.50	TRAP		
6243.122	-140.707	6.236	-134.471	4263.00	10.46	1.70	-132.77	.00	5.37	74.71	10.000	56.000	1.50	0	.0
112.688	.0021				.0013	.15	6.24	.79	5.35	.015	.00	1.50	TRAP		
6355.810	-140.471	5.980	-134.491	4263.00	10.97	1.87	-132.62	.00	5.37	73.94	10.000	56.000	1.50	0	.0

106.898	.0021					.0015	.16	5.98	.84	5.35	.015	.00	1.50	TRAP		
6462.708	-140.248	5.735	-134.513	4263.00	11.51	2.06	-132.46	.00	5.37	73.20	10.000	56.000	1.50	0	.0	
99.440	.0021					.0018	.18	5.73	.90	5.35	.015	.00	1.50	TRAP		
6562.149	-140.040	5.498	-134.542	4263.00	12.07	2.26	-132.28	.00	5.37	72.49	10.000	56.000	1.50	0	.0	
43.164	.0021					.0020	.09	5.50	.96	5.35	.015	.00	1.50	TRAP		
6605.313	-139.949	5.370	-134.579	4263.00	12.39	2.38	-132.19	.00	5.37	72.11	10.000	56.000	1.50	0	.0	
HYDRAULIC JUMP																
6605.313	-139.949	5.351	-134.598	4263.00	12.44	2.40	-132.19	.00	5.37	72.05	10.000	56.000	1.50	0	.0	
5181.596	.0021					.0021	10.84	5.35	1.01	5.35	.015	.00	1.50	TRAP		
11786.910	-129.110	5.351	-123.758	4263.00	12.44	2.40	-121.35	.00	5.37	72.05	10.000	56.000	1.50	0	.0	
60.368	.0021					.0022	.13	5.35	1.01	5.35	.015	.00	1.50	TRAP		
11847.280	-128.983	5.250	-123.733	4263.00	12.71	2.51	-121.22	.00	5.37	71.75	10.000	56.000	1.50	0	.0	
103.127	.0021					.0024	.25	5.25	1.04	5.35	.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
11950.400	-128.768	5.032	-123.736	4263.00	13.33	2.76	-120.98	.00	5.37	71.10	10.000	56.000	1.50	0	.0	
95.379	.0021					.0028	.27	5.03	1.11	5.35	.015	.00	1.50	TRAP		
12045.780	-128.568	4.821	-123.747	4263.00	13.98	3.04	-120.71	.00	5.37	70.46	10.000	56.000	1.50	0	.0	
90.143	.0021					.0032	.29	4.82	1.18	5.35	.015	.00	1.50	TRAP		
12135.930	-128.380	4.619	-123.760	4263.00	14.67	3.34	-120.42	.00	5.37	69.86	10.000	56.000	1.50	0	.0	
85.619	.0021					.0037	.32	4.62	1.27	5.35	.015	.00	1.50	TRAP		
12221.540	-128.200	4.425	-123.776	4263.00	15.38	3.67	-120.10	.00	5.37	69.27	10.000	56.000	1.50	0	.0	
81.455	.0021					.0043	.35	4.42	1.36	5.35	.015	.00	1.50	TRAP		
12303.000	-128.030	4.238	-123.792	4263.00	16.13	4.04	-119.75	.00	5.37	68.71	10.000	56.000	1.50	0	.0	

TRANS STR	.0013					.0040	.06	4.24	1.45		.015	.00	1.50	TRAP			
12318.000	-128.010	4.933	-123.077	4263.00	14.90	3.45	-119.63	.00	5.52	58.01	10.000	58.010	.00	0	.0		
WALL	EXIT																
12318.000	-128.010	5.220	-122.790	4263.00	14.58	3.30	-119.49	.00	5.65	58.01	7.000	58.010	.00	3	.7		
75.000	.0043					.0044	.33	5.22	1.14	5.27	.014	.00	.00	BOX			
12393.000	-127.690	5.175	-122.515	4263.00	14.71	3.36	-119.15	.00	5.65	58.01	7.000	58.010	.00	3	.7		
WALL	ENTRANCE																
12393.000	-127.690	4.317	-123.373	4263.00	17.02	4.50	-118.87	.00	5.52	58.01	10.000	58.010	.00	0	.0		
TRANS STR	.0460					.0036	.11	4.32	1.44		.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
12423.000	-126.310	5.370	-120.940	4263.00	12.39	2.38	-118.55	.00	5.37	72.11	10.000	56.000	1.50	0 .0
27.021	.0014					.0019	.05	5.37	1.00	6.05	.015	.00	1.50	TRAP
12450.020	-126.273	5.602	-120.671	4263.00	11.82	2.17	-118.50	.00	5.37	72.81	10.000	56.000	1.50	0 .0
147.984	.0014					.0017	.25	5.60	.94	6.05	.015	.00	1.50	TRAP
12598.010	-126.069	5.843	-120.227	4263.00	11.27	1.97	-118.26	.00	5.37	73.53	10.000	56.000	1.50	0 .0
131.993	.0014					.0015	.20	5.84	.88	6.05	.015	.00	1.50	TRAP
12730.000	-125.888	5.918	-119.970	4263.00	11.10	1.91	-118.06	.00	5.37	73.75	10.000	56.000	1.50	0 .0
JUNCT STR	.0016					.0014	.04	5.92	.86		.015	.00	1.50	TRAP
12760.000	-125.841	6.214	-119.627	3964.00	10.40	1.68	-117.95	.00	5.36	70.64	10.000	52.000	1.50	0 .0
384.249	.0016					.0013	.52	6.21	.79	5.82	.015	.00	1.50	TRAP
13144.250	-125.240	5.962	-119.278	3964.00	10.91	1.85	-117.43	.00	5.36	69.89	10.000	52.000	1.50	0 .0
592.937	.0016					.0015	.89	5.96	.84	5.82	.015	.00	1.50	TRAP
13737.190	-124.313	5.820	-118.493	3964.00	11.21	1.95	-116.54	.00	5.36	69.46	10.000	52.000	1.50	0 .0

2441.026	.0016					.0016	3.82	5.82	.88	5.82	.015	.00	1.50	TRAP		
16178.210	-120.495	5.820	-114.675	3964.00	11.21	1.95	-112.72	.00	5.36	69.46	10.000	52.000	1.50	0	.0	
HYDRAULIC JUMP																
16178.210	-120.495	4.911	-115.583	3964.00	13.60	2.87	-112.71	.00	5.36	66.73	10.000	52.000	1.50	0	.0	
29.117	.0016					.0029	.08	4.91	1.15	5.82	.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
16207.330	-120.449	4.811	-115.638	3964.00	13.91	3.01	-112.63	.00	5.36	66.43	10.000	52.000	1.50	0 .0
60.047	.0016					.0032	.19	4.81	1.18	5.82	.015	.00	1.50	TRAP
16267.380	-120.355	4.611	-115.745	3964.00	14.59	3.31	-112.44	.00	5.36	65.83	10.000	52.000	1.50	0 .0
63.440	.0016					.0037	.24	4.61	1.27	5.82	.015	.00	1.50	TRAP
16330.820	-120.256	4.418	-115.838	3964.00	15.31	3.64	-112.20	.00	5.36	65.25	10.000	52.000	1.50	0 .0
64.645	.0016					.0043	.28	4.42	1.35	5.82	.015	.00	1.50	TRAP
16395.460	-120.155	4.232	-115.923	3964.00	16.05	4.00	-111.92	.00	5.36	64.70	10.000	52.000	1.50	0 .0
64.539	.0016					.0050	.32	4.23	1.45	5.82	.015	.00	1.50	TRAP
16460.000	-120.054	4.054	-116.000	3964.00	16.84	4.40	-111.60	.00	5.36	64.16	10.000	52.000	1.50	0 .0
27.000	.0009					.0056	.15	4.05	1.55	6.86	.015	.00	1.50	TRAP
16487.000	-120.030	3.968	-116.062	3964.00	17.24	4.61	-111.45	.00	5.36	63.91	10.000	52.000	1.50	0 .0
JUNCT STR	.0207					.0051	.08	3.97	1.60		.015	.00	1.50	TRAP
---------- WARNING - Junction Analysis - Change in Channel Type ----------														
16502.000	-119.720	4.562	-115.158	3680.00	16.13	4.04	-111.12	.00	5.52	50.01	10.000	50.010	.00	0 .0
WALL EXIT														
16502.000	-119.720	4.835	-114.885	3680.00	15.86	3.90	-110.98	.00	5.67	50.01	7.000	50.010	.00	3 .7
9.082	.0110					.0059	.05	4.84	1.30	3.89	.014	.00	.00	BOX

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
16511.080	-119.620	4.916	-114.704	3680.00	15.59	3.78	-110.93	.00	5.67	50.01	7.000	50.010	.00	3 .7
18.400	.0110					.0054	.10	4.92	1.27	3.89	.014	.00	.00	BOX
16529.480	-119.418	5.156	-114.261	3680.00	14.87	3.43	-110.83	.00	5.67	50.01	7.000	50.010	.00	3 .7
9.633	.0110					.0047	.05	5.16	1.18	3.89	.014	.00	.00	BOX
16539.120	-119.312	5.408	-113.904	3680.00	14.18	3.12	-110.78	.00	5.67	50.01	7.000	50.010	.00	3 .7
2.885	.0110					.0042	.01	5.41	1.10	3.89	.014	.00	.00	BOX
16542.000	-119.280	5.673	-113.607	3680.00	13.51	2.84	-110.77	.00	5.67	50.01	7.000	50.010	.00	3 .7
WALL	ENTRANCE													
16542.000	-119.280	6.928	-112.352	3680.00	10.62	1.75	-110.60	.00	5.52	50.01	10.000	50.010	.00	0 .0
TRANS STR	.0495					.0010	.01	6.93	.71		.015	.00	.00	RECTANG
16557.000	-118.537	6.861	-111.676	3680.00	8.61	1.15	-110.52	.00	5.11	72.58	10.000	52.000	1.50	0 .0
216.102	.0016					.0008	.18	6.86	.63	5.57	.015	.00	1.50	TRAP
16773.100	-118.199	6.585	-111.613	3680.00	9.03	1.27	-110.35	.00	5.11	71.76	10.000	52.000	1.50	0 .0
225.404	.0016					.0009	.21	6.59	.67	5.57	.015	.00	1.50	TRAP
16998.510	-117.846	6.319	-111.526	3680.00	9.47	1.39	-110.13	.00	5.11	70.96	10.000	52.000	1.50	0 .0
247.502	.0016					.0011	.27	6.32	.71	5.57	.015	.00	1.50	TRAP
17246.010	-117.458	6.063	-111.395	3680.00	9.93	1.53	-109.86	.00	5.11	70.19	10.000	52.000	1.50	0 .0
307.371	.0016					.0013	.39	6.06	.76	5.57	.015	.00	1.50	TRAP

Program Package Serial Number: 1585
WATER SURFACE PROFILE LISTING Date: 6- 2-2014 Time:11: 0:39

CVWD
MDP
L01

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 / 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
17553.380	-116.977	5.816	-111.160	3680.00	10.42	1.69	-109.47	.00	5.11	69.45	10.000	52.000	1.50	0 .0
624.727	.0016					.0015	.91	5.82	.81	5.57	.015	.00	1.50	TRAP
18178.110	-115.998	5.578	-110.420	3680.00	10.93	1.85	-108.57	.00	5.11	68.74	10.000	52.000	1.50	0 .0
440.068	.0016					.0016	.69	5.58	.87	5.57	.015	.00	1.50	TRAP
18618.170	-115.309	5.571	-109.738	3680.00	10.94	1.86	-107.88	.00	5.11	68.71	10.000	52.000	1.50	0 .0
239.373	.0016					.0016	.37	5.57	.87	5.57	.015	.00	1.50	TRAP
18857.550	-114.934	5.571	-109.363	3680.00	10.94	1.86	-107.50	.00	5.11	68.71	10.000	52.000	1.50	0 .0
HYDRAULIC JUMP														
18857.550	-114.934	4.669	-110.265	3680.00	13.36	2.77	-107.49	.00	5.11	66.01	10.000	52.000	1.50	0 .0
38.570	.0016					.0030	.12	4.67	1.15	5.57	.015	.00	1.50	TRAP
18896.120	-114.874	4.533	-110.341	3680.00	13.81	2.96	-107.38	.00	5.11	65.60	10.000	52.000	1.50	0 .0
57.477	.0016					.0034	.20	4.53	1.21	5.57	.015	.00	1.50	TRAP
18953.590	-114.784	4.343	-110.441	3680.00	14.48	3.26	-107.18	.00	5.11	65.03	10.000	52.000	1.50	0 .0
60.053	.0016					.0039	.24	4.34	1.29	5.57	.015	.00	1.50	TRAP
19013.650	-114.690	4.160	-110.530	3680.00	15.19	3.58	-106.95	.00	5.11	64.48	10.000	52.000	1.50	0 .0
60.834	.0016					.0046	.28	4.16	1.38	5.57	.015	.00	1.50	TRAP
19074.480	-114.595	3.985	-110.610	3680.00	15.93	3.94	-106.67	.00	5.11	63.95	10.000	52.000	1.50	0 .0
60.520	.0016					.0053	.32	3.98	1.48	5.57	.015	.00	1.50	TRAP

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
19135.000	-114.500	3.816	-110.684	3680.00	16.71	4.33	-106.35	.00	5.11	63.45	10.000	52.000	1.50	0 .0
JUNCT STR	.0020					.0052	.08	3.82	1.58		.015	.00	1.50	TRAP

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

19150.000	-114.470	4.207	-110.263	3396.00	16.14	4.05	-106.22	.00	5.23	50.01	10.000	50.010	.00	0 .0
WALL EXIT														
19150.000	-114.470	4.449	-110.021	3396.00	15.90	3.93	-106.09	.00	5.38	50.01	6.000	50.010	.00	3 .7
3.543	.0017				.0065	.02	4.45	1.36	6.00	.014	.00	.00	BOX	
19153.540	-114.464	4.427	-110.036	3396.00	15.98	3.97	-106.07	.00	5.38	50.01	6.000	50.010	.00	3 .7
36.457	.0017				.0070	.25	4.43	1.37	6.00	.014	.00	.00	BOX	
19190.000	-114.400	4.221	-110.179	3396.00	16.76	4.36	-105.82	.00	5.38	50.01	6.000	50.010	.00	3 .7
WALL ENTRANCE														
19190.000	-114.400	3.674	-110.726	3396.00	18.49	5.31	-105.42	.00	5.23	50.01	10.000	50.010	.00	0 .0
TRANS STR	.0867				.0047	.07	3.67	1.70		.015	.00	.00	RECTANG	
19205.000	-113.100	5.968	-107.132	3396.00	12.66	2.49	-104.64	.00	5.97	53.90	10.000	36.000	1.50	0 .0
71.168	.0019				.0020	.14	5.97	1.00	6.12	.015	.00	1.50	TRAP	
19276.170	-112.964	6.123	-106.841	3396.00	12.28	2.34	-104.50	.00	5.97	54.37	10.000	36.000	1.50	0 .0
2296.002	.0019				.0019	4.40	6.12	.96	6.12	.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
21572.170	-108.566	6.123	-102.443	3396.00	12.28	2.34	-100.10	.00	5.97	54.37	10.000	36.000	1.50	0 .0
HYDRAULIC JUMP														
21572.170	-108.566	5.814	-102.752	3396.00	13.06	2.65	-100.10	.00	5.97	53.44	10.000	36.000	1.50	0 .0
37.689	.0019				.0024	.09	5.81	1.04	6.12	.015	.00	1.50	TRAP	
21609.860	-108.493	5.698	-102.796	3396.00	13.38	2.78	-100.02	.00	5.97	53.09	10.000	36.000	1.50	0 .0
73.850	.0019				.0026	.20	5.70	1.08	6.12	.015	.00	1.50	TRAP	
21683.710	-108.352	5.474	-102.878	3396.00	14.03	3.06	-99.82	.00	5.97	52.42	10.000	36.000	1.50	0 .0
79.291	.0019				.0030	.24	5.47	1.15	6.12	.015	.00	1.50	TRAP	

21763.000	-108.200	5.258	-102.942	3396.00	14.72	3.36	-99.58	.00	5.97	51.77	10.000	36.000	1.50	0	.0
JUNCT STR	.0133					.0043	.07	5.26	1.23		.015	.00	1.50	TRAP	

WARNING - Junction Analysis - Change in Channel Type

21778.000	-108.000	4.271	-103.729	3158.00	17.06	4.52	-99.21	.00	5.48	43.34	10.000	43.340	.00	0	.0
WALL	EXIT												
21778.000	-108.000	4.451	-103.549	3158.00	16.89	4.43	-99.12	.00	5.60	43.34	7.000	43.340	.00	2	.7
11.172	.0130					.0065	.07	4.45	1.43	3.52	.014	.00	.00	BOX	
21789.170	-107.855	4.529	-103.326	3158.00	16.60	4.28	-99.05	.00	5.60	43.34	7.000	43.340	.00	2	.7
23.863	.0130					.0060	.14	4.53	1.40	3.52	.014	.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
21813.040	-107.545	4.750	-102.795	3158.00	15.83	3.89	-98.90	.00	5.60	43.34	7.000	43.340	.00	2	.7
15.660	.0130					.0052	.08	4.75	1.30	3.52	.014	.00	.00	BOX	
21828.700	-107.341	4.981	-102.360	3158.00	15.09	3.54	-98.82	.00	5.60	43.34	7.000	43.340	.00	2	.7
9.305	.0130					.0046	.04	4.98	1.21	3.52	.014	.00	.00	BOX	
21838.000	-107.220	5.225	-101.995	3158.00	14.39	3.22	-98.78	.00	5.60	43.34	7.000	43.340	.00	2	.7
WALL	ENTRANCE														
21838.000	-107.220	4.376	-102.844	3158.00	16.65	4.30	-98.54	.00	5.48	43.34	10.000	43.340	.00	0	.0
TRANS STR	.0127					.0039	.06	4.38	1.40		.015	.00	.00	RECTANG	
21853.000	-107.030	5.825	-101.205	3158.00	13.99	3.04	-98.16	.00	6.28	47.48	10.000	30.000	1.50	0	.0
2289.967	.0027					.0027	6.29	5.83	1.13	5.83	.015	.00	1.50	TRAP	
24142.970	-100.738	5.825	-94.913	3158.00	13.99	3.04	-91.87	.00	6.28	47.48	10.000	30.000	1.50	0	.0
357.033	.0027					.0028	1.00	5.83	1.13	5.83	.015	.00	1.50	TRAP	
24500.000	-99.757	5.753	-94.004	3158.00	14.21	3.13	-90.87	.00	6.28	47.26	10.000	30.000	1.50	0	.0

JUNCT STR	.0030					.0029	.09	5.75	1.15		.015	.00	1.50	TRAP	
24530.000	-99.667	5.947	-93.720	2920.00	14.48	3.25	-90.47	.00	6.54	42.84	10.000	25.000	1.50	0	.0
1808.348	.0030					.0030	5.45	5.95	1.18	5.95	.015	.00	1.50	TRAP	
26338.350	-94.219	5.947	-88.272	2920.00	14.48	3.25	-85.02	.00	6.54	42.84	10.000	25.000	1.50	0	.0
421.652	.0030					.0030	1.28	5.95	1.18	5.95	.015	.00	1.50	TRAP	

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
26760.000	-92.949	5.932	-87.017	2920.00	14.52	3.28	-83.74	.00	6.54	42.79	10.000	25.000	1.50	0	.0
JUNCT STR	.0181					.0027	.23	5.93	1.18		.015	.00	1.50	TRAP	
26843.000	-91.449	6.258	-85.191	1810.00	12.37	2.37	-82.82	.00	6.37	32.77	10.000	14.000	1.50	0	.0
1873.436	.0025					.0025	4.59	6.26	1.03	6.26	.015	.00	1.50	TRAP	
28716.430	-86.855	6.258	-80.597	1810.00	12.37	2.37	-78.22	.00	6.37	32.77	10.000	14.000	1.50	0	.0
122.629	.0025					.0025	.31	6.26	1.03	6.26	.015	.00	1.50	TRAP	
28839.060	-86.555	6.155	-80.400	1810.00	12.66	2.49	-77.91	.00	6.37	32.46	10.000	14.000	1.50	0	.0
121.350	.0025					.0028	.34	6.15	1.06	6.26	.015	.00	1.50	TRAP	
28960.410	-86.257	5.948	-80.309	1810.00	13.28	2.74	-77.57	.00	6.37	31.84	10.000	14.000	1.50	0	.0
98.420	.0025					.0032	.31	5.95	1.13	6.26	.015	.00	1.50	TRAP	
29058.830	-86.016	5.747	-80.269	1810.00	13.92	3.01	-77.26	.00	6.37	31.24	10.000	14.000	1.50	0	.0
89.107	.0025					.0036	.32	5.75	1.20	6.26	.015	.00	1.50	TRAP	
29147.940	-85.797	5.551	-80.246	1810.00	14.60	3.31	-76.93	.00	6.37	30.65	10.000	14.000	1.50	0	.0
83.252	.0025					.0041	.35	5.55	1.28	6.26	.015	.00	1.50	TRAP	
29231.190	-85.593	5.361	-80.232	1810.00	15.32	3.64	-76.59	.00	6.37	30.08	10.000	14.000	1.50	0	.0
78.809	.0025					.0047	.37	5.36	1.36	6.26	.015	.00	1.50	TRAP	
29310.000	-85.400	5.177	-80.223	1810.00	16.06	4.01	-76.22	.00	6.37	29.53	10.000	14.000	1.50	0	.0

TRANS STR .0680 .0046 .07 5.18 1.45 .015 .00 1.50 TRAP

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
29325.000	-84.380	4.921	-79.459	1810.00	14.91	3.45	-76.01	.00	5.51	24.67	10.000	24.670	.00	0 .0
WALL	EXIT													
29325.000	-84.380	5.140	-79.240	1810.00	14.67	3.34	-75.90	.00	5.61	24.67	6.000	24.670	.00	1 .7
110.000	.0051					.0047	.51	5.14	1.16	5.07	.014	.00	.00	BOX
29435.000	-83.820	5.345	-78.475	1810.00	14.11	3.09	-75.38	.00	5.61	24.67	6.000	24.670	.00	1 .7
WALL	ENTRANCE													
29435.000	-83.820	4.485	-79.335	1810.00	16.36	4.16	-75.18	.00	5.51	24.67	10.000	24.670	.00	0 .0
JUNCT STR	.0613					.0040	.06	4.49	1.36		.015	.00	.00	RECTANG
				WARNING - Junction Analysis - Change in Channel Type										
29450.000	-82.900	6.024	-76.876	1476.00	11.65	2.11	-74.77	.00	6.02	30.07	10.000	12.000	1.50	0 .0
12.299	.0012					.0022	.03	6.02	1.00	7.10	.015	.00	1.50	TRAP
29462.300	-82.885	6.228	-76.657	1476.00	11.11	1.92	-74.74	.00	6.02	30.68	10.000	12.000	1.50	0 .0
49.355	.0012					.0020	.10	6.23	.94	7.10	.015	.00	1.50	TRAP
29511.650	-82.824	6.437	-76.387	1476.00	10.59	1.74	-74.65	.00	6.02	31.31	10.000	12.000	1.50	0 .0
119.553	.0012					.0017	.20	6.44	.88	7.10	.015	.00	1.50	TRAP
29631.210	-82.676	6.652	-76.024	1476.00	10.10	1.58	-74.44	.00	6.02	31.96	10.000	12.000	1.50	0 .0
289.146	.0012					.0015	.44	6.65	.83	7.10	.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
29920.350	-82.318	6.873	-75.445	1476.00	9.63	1.44	-74.01	.00	6.02	32.62	10.000	12.000	1.50	0 .0
1135.104	.0012				.0013	1.50	6.87	.78	7.10	.015	.00	1.50	TRAP	
31055.460	-80.913	7.098	-73.815	1476.00	9.18	1.31	-72.51	.00	6.02	33.29	10.000	12.000	1.50	0 .0
979.543	.0012				.0012	1.21	7.10	.74	7.10	.015	.00	1.50	TRAP	
32035.000	-79.700	7.098	-72.602	1476.00	9.18	1.31	-71.29	.00	6.02	33.29	10.000	12.000	1.50	0 .0
TRANS STR	.0327				.0012	.02	7.10	.74		.015	.00	1.50	TRAP	
32050.000	-79.210	6.727	-72.483	1476.00	8.89	1.23	-71.25	.00	4.81	24.67	10.000	24.670	.00	0 .0
WALL EXIT														
32050.000	-79.210	6.728	-72.482	1476.00	10.25	1.63	-70.85	.00	4.90	24.67	6.000	24.670	.00	1 .7
23.041	.0330				.0037	.09	6.73	.75	2.28	.014	.00	.00	BOX	
32073.040	-78.450	6.052	-72.398	1476.00	10.25	1.63	-70.77	.00	4.90	24.67	6.000	24.670	.00	1 .7
HYDRAULIC JUMP														
32073.040	-78.450	3.856	-74.593	1476.00	15.95	3.95	-70.64	.00	4.90	24.67	6.000	24.670	.00	1 .7
.068	.0330				.0072	.00	3.86	1.45	2.28	.014	.00	.00	BOX	
32073.110	-78.447	3.858	-74.589	1476.00	15.94	3.95	-70.64	.00	4.90	24.67	6.000	24.670	.00	1 .7
6.498	.0330				.0068	.04	3.86	1.45	2.28	.014	.00	.00	BOX	
32079.610	-78.233	4.046	-74.187	1476.00	15.20	3.59	-70.60	.00	4.90	24.67	6.000	24.670	.00	1 .7
4.750	.0330				.0059	.03	4.05	1.35	2.28	.014	.00	.00	BOX	

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 6- 2-2014 Time:11: 0:39

CVWD
MDP
L01

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	
32084.360	-78.076	4.244	-73.832	1476.00	14.49	3.26	-70.57	.00	4.90	24.67	6.000	24.670	.00	1 .7
3.213	.0330				.0052	.02	4.24	1.26	2.28	.014	.00	.00	BOX	
32087.570	-77.970	4.451	-73.519	1476.00	13.82	2.96	-70.55	.00	4.90	24.67	6.000	24.670	.00	1 .7

1.838	.0330					.0046	.01	4.45	1.17	2.28	.014	.00	.00	BOX			
32089.410	-77.910	4.668	-73.241	1476.00	13.17	2.70	-70.55	.00	4.90	24.67	6.000	24.670	.00	1	.7		
.592	.0330					.0040	.00	4.67	1.09	2.28	.014	.00	.00	BOX			
32090.000	-77.890	4.897	-72.993	1476.00	12.56	2.45	-70.54	.00	4.90	24.67	6.000	24.670	.00	1	.7		
WALL ENTRANCE																	
32090.000	-77.890	5.796	-72.094	1476.00	10.32	1.65	-70.44	.00	4.81	24.67	10.000	24.670	.00	0	.0		
JUNCT STR	.0327							5.80	.76		.015	.00	.00	RECTANG			
32105.000	-77.400	5.176	-72.224	1119.00	10.94	1.86	-70.37	.00	5.18	27.53	10.000	12.000	1.50	0	.0		
41.320	.0023					.0024	.10	5.18	1.00	5.28	.015	.00	1.50	TRAP			
32146.320	-77.306	5.279	-72.027	1119.00	10.64	1.76	-70.27	.00	5.18	27.84	10.000	12.000	1.50	0	.0		
2573.680	.0023					.0023	5.83	5.28	.96	5.28	.015	.00	1.50	TRAP			
34720.000	-71.470	5.279	-66.191	1119.00	10.64	1.76	-64.43	.00	5.18	27.84	10.000	12.000	1.50	0	.0		
TRANS STR	.0280							5.28	.96		.015	.00	1.50	TRAP			
34735.000	-71.050	3.118	-67.932	1119.00	17.36	4.68	-63.25	.00	4.50	20.67	10.000	20.670	.00	0	.0		
WALL EXIT																	

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
34735.000	-71.050	3.244	-67.806	1119.00	17.25	4.62	-63.19	.00	4.60	20.67	6.000	20.670	.00	1 .7
2.867	.0288					.0106	.03	3.24	1.72	2.30	.014	.00	.00	BOX
34737.870	-70.968	3.272	-67.696	1119.00	17.10	4.54	-63.16	.00	4.60	20.67	6.000	20.670	.00	1 .7
13.355	.0288					.0098	.13	3.27	1.69	2.30	.014	.00	.00	BOX
34751.230	-70.584	3.432	-67.152	1119.00	16.30	4.13	-63.02	.00	4.60	20.67	6.000	20.670	.00	1 .7
10.301	.0288					.0086	.09	3.43	1.58	2.30	.014	.00	.00	BOX
34761.530	-70.287	3.599	-66.688	1119.00	15.55	3.75	-62.94	.00	4.60	20.67	6.000	20.670	.00	1 .7

7.793	.0288					.0075	.06	3.60	1.47	2.30	.014	.00	.00	BOX			
34769.320	-70.063	3.775	-66.289	1119.00	14.82	3.41	-62.88	.00	4.60	20.67	6.000	20.670	.00	1	.7		
5.680	.0288					.0066	.04	3.77	1.37	2.30	.014	.00	.00	BOX			
34775.000	-69.900	3.959	-65.941	1119.00	14.13	3.10	-62.84	.00	4.60	20.67	6.000	20.670	.00	1	.7		
WALL ENTRANCE																	
34775.000	-69.900	3.436	-66.464	1119.00	15.75	3.85	-62.61	.00	4.50	20.67	10.000	20.670	.00	0	.0		
JUNCT STR	.0287					.0061	.09	3.44	1.50		.015	.00	.00	RECTANG			

WARNING - Junction Analysis - Change in Channel Type

34790.000	-69.470	4.516	-64.954	763.00	13.23	2.72	-62.24	.00	5.27	19.55	10.000	6.000	1.50	0	.0		
1991.098	.0050					.0050	9.98	4.52	1.36	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
36781.100	-59.487	4.516	-54.971	763.00	13.23	2.72	-52.26	.00	5.27	19.55	10.000	6.000	1.50	0	.0		
378.551	.0050					.0052	1.97	4.52	1.36	4.52	.015	.00	1.50	TRAP			
37159.650	-57.589	4.433	-53.157	763.00	13.61	2.88	-50.28	.00	5.27	19.30	10.000	6.000	1.50	0	.0		
195.352	.0050					.0058	1.13	4.43	1.41	4.52	.015	.00	1.50	TRAP			
37355.000	-56.610	4.296	-52.314	763.00	14.27	3.16	-49.15	.00	5.27	18.89	10.000	6.000	1.50	0	.0		
TRANS STR	.0053					.0056	.08	4.30	1.50		.015	.00	1.50	TRAP			
37370.000	-56.530	4.698	-51.832	763.00	13.53	2.84	-48.99	.00	5.01	12.00	10.000	12.000	.00	0	.0		
WALL EXIT																	
37370.000	-56.530	4.697	-51.833	763.00	13.54	2.85	-48.99	.00	5.01	12.00	6.000	12.000	.00	0	.0		
22.309	.0050					.0044	.10	4.70	1.10	4.51	.014	.00	.00	BOX			
37392.310	-56.418	4.774	-51.645	763.00	13.32	2.75	-48.89	.00	5.01	12.00	6.000	12.000	.00	0	.0		
17.691	.0050					.0040	.07	4.77	1.07	4.51	.014	.00	.00	BOX			
WALL ENTRANCE																	

37410.000	-56.330	5.009	-51.321	763.00	12.69	2.50	-48.82	.00	5.01	12.00	10.000	12.000	.00	0	.0
TRANS STR	.0047				.0025	.04	5.01	1.00		.015	.00	.00	RECTANG		
37425.000	-56.260	7.386	-48.874	763.00	6.05	.57	-48.31	.00	5.27	28.16	10.000	6.000	1.50	0	.0
52.133	.0036				.0007	.03	7.39	.50	4.89	.015	.00	1.50	TRAP		

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 6- 2-2014 Time:11: 0:39

CVWD
MDP
L01

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
37477.130	-56.072	7.175	-48.897	763.00	6.34	.63	-48.27	.00	5.27	27.52	10.000	6.000	1.50	0	.0
8.797	.0036				.0007	.01	7.17	.53	4.89	.015	.00	1.50	TRAP		
37485.930	-56.040	7.139	-48.901	763.00	6.40	.64	-48.27	.00	5.27	27.42	10.000	6.000	1.50	0	.0

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T1 CVWD                                                                                  0
T2 MDP
T3 L01-01
SO   1055.100-091.800  1      .015                -085.191
R    1361.000-090.887  1      .015
TS   1376.000-090.842 10      .015
WX   1376.000-090.842 11
R    1476.000-090.443 11      .015
WE   1476.000-090.443 10      .500
TS   1491.000-089.500  1      .015
R    2772.000-085.859  1      .015
TS   2787.000-085.817 20      .015
WX   2787.000-085.817 21
R    2847.000-085.546 21      .015
WE   2847.000-085.546 20      .500
TS   2862.000-084.500  1      .015
R    4218.000-081.706  1      .015
JX   4233.000-081.575 30 16   .015  334.000         -080.675         45.0
WX   4233.000-081.575 31
R    4273.000-081.393 31      .015
WE   4273.000-081.393 30      .500
TS   4288.000-080.500  2      .015
R    6847.000-073.591  2      .015
TS   6862.000-073.550 40      .015
WX   6862.000-073.550 41      .015
R    6902.000-073.442 41      .015
WE   6902.000-073.442 40      .015
TS   6917.000-072.600  2      .015
R    7108.740-072.000  2      .015
SH   7108.740-072.000  2
CD   1  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   2  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   3  1   0    .000  10.000   64.000 1.500 1.500   .00
CD   4  2   0    .000  10.000   58.010  .000  .000   .00
CD   5  3   3    .670   7.000   58.010  .000  .000   .00
CD   6  1   0    .000  10.000   60.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   40.000 1.500 1.500   .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  2   0    .000  10.000   16.670  .000  .000   .00
CD  11  3   1    .670   7.000   16.670  .000  .000   .00
CD  12  1   0    .000  10.000   52.000 1.500 1.500   .00
CD  13  1   0    .000  10.000   36.000 1.500 1.500   .00
CD  14  1   0    .000  10.000   30.000 1.500 1.500   .00
CD  15  1   0    .000  10.000   25.000 1.500 1.500   .00
CD  16  4   1           5.000     .000  .000  .000   .00
CD  17  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   10.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   16.670  .000  .000   .00
CD  21  3   1    .670   7.000   16.670  .000  .000   .00
CD  22  1   0    .000  10.000   12.000 1.500 1.500   .00
CD  23  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   12.000  .000  .000   .00
CD  31  3   0    .670   7.000   12.000  .000  .000   .00
CD  40  2   0    .000  10.000   12.000  .000  .000   .00
CD  41  3   0    .670   7.000   12.000  .000  .000   .00
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CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   24.670  .000  .000   .00
CD  61  3   1    .670   6.000   24.670  .000  .000   .00
CD  70  2   0    .000  10.000   24.670  .000  .000   .00
CD  71  3   1    .670   6.000   24.670  .000  .000   .00
CD  80  2   0    .000  10.000   20.670  .000  .000   .00
CD  81  3   1    .670   6.000   20.670  .000  .000   .00
CD  90  2   0    .000  10.000   12.000  .000  .000   .00
CD  91  3   0    .000   6.000   12.000  .000  .000   .00
Q           799.000   .0
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FILE: L01-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 6- 2-2014 Time: 5:51: 1

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	8.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	64.000	1.500	1.500	.00										
CD	4	2	0	.000	10.000	58.010			.00										
CD	5	3	3	.670	7.000	58.010	.000	.000	.00										
CD	6	1	0	.000	10.000	60.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	40.000	1.500	1.500	.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	2	0	.000	10.000	16.670			.00										
CD	11	3	1	.670	7.000	16.670	.000	.000	.00										
CD	12	1	0	.000	10.000	52.000	1.500	1.500	.00										
CD	13	1	0	.000	10.000	36.000	1.500	1.500	.00										
CD	14	1	0	.000	10.000	30.000	1.500	1.500	.00										
CD	15	1	0	.000	10.000	25.000	1.500	1.500	.00										
CD	16	4	1		5.000														
CD	17	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	10.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	16.670			.00										
CD	21	3	1	.670	7.000	16.670	.000	.000	.00										
CD	22	1	0	.000	10.000	12.000	1.500	1.500	.00										
CD	23	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	12.000			.00										
CD	31	3	0	.670	7.000	12.000	.000	.000	.00										
CD	40	2	0	.000	10.000	12.000			.00										
CD	41	3	0	.670	7.000	12.000	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	24.670			.00										
CD	61	3	1	.670	6.000	24.670	.000	.000	.00										
CD	70	2	0	.000	10.000	24.670			.00										
CD	71	3	1	.670	6.000	24.670	.000	.000	.00										
CD	80	2	0	.000	10.000	20.670			.00										
CD	81	3	1	.670	6.000	20.670	.000	.000	.00										
CD	90	2	0	.000	10.000	12.000			.00										
CD	91	3	0	.000	6.000	12.000	.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 -
L01-01

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
	1055.100	-91.800	1	-85.191

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
                               1361.000  -90.887    1              .015                           .000     .000      .000     0
 ELEMENT NO   3 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               1376.000  -90.842   10              .015                           .000     .000
 ELEMENT NO   4 IS A  WALL  EXIT                       *
                    U/S DATA   STATION    INVERT  SECT
                               1376.000  -90.842   11
 ELEMENT NO   5 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               1476.000  -90.443   11              .015                           .000     .000      .000     0
 ELEMENT NO   6 IS A  WALL  ENTRANCE                   *
                    U/S DATA   STATION    INVERT  SECT             FP
                               1476.000  -90.443   10              .500
 ELEMENT NO   7 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               1491.000  -89.500    1              .015                           .000     .000
 ELEMENT NO   8 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               2772.000  -85.859    1              .015                           .000     .000      .000     0
 ELEMENT NO   9 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               2787.000  -85.817   20              .015                           .000     .000
 ELEMENT NO  10 IS A  WALL  EXIT                       *
                    U/S DATA   STATION    INVERT  SECT
                               2787.000  -85.817   21
 ELEMENT NO  11 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               2847.000  -85.546   21              .015                           .000     .000      .000     0
 ELEMENT NO  12 IS A  WALL  ENTRANCE                   *
                    U/S DATA   STATION    INVERT  SECT             FP
                               2847.000  -85.546   20              .500
 ELEMENT NO  13 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               2862.000  -84.500    1              .015                           .000     .000
                                                    W S P G W                                                          PAGE NO   3
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  14 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               4218.000  -81.706    1              .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
                               4233.000  -81.575   30    16     0   .015   334.000      .000   -80.675      .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  WALL  EXIT                       *
                    U/S DATA   STATION    INVERT  SECT
                               4233.000  -81.575   31
 ELEMENT NO  17 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               4273.000  -81.393   31              .015                           .000     .000      .000     0
 ELEMENT NO  18 IS A  WALL  ENTRANCE                   *
                    U/S DATA   STATION    INVERT  SECT             FP
                               4273.000  -81.393   30              .500
 ELEMENT NO  19 IS A TRANSITION        *         *     *
```

U/S DATA STATION INVERT SECT N RADIUS ANGLE
4288.000 -80.500 2 .015 .000 .000

ELEMENT NO 20 IS A REACH * * *

U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
6847.000 -73.591 2 .015 .000 .000 .000 0

ELEMENT NO 21 IS A TRANSITION * * *

U/S DATA STATION INVERT SECT N RADIUS ANGLE
6862.000 -73.550 40 .015 .000 .000

ELEMENT NO 22 IS A WALL EXIT *

U/S DATA STATION INVERT SECT
6862.000 -73.550 41

ELEMENT NO 23 IS A REACH * * *

U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
6902.000 -73.442 41 .015 .000 .000 .000 0

ELEMENT NO 24 IS A WALL ENTRANCE *

U/S DATA STATION INVERT SECT FP
6902.000 -73.442 40 .015

ELEMENT NO 25 IS A TRANSITION * * *

U/S DATA STATION INVERT SECT N RADIUS ANGLE
6917.000 -72.600 2 .015 .000 .000

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 26 IS A REACH * * *

U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
7108.740 -72.000 2 .015 .000 .000 .000 0

ELEMENT NO 27 IS A SYSTEM HEADWORKS * *

U/S DATA STATION INVERT SECT W S ELEV
7108.740 -72.000 2 .000

CVWD
MDP
L01-01

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
1055.100	-91.800	6.609	-85.191	1133.00	9.57	1.42	-83.77	.00	5.96	27.83	10.000	8.000	1.50	0 .0
46.182	.0030					.0017	.08	6.61	.82	5.70	.015	.00	1.50	TRAP
1101.282	-91.662	6.409	-85.253	1133.00	10.04	1.56	-83.69	.00	5.96	27.23	10.000	8.000	1.50	0 .0
35.036	.0030					.0020	.07	6.41	.87	5.70	.015	.00	1.50	TRAP
1136.319	-91.558	6.234	-85.324	1133.00	10.48	1.70	-83.62	.00	5.96	26.70	10.000	8.000	1.50	0 .0
HYDRAULIC JUMP														
1136.319	-91.558	5.701	-85.857	1133.00	12.01	2.24	-83.62	.00	5.96	25.10	10.000	8.000	1.50	0 .0
33.976	.0030					.0030	.10	5.70	1.09	5.70	.015	.00	1.50	TRAP
1170.294	-91.456	5.701	-85.755	1133.00	12.01	2.24	-83.52	.00	5.96	25.10	10.000	8.000	1.50	0 .0
155.079	.0030					.0029	.45	5.70	1.09	5.70	.015	.00	1.50	TRAP
1325.374	-90.993	5.778	-85.215	1133.00	11.76	2.15	-83.07	.00	5.96	25.34	10.000	8.000	1.50	0 .0
35.626	.0030					.0027	.09	5.78	1.06	5.70	.015	.00	1.50	TRAP
1361.000	-90.887	5.963	-84.924	1133.00	11.21	1.95	-82.97	.00	5.96	25.89	10.000	8.000	1.50	0 .0
TRANS STR	.0030					.0025	.04	5.96	1.00		.015	.00	1.50	TRAP
1376.000	-90.842	5.903	-84.939	1133.00	11.51	2.06	-82.88	.00	5.23	16.67	10.000	16.670	.00	0 .0
WALL EXIT														
1376.000	-90.842	5.903	-84.939	1133.00	12.00	2.23	-82.70	.00	5.38	16.67	7.000	16.670	.00	1 .7
100.000	.0040					.0043	.43	5.90	.89	6.25	.015	.00	.00	BOX

CVWD
MDP
L01-01

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

1476.000	-90.443	6.070	-84.373	1133.00	11.67	2.11	-82.26	.00	5.38	16.67	7.000	16.670	.00	1 .7
WALL	ENTRANCE													
1476.000	-90.443	6.762	-83.681	1133.00	10.05	1.57	-82.11	.00	5.23	16.67	10.000	16.670	.00	0 .0
TRANS STR	.0629							6.76	.68		.015	.00	.00	RECTANG
1491.000	-89.500	5.769	-83.731	1133.00	11.79	2.16	-81.57	.00	5.96	25.31	10.000	8.000	1.50	0 .0
1084.483	.0028					.0028	3.08	5.77	1.07	5.77	.015	.00	1.50	TRAP
2575.483	-86.418	5.769	-80.648	1133.00	11.79	2.16	-78.49	.00	5.96	25.31	10.000	8.000	1.50	0 .0
134.017	.0028					.0028	.38	5.77	1.07	5.77	.015	.00	1.50	TRAP
2709.501	-86.037	5.778	-80.258	1133.00	11.76	2.15	-78.11	.00	5.96	25.34	10.000	8.000	1.50	0 .0
62.499	.0028					.0027	.17	5.78	1.06	5.77	.015	.00	1.50	TRAP
2772.000	-85.859	5.963	-79.896	1133.00	11.21	1.95	-77.94	.00	5.96	25.89	10.000	8.000	1.50	0 .0
TRANS STR	.0028					.0025	.04	5.96	1.00		.015	.00	1.50	TRAP
2787.000	-85.817	5.908	-79.909	1133.00	11.50	2.06	-77.85	.00	5.23	16.67	10.000	16.670	.00	0 .0
WALL	EXIT													
2787.000	-85.817	5.908	-79.909	1133.00	11.99	2.23	-77.68	.00	5.38	16.67	7.000	16.670	.00	1 .7
60.000	.0045					.0046	.27	5.91	.89	5.95	.015	.00	.00	BOX
2847.000	-85.546	5.923	-79.623	1133.00	11.95	2.22	-77.40	.00	5.38	16.67	7.000	16.670	.00	1 .7
WALL	ENTRANCE													

CVWD
MDP
L01-01

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
2847.000	-85.546	6.693	-78.853	1133.00	10.15	1.60	-77.25	.00	5.23	16.67	10.000	16.670	.00	0 .0
TRANS STR	.0697							6.69	.69		.015	.00	.00	RECTANG
2862.000	-84.500	5.963	-78.537	1133.00	11.21	1.95	-76.58	.00	5.96	25.89	10.000	8.000	1.50	0 .0
40.295	.0021					.0023	.09	5.96	1.00	6.24	.015	.00	1.50	TRAP
2902.295	-84.417	6.151	-78.266	1133.00	10.69	1.77	-76.49	.00	5.96	26.45	10.000	8.000	1.50	0 .0
199.115	.0021					.0021	.42	6.15	.94	6.24	.015	.00	1.50	TRAP
3101.410	-84.007	6.237	-77.769	1133.00	10.47	1.70	-76.07	.00	5.96	26.71	10.000	8.000	1.50	0 .0

1116.590	.0021				.0021	2.30	6.24	.92	6.24	.015	.00	1.50	TRAP	
4218.000	-81.706	6.237	-75.469	1133.00	10.47	1.70	-73.77	.00	5.96	26.71	10.000	8.000	1.50	0 .0
JUNCT STR	.0087				.0026	.04	6.24	.92		.015	.00	1.50	TRAP	

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

4233.000	-81.575	5.801	-75.774	799.00	11.48	2.05	-73.73	.00	5.16	12.00	10.000	12.000	.00	0 .0
WALL	EXIT													
4233.000	-81.575	5.802	-75.773	799.00	11.48	2.04	-73.73	.00	5.16	12.00	7.000	12.000	.00	0 .7
40.000	.0045				.0032	.13	5.80	.84	5.08	.015	.00	.00	BOX	
4273.000	-81.393	5.612	-75.781	799.00	11.86	2.19	-73.60	.00	5.16	12.00	7.000	12.000	.00	0 .7
HYDRAULIC JUMP														

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 6- 2-2014 Time: 5:51: 3

CVWD
MDP
L01-01

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
4273.000	-81.393	5.155	-76.238	799.00	12.92	2.59	-73.65	.00	5.16	12.00	10.000	12.000	.00	0 .0
HYDRAULIC DROP														
4273.000	-81.393	5.613	-75.780	799.00	11.86	2.18	-73.59	.00	5.16	12.00	10.000	12.000	.00	0 .0
TRANS STR	.0595							5.61	.88		.015	.00	.00	RECTANG
4288.000	-80.500	5.355	-75.145	799.00	10.63	1.76	-73.39	.00	5.40	22.06	10.000	6.000	1.50	0 .0
2164.840	.0027				.0027	5.84	5.35	1.02	5.35	.015	.00	1.50	TRAP	
6452.840	-74.655	5.355	-69.300	799.00	10.63	1.76	-67.54	.00	5.40	22.06	10.000	6.000	1.50	0 .0
33.275	.0027				.0027	.09	5.35	1.02	5.35	.015	.00	1.50	TRAP	
6486.116	-74.565	5.343	-69.222	799.00	10.67	1.77	-67.45	.00	5.40	22.03	10.000	6.000	1.50	0 .0
79.796	.0027				.0029	.23	5.34	1.02	5.35	.015	.00	1.50	TRAP	
6565.912	-74.350	5.183	-69.167	799.00	11.19	1.94	-67.22	.00	5.40	21.55	10.000	6.000	1.50	0 .0
63.361	.0027				.0033	.21	5.18	1.08	5.35	.015	.00	1.50	TRAP	
6629.272	-74.179	5.027	-69.152	799.00	11.74	2.14	-67.01	.00	5.40	21.08	10.000	6.000	1.50	0 .0
58.403	.0027				.0038	.22	5.03	1.15	5.35	.015	.00	1.50	TRAP	
6687.676	-74.021	4.875	-69.146	799.00	12.31	2.35	-66.79	.00	5.40	20.63	10.000	6.000	1.50	0 .0

55.358	.0027				.0043	.24	4.88	1.22	5.35	.015	.00	1.50	TRAP	
6743.034	-73.872	4.727	-69.145	799.00	12.91	2.59	-66.56	.00	5.40	20.18	10.000	6.000	1.50	0 .0
52.997	.0027				.0049	.26	4.73	1.30	5.35	.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
6796.030	-73.729	4.583	-69.146	799.00	13.54	2.85	-66.30	.00	5.40	19.75	10.000	6.000	1.50	0 .0
50.970	.0027				.0055	.28	4.58	1.38	5.35	.015	.00	1.50	TRAP	
6847.000	-73.591	4.442	-69.149	799.00	14.20	3.13	-66.02	.00	5.40	19.33	10.000	6.000	1.50	0 .0
TRANS STR	.0027				.0051	.08	4.44	1.47		.015	.00	1.50	TRAP	
6862.000	-73.550	5.163	-68.387	799.00	12.90	2.58	-65.80	.00	5.16	12.00	10.000	12.000	.00	0 .0
WALL EXIT														
6862.000	-73.550	5.163	-68.387	799.00	12.90	2.58	-65.80	.00	5.16	12.00	7.000	12.000	.00	0 .7
12.465	.0027				.0038	.05	5.16	1.00	6.16	.015	.00	.00	BOX	
6874.465	-73.516	5.415	-68.101	799.00	12.30	2.35	-65.75	.00	5.16	12.00	7.000	12.000	.00	0 .7
27.535	.0027				.0035	.10	5.42	.93	6.16	.015	.00	.00	BOX	
6902.000	-73.442	5.574	-67.868	799.00	11.95	2.22	-65.65	.00	5.16	12.00	7.000	12.000	.00	0 .7
HYDRAULIC JUMP														
6902.000	-73.442	5.102	-68.340	799.00	13.05	2.64	-65.70	.00	5.16	12.00	10.000	12.000	.00	0 .0
HYDRAULIC DROP														
6902.000	-73.442	5.575	-67.867	799.00	11.94	2.22	-65.65	.00	5.16	12.00	10.000	12.000	.00	0 .0
TRANS STR	.0561				.0026	.04	5.57	.89		.015	.00	.00	RECTANG	
6917.000	-72.600	6.032	-66.568	799.00	8.80	1.20	-65.36	.00	5.40	24.10	10.000	6.000	1.50	0 .0
40.894	.0031				.0017	.07	6.03	.80	5.17	.015	.00	1.50	TRAP	

L01-01

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
6957.894	-72.472	5.855	-66.617	799.00	9.23	1.32	-65.29	.00	5.40	23.56	10.000	6.000	1.50	0 .0
35.020	.0031					.0020	.07	5.85	.85	5.17	.015	.00	1.50	TRAP
6992.914	-72.362	5.682	-66.681	799.00	9.68	1.46	-65.22	.00	5.40	23.05	10.000	6.000	1.50	0 .0
15.161	.0031					.0022	.03	5.68	.90	5.17	.015	.00	1.50	TRAP
7008.075	-72.315	5.600	-66.715	799.00	9.91	1.52	-65.19	.00	5.40	22.80	10.000	6.000	1.50	0 .0
HYDRAULIC JUMP														
7008.075	-72.315	5.196	-67.119	799.00	11.15	1.93	-65.19	.00	5.40	21.59	10.000	6.000	1.50	0 .0
70.055	.0031					.0030	.21	5.20	1.08	5.17	.015	.00	1.50	TRAP
7078.130	-72.096	5.234	-66.862	799.00	11.02	1.89	-64.98	.00	5.40	21.70	10.000	6.000	1.50	0 .0
30.610	.0031					.0028	.09	5.23	1.06	5.17	.015	.00	1.50	TRAP
7108.740	-72.000	5.396	-66.604	799.00	10.51	1.71	-64.89	.00	5.40	22.19	10.000	6.000	1.50	0 .0

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T1 CVWD                                                                  0
T2 MDP
T3 M01
SO   1231.040-158.000  1      .014               -151.700
R    1480.000-157.100  1      .014                            .000
WE   1480.000-157.100  2      .500
TS   1510.000-156.800  3      .015
R    2000.000-156.314  3      .015
JX   2030.000-155.984  3  4   .015  280.000        -155.284        45.0
R    2185.000-155.830  3      .015
TS   2200.000-155.792 10      .015
WX   2200.000-155.792 11
R    2240.000-155.691 11      .014
WE   2240.000-155.691 10      .500
TS   2270.000-155.383  3      .015
R    6000.000-151.653  3      .015
JX   6030.000-151.623  5  4   .015  281.000        -150.623        45.0
R    6175.000-151.478  5      .015
R    7510.000-150.153  5      .015
TS   7525.000-150.116 20      .015
WX   7525.000-150.116 21
R    7565.000-150.016 21      .014
WE   7565.000-150.016 20      .500
R    7580.000-149.866  5      .015
R    9750.000-147.593  5      .015
JX   9780.000-147.561  7  6   .015  932.000        -147.561        30.0
R   13500.000-143.665  7      .015
JX  13530.000-142.165  8  6   .015  933.000        -142.165        30.0
R   18038.000-126.000  8      .015
TS  18068.000-125.200 30      .015
WX  18068.000-125.200 31
R   18128.000-124.000 31      .014
WE  18128.000-124.000 30      .500
TS  18143.000-123.500  8      .015
R   18190.000-123.374  8      .015
R   18220.000-123.294  8      .015
R   18300.000-123.079  8      .015
JX  18330.000-122.000  9  6   .015  984.000        -121.000        30.0
R   20800.000-115.868  9      .015
JX  20815.000-115.284 12  4   .015  328.000        -114.794        45.0
R   23150.000-110.034 12      .015
JX  23180.000-109.060 13  6   .015  954.000        -109.034        30.0
R   23333.000-108.480 13      .015
TS  23348.000-108.042 40      .015
WX  23348.000-108.042 41
R   23408.000-107.000 41      .014
WE  23408.000-107.000 40      .500
TS  23423.000-106.500 13      .015
R   26100.000-101.500 13      .015
JX  26115.000-101.000 14  4   .015  363.000        -100.581        45.0
R   28670.000-098.000 14      .015
TS  28685.000-097.563 50      .015
WX  28685.000-097.563 51
R   28725.000-097.100 51      .014
WE  28725.000-097.100 50      .500
TS  28740.000-096.800 14      .015
R   28925.000-096.470 14      .015
JX  28955.000-096.000 15  4   .015  342.000        -095.747        45.0
R   31500.000-091.000 15      .015
JX  31530.000-089.500 15  4   .015  342.000        -089.000        45.0
R   33973.000-085.300 15      .015
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TS  33988.000-085.246 60      .015
WX  33988.000-085.246 61
R   34028.000-085.100 61      .014
WE  34028.000-085.100 60      .500
TS  34043.000-084.100 15      .015
R   34119.000-084.000 15      .015
SH  34119.000-084.000 15
CD   1  3   5    .670   7.000   87.350  .000  .000   .00
CD   2  2   0    .000  10.000   87.350  .000  .000   .00
CD   3  1   0    .000  10.000   85.000 1.500 1.500   .00
CD   4  4   1    .000   8.000    0.000  .000  .000   .00
CD   5  1   0    .000  10.000   82.000 1.500 1.500   .00
CD   6  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   68.000 1.500 1.500   .00
CD   8  1   0    .000  10.000   31.000 1.500 1.500   .00
CD   9  1   0    .000  10.000   25.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   87.350  .000  .000   .00
CD  11  3   5    .670   7.000   87.350  .000  .000   .00
CD  12  1   0    .000  10.000   23.000 1.500 1.500   .00
CD  13  1   0    .000  10.000   14.000 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  20  2   0    .000  10.000   87.350  .000  .000   .00
CD  21  3   5    .670   7.000   87.350  .000  .000   .00
CD  30  2   0    .000  10.000   43.340  .000  .000   .00
CD  31  3   2    .670   7.000   43.340  .000  .000   .00
CD  40  2   0    .000  10.000   24.670  .000  .000   .00
CD  41  3   1    .670   7.000   24.670  .000  .000   .00
CD  50  2   0    .000  10.000   20.670  .000  .000   .00
CD  51  3   1    .670   7.000   20.670  .000  .000   .00
CD  60  2   0    .000  10.000   10.000  .000  .000   .00
CD  61  3   0    .670   7.000   10.000  .000  .000   .00
Q          754.000   .0
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FILE: M01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 5- 7-2014 Time: 2: 3: 2

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	5	.670	7.000	87.350	.000	.000	.00										
CD	2	2	0	.000	10.000	87.350			.00										
CD	3	1	0	.000	10.000	85.000	1.500	1.500	.00										
CD	4	4	1		8.000														
CD	5	1	0	.000	10.000	82.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	68.000	1.500	1.500	.00										
CD	8	1	0	.000	10.000	31.000	1.500	1.500	.00										
CD	9	1	0	.000	10.000	25.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	87.350			.00										
CD	11	3	5	.670	7.000	87.350	.000	.000	.00										
CD	12	1	0	.000	10.000	23.000	1.500	1.500	.00										
CD	13	1	0	.000	10.000	14.000	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	20	2	0	.000	10.000	87.350			.00										
CD	21	3	5	.670	7.000	87.350	.000	.000	.00										
CD	30	2	0	.000	10.000	43.340			.00										
CD	31	3	2	.670	7.000	43.340	.000	.000	.00										
CD	40	2	0	.000	10.000	24.670			.00										
CD	41	3	1	.670	7.000	24.670	.000	.000	.00										
CD	50	2	0	.000	10.000	20.670			.00										
CD	51	3	1	.670	7.000	20.670	.000	.000	.00										
CD	60	2	0	.000	10.000	10.000			.00										
CD	61	3	0	.670	7.000	10.000	.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 -
M01

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
	1231.040	-158.000	1	-151.700

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
	1480.000	-157.100	1	.014	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1480.000	-157.100	2	.500

ELEMENT NO 4 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	1510.000	-156.800	3	.015	.000	.000

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2000.000	-156.314	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
	2030.000	-155.984	3	4	0	.015	280.000	.000	-155.284	.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
	2185.000	-155.830	3	.015	.000	.000	.000	0

ELEMENT NO 8 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	2200.000	-155.792	10	.015	.000	.000

ELEMENT NO 9 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	2200.000	-155.792	11

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2240.000	-155.691	11	.014	.000	.000	.000	0

ELEMENT NO 11 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	
	2240.000	-155.691	10	FP .500

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 12 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	2270.000	-155.383	3	.015	.000	.000

ELEMENT NO 13 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6000.000	-151.653	3	.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
	6030.000	-151.623	5	4	0	.015	281.000	.000	-150.623	.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 REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6175.000	-151.478	5	.015	.000	.000	.000	0

ELEMENT NO 16 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	7510.000	-150.153	5	.015	.000	.000	.000	0

ELEMENT NO 17 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	7525.000	-150.116	20	.015	.000	.000

ELEMENT NO 18 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	7525.000	-150.116	21

ELEMENT NO 19 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	7565.000	-150.016	21	.014	.000	.000	.000	0

ELEMENT NO 20 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	
	7565.000	-150.016	20	FP .500

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 21 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	7580.000	-149.866	5	.015	.000	.000	.000	0

ELEMENT NO 22 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	9750.000	-147.593	5	.015	.000	.000	.000	0

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

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
	9780.000	-147.561	7	6	0	.015	932.000	.000	-147.561	.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  24 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              13500.000 -143.665    7              .015                          .000     .000      .000     0
 ELEMENT NO  25 IS A JUNCTION           *         *     *     *                *                 *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                              13530.000 -142.165    8     6     0   .015   933.000      .000  -142.165      .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  26 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              18038.000 -126.000    8              .015                          .000     .000      .000     0
 ELEMENT NO  27 IS A TRANSITION         *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                              18068.000 -125.200   30              .015                          .000     .000
 ELEMENT NO  28 IS A  WALL  EXIT                        *
                    U/S DATA   STATION    INVERT  SECT
                              18068.000 -125.200   31
 ELEMENT NO  29 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              18128.000 -124.000   31              .014                          .000     .000      .000     0
 ELEMENT NO  30 IS A  WALL  ENTRANCE                    *
                    U/S DATA   STATION    INVERT  SECT             FP
                              18128.000 -124.000   30              .500
 ELEMENT NO  31 IS A TRANSITION         *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                              18143.000 -123.500    8              .015                          .000     .000
                                                    W S P G W                                                          PAGE NO   5
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  32 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              18190.000 -123.374    8              .015                          .000     .000      .000     0
 ELEMENT NO  33 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              18220.000 -123.294    8              .015                          .000     .000      .000     0
 ELEMENT NO  34 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              18300.000 -123.079    8              .015                          .000     .000      .000     0
 ELEMENT NO  35 IS A JUNCTION           *         *     *     *                *                 *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                              18330.000 -122.000    9     6     0   .015   984.000      .000  -121.000      .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  36 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              20800.000 -115.868    9              .015                          .000     .000      .000     0
 ELEMENT NO  37 IS A JUNCTION           *         *     *     *                *                 *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                              20815.000 -115.284   12     4     0   .015   328.000      .000  -114.794      .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  38 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              23150.000 -110.034   12              .015                          .000     .000      .000     0
 ELEMENT NO  39 IS A JUNCTION           *         *     *     *                *                 *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                              23180.000 -109.060   13     6     0   .015   954.000      .000  -109.034      .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 6

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 40 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	23333.000	-108.480	13	.015	.000	.000	.000	0

ELEMENT NO 41 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	23348.000	-108.042	40	.015	.000	.000

ELEMENT NO 42 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	23348.000	-108.042	41

ELEMENT NO 43 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	23408.000	-107.000	41	.014	.000	.000	.000	0

ELEMENT NO 44 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	23408.000	-107.000	40	.500

ELEMENT NO 45 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	23423.000	-106.500	13	.015	.000	.000

ELEMENT NO 46 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	26100.000	-101.500	13	.015	.000	.000	.000	0

ELEMENT NO 47 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	26115.000	-101.000	14	4	0	.015	363.000	.000	-100.581	.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 48 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	28670.000	-98.000	14	.015	.000	.000	.000	0

ELEMENT NO 49 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	28685.000	-97.563	50	.015	.000	.000

ELEMENT NO 50 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	28685.000	-97.563	51

W S P G W PAGE NO 7

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 51 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	28725.000	-97.100	51	.014	.000	.000	.000	0

ELEMENT NO 52 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	28725.000	-97.100	50	.500

ELEMENT NO 53 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	28740.000	-96.800	14	.015	.000	.000

ELEMENT NO 54 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	28925.000	-96.470	14	.015	.000	.000	.000	0

ELEMENT NO 55 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	28955.000	-96.000	15	4	0	.015	342.000	.000	-95.747	.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

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 ELEMENT NO  56 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              31500.000  -91.000   15              .015                           .000     .000      .000     0
 ELEMENT NO  57 IS A JUNCTION           *         *     *     *                  *                  *                 *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                              31530.000  -89.500   15     4     0   .015   342.000      .000   -89.000      .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  58 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              33973.000  -85.300   15              .015                           .000     .000      .000     0
 ELEMENT NO  59 IS A TRANSITION         *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                              33988.000  -85.246   60              .015                           .000     .000
 ELEMENT NO  60 IS A  WALL  EXIT                        *
                    U/S DATA   STATION    INVERT  SECT
                              33988.000  -85.246   61
                                                    W S P G W                                                          PAGE NO   8
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  61 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              34028.000  -85.100   61              .014                           .000     .000      .000     0
 ELEMENT NO  62 IS A  WALL  ENTRANCE                    *
                    U/S DATA   STATION    INVERT  SECT             FP
                              34028.000  -85.100   60              .500
 ELEMENT NO  63 IS A TRANSITION         *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                              34043.000  -84.100   15              .015                           .000     .000
 ELEMENT NO  64 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              34119.000  -84.000   15              .015                           .000     .000      .000     0
 ELEMENT NO  65 IS A SYSTEM HEADWORKS                   *                    *
                    U/S DATA   STATION    INVERT  SECT                                   W S ELEV
                              34119.000  -84.000   15                                        .000
```

CVWD
MDP
M01

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
1231.040	-158.000	6.300	-151.700	6493.00	12.27	2.34	-149.36	.00	5.70	87.35	7.000	87.350	.00	5 .7
81.819	.0036					.0027	.22	6.30	.88	5.66	.014	.00	.00	BOX
---------- WARNING - Flow depth near top of box conduit ----------														
1312.859	-157.704	6.007	-151.697	6493.00	12.87	2.57	-149.13	.00	5.70	87.35	7.000	87.350	.00	5 .7
67.541	.0036					.0031	.21	6.01	.94	5.66	.014	.00	.00	BOX
1380.400	-157.460	5.747	-151.713	6493.00	13.45	2.81	-148.90	.00	5.70	87.35	7.000	87.350	.00	5 .7
HYDRAULIC JUMP														
1380.400	-157.460	5.661	-151.799	6493.00	13.66	2.90	-148.90	.00	5.70	87.35	7.000	87.350	.00	5 .7
86.202	.0036					.0036	.31	5.66	1.03	5.66	.014	.00	.00	BOX
1466.602	-157.148	5.661	-151.488	6493.00	13.66	2.90	-148.59	.00	5.70	87.35	7.000	87.350	.00	5 .7
13.398	.0036					.0036	.05	5.66	1.03	5.66	.014	.00	.00	BOX
1480.000	-157.100	5.704	-151.396	6493.00	13.55	2.85	-148.54	.00	5.70	87.35	7.000	87.350	.00	5 .7
WALL ENTRANCE														
1480.000	-157.100	6.937	-150.163	6493.00	10.71	1.78	-148.38	.00	5.56	87.35	10.000	87.350	.00	0 .0
TRANS STR	.0100					.0010	.03	6.94	.72		.015	.00	.00	RECTANG
1510.000	-156.800	7.033	-149.767	6493.00	9.66	1.45	-148.32	.00	5.47	106.10	10.000	85.000	1.50	0 .0
490.000	.0010					.0009	.43	7.03	.68	6.73	.015	.00	1.50	TRAP

CVWD
MDP
M01

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
2000.000	-156.314	6.928	-149.386	6493.00	9.82	1.50	-147.89	.00	5.47	105.78	10.000	85.000	1.50	0 .0
JUNCT STR	.0110					.0009	.03	6.93	.69		.015	.00	1.50	TRAP
2030.000	-155.984	6.721	-149.263	6213.00	9.72	1.47	-147.80	.00	5.32	105.16	10.000	85.000	1.50	0 .0
155.000	.0010					.0009	.14	6.72	.69	6.56	.015	.00	1.50	TRAP
2185.000	-155.830	6.699	-149.131	6213.00	9.76	1.48	-147.65	.00	5.32	105.10	10.000	85.000	1.50	0 .0
TRANS STR	.0025					.0011	.02	6.70	.70		.015	.00	1.50	TRAP
2200.000	-155.792	6.255	-149.537	6213.00	11.37	2.01	-147.53	.00	5.40	87.35	10.000	87.350	.00	0 .0
WALL	EXIT													
2200.000	-155.792	6.256	-149.536	6213.00	11.82	2.17	-147.37	.00	5.54	87.35	7.000	87.350	.00	5 .7
40.000	.0025					.0025	.10	6.26	.85	6.25	.014	.00	.00	BOX
2240.000	-155.691	6.256	-149.435	6213.00	11.82	2.17	-147.26	.00	5.54	87.35	7.000	87.350	.00	5 .7
WALL	ENTRANCE													
2240.000	-155.691	6.942	-148.749	6213.00	10.25	1.63	-147.12	.00	5.40	87.35	10.000	87.350	.00	0 .0
TRANS STR	.0103					.0009	.03	6.94	.69		.015	.00	.00	RECTANG
2270.000	-155.383	6.960	-148.423	6213.00	9.35	1.36	-147.06	.00	5.32	105.88	10.000	85.000	1.50	0 .0
1261.759	.0010					.0009	1.10	6.96	.66	6.54	.015	.00	1.50	TRAP
3531.759	-154.121	6.667	-147.454	6213.00	9.81	1.49	-145.96	.00	5.32	105.00	10.000	85.000	1.50	0 .0
1956.366	.0010					.0010	1.90	6.67	.70	6.54	.015	.00	1.50	TRAP

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 5- 7-2014 Time: 2: 3: 4

CVWD
MDP
M01

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
5488.125	-152.165	6.544	-145.621	6213.00	10.01	1.56	-144.06	.00	5.32	104.63	10.000	85.000	1.50	0 .0
511.875	.0010					.0010	.51	6.54	.72	6.54	.015	.00	1.50	TRAP
6000.000	-151.653	6.544	-145.109	6213.00	10.01	1.56	-143.55	.00	5.32	104.63	10.000	85.000	1.50	0 .0

JUNCT STR	.0010					.0009	.03	6.54	.72		.015	.00	1.50	TRAP	
6030.000	-151.623	6.749	-144.874	5932.00	9.54	1.41	-143.46	.00	5.28	102.25	10.000	82.000	1.50	0	.0
145.000	.0010					.0009	.13	6.75	.68	6.50	.015	.00	1.50	TRAP	
6175.000	-151.478	6.719	-144.759	5932.00	9.59	1.43	-143.33	.00	5.28	102.16	10.000	82.000	1.50	0	.0
1335.000	.0010					.0009	1.24	6.72	.69	6.52	.015	.00	1.50	TRAP	
7510.000	-150.153	6.560	-143.593	5932.00	9.85	1.51	-142.09	.00	5.28	101.68	10.000	82.000	1.50	0	.0
TRANS STR	.0025					.0011	.02	6.56	.71		.015	.00	1.50	TRAP	
7525.000	-150.116	6.401	-143.715	5932.00	10.61	1.75	-141.97	.00	5.23	87.35	10.000	87.350	.00	0	.0
WALL	EXIT														
7525.000	-150.116	6.401	-143.715	5932.00	11.03	1.89	-141.82	.00	5.37	87.35	7.000	87.350	.00	5	.7
40.000	.0025					.0022	.09	6.40	.78	6.07	.014	.00	.00	BOX	

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

7565.000	-150.016	6.369	-143.647	5932.00	11.09	1.91	-141.74	.00	5.37	87.35	7.000	87.350	.00	5	.7
WALL	ENTRANCE														

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

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
7565.000	-150.016	6.910	-143.106	5932.00	9.29	1.34	-141.76	.00	5.28	102.73	10.000	82.000	1.50	0	.0
15.000	.0100					.0009	.01	6.91	.66	3.28	.015	.00	1.50	TRAP	
7580.000	-149.866	6.658	-143.208	5932.00	9.69	1.46	-141.75	.00	5.28	101.97	10.000	82.000	1.50	0	.0
1895.431	.0010					.0010	1.87	6.66	.70	6.41	.015	.00	1.50	TRAP	
9475.431	-147.881	6.412	-141.468	5932.00	10.10	1.58	-139.89	.00	5.28	101.24	10.000	82.000	1.50	0	.0
274.569	.0010					.0010	.29	6.41	.74	6.41	.015	.00	1.50	TRAP	
9750.000	-147.593	6.412	-141.181	5932.00	10.10	1.58	-139.60	.00	5.28	101.24	10.000	82.000	1.50	0	.0
JUNCT STR	.0011					.0010	.03	6.41	.74		.015	.00	1.50	TRAP	

9780.000	-147.561	6.660	-140.901	5000.00	9.63	1.44	-139.46	.00	5.30	87.98	10.000	68.000	1.50	0 .0
1878.340	.0010				.0010	1.87	6.66	.70	6.45	.015	.00	1.50	TRAP	
11658.340	-145.594	6.451	-139.143	5000.00	9.98	1.55	-137.60	.00	5.30	87.35	10.000	68.000	1.50	0 .0
1377.965	.0010				.0010	1.44	6.45	.73	6.45	.015	.00	1.50	TRAP	
13036.300	-144.151	6.451	-137.700	5000.00	9.98	1.55	-136.15	.00	5.30	87.35	10.000	68.000	1.50	0 .0
HYDRAULIC JUMP														
13036.300	-144.151	4.283	-139.867	5000.00	15.68	3.82	-136.05	.00	5.30	80.85	10.000	68.000	1.50	0 .0
20.926	.0010				.0043	.09	4.28	1.39	6.45	.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
13057.230	-144.129	4.217	-139.912	5000.00	15.95	3.95	-135.96	.00	5.30	80.65	10.000	68.000	1.50	0 .0
57.284	.0010				.0048	.27	4.22	1.43	6.45	.015	.00	1.50	TRAP	
13114.510	-144.069	4.036	-140.033	5000.00	16.73	4.35	-135.69	.00	5.30	80.11	10.000	68.000	1.50	0 .0
57.949	.0010				.0055	.32	4.04	1.53	6.45	.015	.00	1.50	TRAP	
13172.460	-144.008	3.861	-140.147	5000.00	17.55	4.78	-135.37	.00	5.30	79.58	10.000	68.000	1.50	0 .0
57.755	.0010				.0064	.37	3.86	1.63	6.45	.015	.00	1.50	TRAP	
13230.220	-143.948	3.694	-140.253	5000.00	18.40	5.26	-134.99	.00	5.30	79.08	10.000	68.000	1.50	0 .0
56.951	.0010				.0075	.43	3.69	1.75	6.45	.015	.00	1.50	TRAP	
13287.170	-143.888	3.534	-140.354	5000.00	19.30	5.79	-134.57	.00	5.30	78.60	10.000	68.000	1.50	0 .0
55.713	.0010				.0087	.48	3.53	1.87	6.45	.015	.00	1.50	TRAP	
13342.880	-143.830	3.380	-140.449	5000.00	20.24	6.36	-134.09	.00	5.30	78.14	10.000	68.000	1.50	0 .0
54.171	.0010				.0101	.55	3.38	2.01	6.45	.015	.00	1.50	TRAP	
13397.050	-143.773	3.233	-140.540	5000.00	21.23	7.00	-133.54	.00	5.30	77.70	10.000	68.000	1.50	0 .0
52.419	.0010				.0117	.61	3.23	2.15	6.45	.015	.00	1.50	TRAP	

13449.470	-143.718	3.091	-140.627	5000.00	22.27	7.70	-132.93	.00	5.30	77.27	10.000	68.000	1.50	0	.0
50.527	.0010					.0136	.69	3.09	2.30	6.45	.015	.00	1.50	TRAP	
13500.000	-143.665	2.956	-140.709	5000.00	23.36	8.47	-132.24	.00	5.30	76.87	10.000	68.000	1.50	0	.0
JUNCT STR	.0500					.0091	.27	2.96	2.47		.015	.00	1.50	TRAP	

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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
13530.000	-142.165	6.131	-136.034	4067.00	16.50	4.23	-131.80	.00	7.18	49.39	10.000	31.000	1.50	0	.0
3555.488	.0036					.0036	12.75	6.13	1.30	6.13	.015	.00	1.50	TRAP	
17085.490	-129.416	6.131	-123.285	4067.00	16.50	4.23	-119.06	.00	7.18	49.39	10.000	31.000	1.50	0	.0
641.258	.0036					.0034	2.20	6.13	1.30	6.13	.015	.00	1.50	TRAP	
17726.740	-127.116	6.281	-120.835	4067.00	16.02	3.98	-116.85	.00	7.18	49.84	10.000	31.000	1.50	0	.0
228.568	.0036					.0031	.70	6.28	1.25	6.13	.015	.00	1.50	TRAP	
17955.310	-126.297	6.528	-119.769	4067.00	15.27	3.62	-116.15	.00	7.18	50.58	10.000	31.000	1.50	0	.0
82.688	.0036					.0027	.22	6.53	1.17	6.13	.015	.00	1.50	TRAP	
18038.000	-126.000	6.783	-119.217	4067.00	14.56	3.29	-115.92	.00	7.18	51.35	10.000	31.000	1.50	0	.0
TRANS STR	.0267					.0043	.13	6.78	1.10		.015	.00	1.50	TRAP	
18068.000	-125.200	4.839	-120.361	4067.00	19.39	5.84	-114.52	.00	6.49	43.34	10.000	43.340	.00	0	.0
WALL EXIT															
18068.000	-125.200	5.036	-120.164	4067.00	19.23	5.74	-114.42	.00	6.63	43.34	7.000	43.340	.00	2	.7
21.281	.0200					.0074	.16	5.04	1.53	3.61	.014	.00	.00	BOX	
18089.280	-124.774	5.274	-119.501	4067.00	18.36	5.23	-114.27	.00	6.63	43.34	7.000	43.340	.00	2	.7
16.148	.0200					.0065	.10	5.27	1.43	3.61	.014	.00	.00	BOX	
18105.430	-124.451	5.531	-118.920	4067.00	17.51	4.76	-114.16	.00	6.63	43.34	7.000	43.340	.00	2	.7
11.355	.0200					.0057	.06	5.53	1.33	3.61	.014	.00	.00	BOX	

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
18116.790	-124.224	5.801	-118.423	4067.00	16.69	4.33	-114.10	.00	6.63	43.34	7.000	43.340	.00	2 .7
7.336	.0200					.0050	.04	5.80	1.24	3.61	.014	.00	.00	BOX
18124.120	-124.078	6.084	-117.993	4067.00	15.92	3.93	-114.06	.00	6.63	43.34	7.000	43.340	.00	2 .7
3.879	.0200					.0044	.02	6.08	1.16	3.61	.014	.00	.00	BOX
18128.000	-124.000	6.381	-117.619	4067.00	15.17	3.58	-114.04	.00	6.63	43.34	7.000	43.340	.00	2 .7
WALL	ENTRANCE													
		---------- WARNING - Flow depth near top of box conduit ----------												
18128.000	-124.000	5.224	-118.776	4067.00	17.96	5.01	-113.77	.00	6.49	43.34	10.000	43.340	.00	0 .0
TRANS STR	.0333					.0038	.06	5.22	1.38		.015	.00	.00	RECTANG
18143.000	-123.500	6.543	-116.957	4067.00	15.23	3.60	-113.36	.00	7.18	50.63	10.000	31.000	1.50	0 .0
47.000	.0027					.0029	.13	6.54	1.17	6.65	.015	.00	1.50	TRAP
18190.000	-123.374	6.519	-116.855	4067.00	15.30	3.63	-113.22	.00	7.18	50.56	10.000	31.000	1.50	0 .0
30.000	.0027					.0029	.09	6.52	1.18	6.66	.015	.00	1.50	TRAP
18220.000	-123.294	6.502	-116.792	4067.00	15.35	3.66	-113.13	.00	7.18	50.51	10.000	31.000	1.50	0 .0
80.000	.0027					.0030	.24	6.50	1.18	6.65	.015	.00	1.50	TRAP
18300.000	-123.079	6.450	-116.629	4067.00	15.50	3.73	-112.90	.00	7.18	50.35	10.000	31.000	1.50	0 .0
JUNCT STR	.0360					.0027	.08	6.45	1.20		.015	.00	1.50	TRAP

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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

18330.000	-122.000	6.466	-115.534	3083.00	13.74	2.93	-112.60	.00	6.75	44.40	10.000	25.000	1.50	0 .0
2176.412	.0025				.0025	5.40	6.47	1.08	6.47	.015	.00	1.50	TRAP	
20506.410	-116.597	6.466	-110.130	3083.00	13.74	2.93	-107.20	.00	6.75	44.40	10.000	25.000	1.50	0 .0
215.584	.0025				.0025	.53	6.47	1.08	6.47	.015	.00	1.50	TRAP	
20722.000	-116.062	6.507	-109.554	3083.00	13.63	2.88	-106.67	.00	6.75	44.52	10.000	25.000	1.50	0 .0
78.004	.0025				.0023	.18	6.51	1.07	6.47	.015	.00	1.50	TRAP	
20800.000	-115.868	6.754	-109.114	3083.00	12.99	2.62	-106.49	.00	6.75	45.26	10.000	25.000	1.50	0 .0
JUNCT STR	.0389				.0020	.03	6.75	1.00		.015	.00	1.50	TRAP	
20815.000	-115.284	6.859	-108.425	2755.00	12.07	2.26	-106.16	.00	6.57	43.58	10.000	23.000	1.50	0 .0
67.984	.0022				.0020	.13	6.86	.93	6.49	.015	.00	1.50	TRAP	
20882.980	-115.131	6.648	-108.483	2755.00	12.57	2.45	-106.03	.00	6.57	42.94	10.000	23.000	1.50	0 .0
HYDRAULIC JUMP														
20882.980	-115.131	6.494	-108.637	2755.00	12.96	2.61	-106.03	.00	6.57	42.48	10.000	23.000	1.50	0 .0
2233.250	.0022				.0022	5.02	6.49	1.02	6.49	.015	.00	1.50	TRAP	
23116.230	-110.110	6.494	-103.616	2755.00	12.96	2.61	-101.01	.00	6.57	42.48	10.000	23.000	1.50	0 .0
33.766	.0022				.0022	.07	6.49	1.02	6.49	.015	.00	1.50	TRAP	
23150.000	-110.034	6.573	-103.461	2755.00	12.76	2.53	-100.93	.00	6.57	42.72	10.000	23.000	1.50	0 .0
JUNCT STR	.0325							6.57	1.00		.015	.00	1.50	TRAP

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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
23180.000	-109.060	5.752	-103.308	1801.00	13.84	2.97	-100.34	.00	6.35	31.26	10.000	14.000	1.50	0 .0
100.057	.0038				.0032	.32	5.75	1.19	5.57	.015	.00	1.50	TRAP	
23280.060	-108.681	5.929	-102.752	1801.00	13.27	2.73	-100.02	.00	6.35	31.79	10.000	14.000	1.50	0 .0
42.699	.0038				.0028	.12	5.93	1.13	5.57	.015	.00	1.50	TRAP	

23322.760	-108.519	6.135	-102.384	1801.00	12.65	2.49	-99.90	.00	6.35	32.41	10.000	14.000	1.50	0 .0
10.244	.0038				.0025	.03	6.14	1.06	5.57	.015	.00	1.50	TRAP	
23333.000	-108.480	6.348	-102.132	1801.00	12.06	2.26	-99.87	.00	6.35	33.05	10.000	14.000	1.50	0 .0
TRANS STR	.0292							6.35	1.00		.015	.00	1.50	TRAP
23348.000	-108.042	4.140	-103.902	1801.00	17.63	4.83	-99.07	.00	5.49	24.67	10.000	24.670	.00	0 .0
WALL	EXIT													
23348.000	-108.042	4.289	-103.753	1801.00	17.50	4.75	-99.00	.00	5.59	24.67	7.000	24.670	.00	1 .7
6.170	.0174				.0079	.05	4.29	1.51	3.26	.014	.00	.00	BOX	
23354.170	-107.935	4.338	-103.597	1801.00	17.30	4.65	-98.95	.00	5.59	24.67	7.000	24.670	.00	1 .7
20.877	.0174				.0073	.15	4.34	1.48	3.26	.014	.00	.00	BOX	
23375.040	-107.572	4.550	-103.022	1801.00	16.49	4.22	-98.80	.00	5.59	24.67	7.000	24.670	.00	1 .7
14.738	.0174				.0064	.09	4.55	1.38	3.26	.014	.00	.00	BOX	
23389.780	-107.316	4.772	-102.544	1801.00	15.73	3.84	-98.70	.00	5.59	24.67	7.000	24.670	.00	1 .7
9.871	.0174				.0056	.06	4.77	1.29	3.26	.014	.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
23399.650	-107.145	5.005	-102.140	1801.00	14.99	3.49	-98.65	.00	5.59	24.67	7.000	24.670	.00	1 .7
5.869	.0174				.0049	.03	5.00	1.20	3.26	.014	.00	.00	BOX	
23405.520	-107.043	5.249	-101.794	1801.00	14.30	3.17	-98.62	.00	5.59	24.67	7.000	24.670	.00	1 .7
2.477	.0174				.0043	.01	5.25	1.11	3.26	.014	.00	.00	BOX	
23408.000	-107.000	5.505	-101.495	1801.00	13.63	2.89	-98.61	.00	5.59	24.67	7.000	24.670	.00	1 .7
WALL	ENTRANCE													
23408.000	-107.000	4.496	-102.504	1801.00	16.24	4.09	-98.41	.00	5.49	24.67	10.000	24.670	.00	0 .0
TRANS STR	.0333				.0039	.06	4.50	1.35		.015	.00	.00	RECTANG	

23423.000	-106.500	6.348	-100.152	1801.00	12.06	2.26	-97.89	.00	6.35	33.05	10.000	14.000	1.50	0 .0
45.279	.0019					.0022	.10	6.35	1.00	6.70	.015	.00	1.50	TRAP
23468.280	-106.415	6.567	-99.849	1801.00	11.50	2.05	-97.80	.00	6.35	33.70	10.000	14.000	1.50	0 .0
263.953	.0019					.0019	.51	6.57	.94	6.70	.015	.00	1.50	TRAP
23732.230	-105.922	6.697	-99.225	1801.00	11.18	1.94	-97.28	.00	6.35	34.09	10.000	14.000	1.50	0 .0
2367.768	.0019					.0019	4.42	6.70	.91	6.70	.015	.00	1.50	TRAP
26100.000	-101.500	6.697	-94.803	1801.00	11.18	1.94	-92.86	.00	6.35	34.09	10.000	14.000	1.50	0 .0
JUNCT STR	.0333					.0018	.03	6.70	.91		.015	.00	1.50	TRAP
26115.000	-101.000	6.830	-94.170	1438.00	10.40	1.68	-92.49	.00	6.31	30.49	10.000	10.000	1.50	0 .0
144.121	.0012					.0016	.24	6.83	.86	7.52	.015	.00	1.50	TRAP

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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
26259.120	-100.831	7.049	-93.782	1438.00	9.92	1.53	-92.26	.00	6.31	31.15	10.000	10.000	1.50	0 .0
327.441	.0012					.0014	.47	7.05	.81	7.52	.015	.00	1.50	TRAP
26586.560	-100.446	7.274	-93.173	1438.00	9.45	1.39	-91.78	.00	6.31	31.82	10.000	10.000	1.50	0 .0
1171.404	.0012					.0013	1.48	7.27	.76	7.52	.015	.00	1.50	TRAP
27757.970	-99.071	7.505	-91.566	1438.00	9.01	1.26	-90.30	.00	6.31	32.51	10.000	10.000	1.50	0 .0
912.033	.0012					.0012	1.08	7.50	.72	7.52	.015	.00	1.50	TRAP
28670.000	-98.000	7.514	-90.486	1438.00	9.00	1.26	-89.23	.00	6.31	32.54	10.000	10.000	1.50	0 .0
TRANS STR	.0291					.0014	.02	7.51	.72		.015	.00	1.50	TRAP
28685.000	-97.563	6.948	-90.615	1438.00	10.01	1.56	-89.06	.00	5.32	20.67	10.000	20.670	.00	0 .0
WALL EXIT														
28685.000	-97.563	6.948	-90.615	1438.00	10.35	1.66	-88.95	.00	5.44	20.67	7.000	20.670	.00	1 .7
17.195	.0116					.0023	.04	6.95	.70	3.78	.014	.00	.00	BOX

WARNING - Flow depth near top of box conduit

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
28702.200	-97.364	6.625	-90.739	1438.00	10.85	1.83	-88.91	.00	5.44	20.67	7.000	20.670	.00	1 .7
14.223	.0116					.0026	.04	6.63	.76	3.78	.014	.00	.00	BOX

WARNING - Flow depth near top of box conduit

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
28716.420	-97.199	6.317	-90.883	1438.00	11.38	2.01	-88.87	.00	5.44	20.67	7.000	20.670	.00	1 .7
8.582	.0116					.0029	.03	6.32	.81	3.78	.014	.00	.00	BOX
28725.000	-97.100	6.095	-91.005	1438.00	11.80	2.16	-88.84	.00	5.44	20.67	7.000	20.670	.00	1 .7
WALL	ENTRANCE													
28725.000	-97.100	6.711	-90.389	1438.00	10.37	1.67	-88.72	.00	5.32	20.67	10.000	20.670	.00	0 .0
TRANS STR	.0200							6.71	.71		.015	.00	.00	RECTANG
28740.000	-96.800	6.315	-90.485	1438.00	11.70	2.12	-88.36	.00	6.31	28.94	10.000	10.000	1.50	0 .0
26.195	.0018					.0022	.06	6.31	1.00	6.79	.015	.00	1.50	TRAP
28766.200	-96.753	6.520	-90.233	1438.00	11.15	1.93	-88.30	.00	6.31	29.56	10.000	10.000	1.50	0 .0
158.805	.0018					.0020	.31	6.52	.94	6.79	.015	.00	1.50	TRAP
28925.000	-96.470	6.714	-89.756	1438.00	10.67	1.77	-87.99	.00	6.31	30.14	10.000	10.000	1.50	0 .0
JUNCT STR	.0157					.0017	.05	6.71	.89		.015	.00	1.50	TRAP
28955.000	-96.000	7.095	-88.905	1096.00	9.28	1.34	-87.57	.00	6.31	27.28	10.000	6.000	1.50	0 .0
200.258	.0020					.0016	.32	7.09	.79	6.68	.015	.00	1.50	TRAP
29155.260	-95.607	6.891	-88.715	1096.00	9.74	1.47	-87.24	.00	6.31	26.67	10.000	6.000	1.50	0 .0
398.139	.0020					.0018	.73	6.89	.84	6.68	.015	.00	1.50	TRAP

M01

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
29553.400	-94.824	6.693	-88.132	1096.00	10.21	1.62	-86.51	.00	6.31	26.08	10.000	6.000	1.50	0 .0
268.203	.0020					.0020	.52	6.69	.89	6.68	.015	.00	1.50	TRAP
29821.600	-94.297	6.683	-87.615	1096.00	10.23	1.63	-85.99	.00	6.31	26.05	10.000	6.000	1.50	0 .0
1678.402	.0020					.0020	3.29	6.68	.89	6.68	.015	.00	1.50	TRAP
31500.000	-91.000	6.683	-84.317	1096.00	10.23	1.63	-82.69	.00	6.31	26.05	10.000	6.000	1.50	0 .0
JUNCT STR	.0500					.0017	.05	6.68	.89		.015	.00	1.50	TRAP
31530.000	-89.500	6.013	-83.487	754.00	8.35	1.08	-82.40	.00	5.24	24.04	10.000	6.000	1.50	0 .0
451.361	.0017					.0016	.71	6.01	.76	5.79	.015	.00	1.50	TRAP
31981.360	-88.724	5.837	-82.887	754.00	8.76	1.19	-81.70	.00	5.24	23.51	10.000	6.000	1.50	0 .0
517.152	.0017					.0017	.87	5.84	.81	5.79	.015	.00	1.50	TRAP
32498.510	-87.835	5.795	-82.040	754.00	8.86	1.22	-80.82	.00	5.24	23.38	10.000	6.000	1.50	0 .0
1239.295	.0017					.0017	2.13	5.79	.82	5.79	.015	.00	1.50	TRAP
33737.810	-85.704	5.795	-79.910	754.00	8.86	1.22	-78.69	.00	5.24	23.38	10.000	6.000	1.50	0 .0
HYDRAULIC JUMP														
33737.810	-85.704	4.718	-80.986	754.00	12.22	2.32	-78.67	.00	5.24	20.16	10.000	6.000	1.50	0 .0
15.332	.0017					.0042	.06	4.72	1.23	5.79	.015	.00	1.50	TRAP
33753.140	-85.678	4.654	-81.024	754.00	12.48	2.42	-78.61	.00	5.24	19.96	10.000	6.000	1.50	0 .0
34.305	.0017					.0046	.16	4.65	1.26	5.79	.015	.00	1.50	TRAP

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 5- 7-2014 Time: 2: 3: 4

CVWD
MDP
M01

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

33787.450	-85.619	4.512	-81.107	754.00	13.09	2.66	-78.45	.00	5.24	19.53	10.000	6.000	1.50	0	.0
36.035	.0017					.0053	.19	4.51	1.34	5.79	.015	.00	1.50	TRAP	
33823.480	-85.557	4.373	-81.184	754.00	13.73	2.93	-78.26	.00	5.24	19.12	10.000	6.000	1.50	0	.0
37.023	.0017					.0060	.22	4.37	1.43	5.79	.015	.00	1.50	TRAP	
33860.500	-85.493	4.238	-81.256	754.00	14.40	3.22	-78.04	.00	5.24	18.71	10.000	6.000	1.50	0	.0
37.492	.0017					.0068	.25	4.24	1.52	5.79	.015	.00	1.50	TRAP	
33898.000	-85.429	4.106	-81.323	754.00	15.10	3.54	-77.78	.00	5.24	18.32	10.000	6.000	1.50	0	.0
37.590	.0017					.0077	.29	4.11	1.61	5.79	.015	.00	1.50	TRAP	
33935.590	-85.364	3.978	-81.386	754.00	15.84	3.90	-77.49	.00	5.24	17.93	10.000	6.000	1.50	0	.0
37.414	.0017					.0088	.33	3.98	1.71	5.79	.015	.00	1.50	TRAP	
33973.000	-85.300	3.853	-81.447	754.00	16.61	4.29	-77.16	.00	5.24	17.56	10.000	6.000	1.50	0	.0
TRANS STR	.0036					.0072	.11	3.85	1.82		.015	.00	1.50	TRAP	
33988.000	-85.246	5.611	-79.635	754.00	13.44	2.80	-76.83	.00	5.61	10.00	10.000	10.000	.00	0	.0
WALL EXIT															
33988.000	-85.246	5.611	-79.635	754.00	13.44	2.80	-76.83	.00	5.61	10.00	7.000	10.000	.00	0	.7
39.691	.0037					.0039	.15	5.61	1.00	6.02	.014	.00	.00	BOX	
34027.690	-85.101	5.885	-79.216	754.00	12.81	2.55	-76.67	.00	5.61	10.00	7.000	10.000	.00	0	.7
.309	.0037					.0039	.00	5.88	.93	6.02	.014	.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
WALL ENTRANCE														
34028.000	-85.100	5.886	-79.214	754.00	12.81	2.55	-76.67	.00	5.61	10.00	10.000	10.000	.00	0 .0
TRANS STR	.0667					.0026	.04	5.89	.93		.015	.00	.00	RECTANG
34043.000	-84.100	7.142	-76.958	754.00	6.32	.62	-76.34	.00	5.24	27.43	10.000	6.000	1.50	0 .0
76.000	.0013					.0007	.05	7.14	.53	6.17	.015	.00	1.50	TRAP

M01

34119.000	-84.000	7.078	-76.922	754.00	6.41	.64	-76.28	.00	5.24	27.23	10.000	6.000	1.50	0	.0

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T1 CVWD                                                                                  0
T2 MDP
T3 M01-01
SO   1038.800-121.931  1      .015                -115.534
R    3500.000-119.470  1      .015                                    .000
JX   3520.000-119.450  2 12   .015  327.000         -118.450         45.0
R    6178.000-116.792  2      .015
TS   6193.000-116.754 10      .015
WX   6193.000-116.754 11
R    6233.000-116.654 11      .015
WE   6233.000-116.654 10      .500
TS   6248.000-116.417  2      .015
R    6312.000-116.353  2      .015
SH   6312.000-116.353  2
CD   1  1   0    .000  10.000   14.000 1.500 1.500   .00
CD   2  1   0    .000  10.000    9.000 1.500 1.500   .00
CD   3  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   4  1   0    .000  10.000   32.000 1.500 1.500   .00
CD   5  1   0    .000  10.000   16.000 1.500 1.500   .00
CD   6  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   14.670  .000  .000   .00
CD  11  3   1    .670   7.000   14.670  .000  .000   .00
CD  12  4   1    .000   7.000    0.000  .000  .000   .00
CD  13  4   1    .000   3.000    0.000  .000  .000   .00
CD  14  4   1    .000   5.000     .000  .000  .000   .00
CD  15  4   1    .000   8.000     .000  .000  .000   .00
CD  16  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   14.670  .000  .000   .00
CD  21  3   1    .670   7.000   14.670  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   24.670  .000  .000   .00
CD  31  3   1    .670   7.000   24.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q          835.000   .0
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FILE: M01-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 5-29-2014 Time:11:56:35

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	10.000	14.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	9.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	16.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	14.670			.00										
CD	11	3	1	.670	7.000	14.670	.000	.000	.00										
CD	12	4	1		7.000														
CD	13	4	1		3.000														
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	14.670			.00										
CD	21	3	1	.670	7.000	14.670	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.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 -
M01-01

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
	1038.800	-121.931	1	-115.534

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
                             3500.000 -119.470    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
                             3520.000 -119.450    2    12     0   .015   327.000      .000  -118.450      .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
                             6178.000 -116.792    2               .015                             .000     .000      .000     0
 ELEMENT NO   5 IS A TRANSITION         *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                            RADIUS   ANGLE
                             6193.000 -116.754   10               .015                             .000     .000
 ELEMENT NO   6 IS A  WALL  EXIT                   *
                  U/S DATA   STATION    INVERT  SECT
                             6193.000 -116.754   11
 ELEMENT NO   7 IS A REACH              *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                             6233.000 -116.654   11               .015                             .000     .000      .000     0
 ELEMENT NO   8 IS A  WALL  ENTRANCE              *
                  U/S DATA   STATION    INVERT  SECT              FP
                             6233.000 -116.654   10               .500
 ELEMENT NO   9 IS A TRANSITION         *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                            RADIUS   ANGLE
                             6248.000 -116.417    2               .015                             .000     .000
 ELEMENT NO  10 IS A REACH              *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                             6312.000 -116.353    2               .015                             .000     .000      .000     0
 ELEMENT NO  11 IS A SYSTEM HEADWORKS                *                         *
                  U/S DATA   STATION    INVERT  SECT                                      W S ELEV
                             6312.000 -116.353    2                                         .000
                                          W S P G W                                                                 PAGE NO   3
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
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CVWD
MDP
M01-01

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
1038.800	-121.931	6.397	-115.534	1162.00	7.70	.92	-114.61	.00	4.97	33.19	10.000	14.000	1.50	0 .0
1945.530	.0010					.0010	1.87	6.40	.64	6.28	.015	.00	1.50	TRAP
2984.330	-119.986	6.275	-113.710	1162.00	7.91	.97	-112.74	.00	4.97	32.83	10.000	14.000	1.50	0 .0
515.670	.0010					.0010	.51	6.28	.66	6.28	.015	.00	1.50	TRAP
3500.000	-119.470	6.275	-113.195	1162.00	7.91	.97	-112.22	.00	4.97	32.83	10.000	14.000	1.50	0 .0
JUNCT STR	.0010					.0009	.02	6.28	.66		.015	.00	1.50	TRAP
3520.000	-119.450	6.536	-112.914	835.00	6.79	.72	-112.20	.00	4.90	28.61	10.000	9.000	1.50	0 .0
901.406	.0010					.0009	.77	6.54	.58	6.19	.015	.00	1.50	TRAP
4421.406	-118.549	6.334	-112.215	835.00	7.13	.79	-111.43	.00	4.90	28.00	10.000	9.000	1.50	0 .0
1756.594	.0010					.0010	1.67	6.33	.61	6.19	.015	.00	1.50	TRAP
6178.000	-116.792	6.197	-110.595	835.00	7.36	.84	-109.75	.00	4.90	27.59	10.000	9.000	1.50	0 .0
TRANS STR	.0025					.0015	.02	6.20	.64		.015	.00	1.50	TRAP
6193.000	-116.754	5.839	-110.915	835.00	9.75	1.48	-109.44	.00	4.65	14.67	10.000	14.670	.00	0 .0
WALL EXIT														
6193.000	-116.754	5.839	-110.915	835.00	10.21	1.62	-109.29	.00	4.80	14.67	7.000	14.670	.00	1 .7
40.000	.0025					.0036	.14	5.84	.76	6.87	.015	.00	.00	BOX
6233.000	-116.654	5.941	-110.713	835.00	10.04	1.57	-109.15	.00	4.80	14.67	7.000	14.670	.00	1 .7
WALL ENTRANCE														

CVWD
MDP
M01-01

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

M01-01

6233.000	-116.654	6.411	-110.243	835.00	8.88	1.22	-109.02	.00	4.65	14.67	10.000	14.670	.00	0	.0		
TRANS STR	.0158					.0011	.02	6.41	.62		.015	.00	.00	RECTANG			
6248.000	-116.417	6.972	-109.445	835.00	6.16	.59	-108.86	.00	4.90	29.92	10.000	9.000	1.50	0	.0		
64.000	.0010					.0006	.04	6.97	.51	6.19	.015	.00	1.50	TRAP			
6312.000	-116.353	6.939	-109.414	835.00	6.20	.60	-108.82	.00	4.90	29.82	10.000	9.000	1.50	0	.0		

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T1 CVWD                                                                                  0
T2 MDP
T3 M01-02
SO   1031.500-109.313  1      .015                -103.308
R    3550.000-106.791  1      .015                                    .000
JX   3570.000-106.571  2 12   .015  364.000         -105.771         45.0
R    6204.000-103.933  2      .015
TS   6219.000-103.896 10      .015
WX   6219.000-103.896 11
R    6299.000-103.696 11      .015
WE   6299.000-103.696 10      .500
TS   6314.000-103.658  2      .015
R    6414.000-103.558  2      .015
SH   6414.000-103.558  2
CD   1  1   0    .000  10.000   14.000 1.500 1.500   .00
CD   2  1   0    .000  10.000    9.000 1.500 1.500   .00
CD   3  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   4  1   0    .000  10.000   32.000 1.500 1.500   .00
CD   5  1   0    .000  10.000   16.000 1.500 1.500   .00
CD   6  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   14.670  .000  .000   .00
CD  11  3   1    .670   7.000   14.670  .000  .000   .00
CD  12  4   1    .000   7.000    0.000  .000  .000   .00
CD  13  4   1    .000   3.000    0.000  .000  .000   .00
CD  14  4   1    .000   5.000     .000  .000  .000   .00
CD  15  4   1    .000   8.000     .000  .000  .000   .00
CD  16  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   14.670  .000  .000   .00
CD  21  3   1    .670   7.000   14.670  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   24.670  .000  .000   .00
CD  31  3   1    .670   7.000   24.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q          752.000   .0
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FILE: M01-02.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 5-29-2014 Time: 4: 7: 1

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	10.000	14.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	9.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	16.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	14.670			.00										
CD	11	3	1	.670	7.000	14.670	.000	.000	.00										
CD	12	4	1		7.000														
CD	13	4	1		3.000														
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	14.670			.00										
CD	21	3	1	.670	7.000	14.670	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.000	.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 -
M01-02

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
	1031.500	-109.313	1	-103.308

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
	3550.000	-106.791	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

3570.000 -106.571 2 12 0 .015 364.000 .000 -105.771 .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
	6204.000	-103.933	2	.015	.000	.000	.000	0

ELEMENT NO 5 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	6219.000	-103.896	10	.015	.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	6219.000	-103.896	11

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6299.000	-103.696	11	.015	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT		
	6299.000	-103.696	10	FP .500	

ELEMENT NO 9 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	6314.000	-103.658	2	.015	.000	.000

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6414.000	-103.558	2	.015	.000	.000	.000	0

ELEMENT NO 11 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	6414.000	-103.558	2	.000

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

CVWD
MDP
M01-02

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
1031.500	-109.313	6.005	-103.308	1116.00	8.08	1.01	-102.29	.00	4.86	32.02	10.000	14.000	1.50	0 .0
1686.456	.0010					.0010	1.76	6.01	.69	6.14	.015	.00	1.50	TRAP
2717.956	-107.624	6.142	-101.482	1116.00	7.83	.95	-100.53	.00	4.86	32.43	10.000	14.000	1.50	0 .0
832.044	.0010					.0010	.83	6.14	.66	6.14	.015	.00	1.50	TRAP
3550.000	-106.791	6.142	-100.649	1116.00	7.83	.95	-99.70	.00	4.86	32.43	10.000	14.000	1.50	0 .0
JUNCT STR	.0110					.0009	.02	6.14	.66		.015	.00	1.50	TRAP
3570.000	-106.571	6.215	-100.356	752.00	6.60	.68	-99.68	.00	4.63	27.64	10.000	9.000	1.50	0 .0
847.470	.0010					.0009	.72	6.21	.57	5.88	.015	.00	1.50	TRAP
4417.470	-105.722	6.021	-99.701	752.00	6.93	.75	-98.96	.00	4.63	27.06	10.000	9.000	1.50	0 .0
1786.530	.0010					.0010	1.70	6.02	.61	5.88	.015	.00	1.50	TRAP
6204.000	-103.933	5.880	-98.053	752.00	7.18	.80	-97.25	.00	4.63	26.64	10.000	9.000	1.50	0 .0
TRANS STR	.0025					.0014	.02	5.88	.64		.015	.00	1.50	TRAP
6219.000	-103.896	5.591	-98.305	752.00	9.17	1.31	-97.00	.00	4.34	14.67	10.000	14.670	.00	0 .0
WALL EXIT														
6219.000	-103.896	5.592	-98.304	752.00	9.61	1.43	-96.87	.00	4.48	14.67	7.000	14.670	.00	1 .7
80.000	.0025					.0032	.26	5.59	.73	6.31	.015	.00	.00	BOX
6299.000	-103.696	5.718	-97.978	752.00	9.39	1.37	-96.61	.00	4.48	14.67	7.000	14.670	.00	1 .7
WALL ENTRANCE														

CVWD
MDP
M01-02

	Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height/	Base Wt		No Wth

M01-02

Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	Dia.-FT	or I.D.	ZL	Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
6299.000	-103.696	6.109	-97.587	752.00	8.39	1.09	-96.49	.00	4.34	14.67	10.000	14.670	.00	0 .0
TRANS STR	.0025					.0010	.01	6.11	.60		.015	.00	.00	RECTANG
6314.000	-103.658	6.796	-96.862	752.00	5.76	.52	-96.35	.00	4.63	29.39	10.000	9.000	1.50	0 .0
100.000	.0010					.0006	.06	6.80	.48	5.88	.015	.00	1.50	TRAP
6414.000	-103.558	6.739	-96.819	752.00	5.84	.53	-96.29	.00	4.63	29.22	10.000	9.000	1.50	0 .0

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T1 CVWD                                                                    0
T2 MDP
T3 N01
SO   1155.080-179.400  1      .014               -170.300
R    1440.000-178.700  1      .014                                  .000
WE   1440.000-178.700  2      .500
TS   1470.000-178.670  3      .015
R    2970.000-177.000  3      .015
JX   3000.000-176.600  5  4   .015  106.000         -175.593         45.0
R    4475.000-175.100  5      .015
TS   4490.000-175.062 10      .015
WX   4490.000-175.062 11
R    4530.000-174.862 11      .014
WE   4530.000-174.862 10      .500
JX   4580.000-174.224 28  4   .015  600.000         -173.224         45.0
R    7130.000-171.800 28      .015
JX   7150.000-171.680  6 15   .015  599.000         -172.080         30.0
R    9740.000-169.153  6      .015
JX   9760.000-169.132  7 15   .015  120.000         -168.132         30.0
R   12460.000-166.000  7      .015
JX  12500.000-165.330  9 15   .015 1151.000         -165.530         60.0
R   15005.000-160.650  9      .015
TS  15020.000-160.300 20      .015
WX  15020.000-160.300 21
R   15060.000-160.100 21      .014
WE  15060.000-160.100 20      .500
JX  15090.000-159.500 16 15   .015  210.000         -158.500         45.0
R   17500.000-154.000 16      .015
JX  17515.000-153.853 18 17   .015  179.000         -152.953         45.0
R   20250.000-146.500 18      .015
TS  20265.000-146.374 30      .015
WX  20265.000-146.374 31      .015
R   20325.000-146.162 31      .015
WE  20325.000-146.162 30      .500
JX  20410.000-143.917 19 15   .015 1637.000         -143.900         30.0
R   22970.000-139.309 19      .015
JX  23000.000-139.243 25 17   .015  609.000         -138.243         45.0
R   25392.000-134.037 25      .015
TS  25407.000-133.502 40      .015
WX  25407.000-133.502 41
R   25447.000-133.000 41      .014
WE  25447.000-133.000 40      .500
JX  25522.000-132.340 26 15   .015 1308.000         -133.172         30.0
R   28120.000-127.900 26      .015
JX  28140.000-127.661 27 15   .015  757.000         -127.561         30.0
R   30763.000-122.300 27      .015
TS  30778.000-122.162 50      .015
WX  30778.000-122.162 51      .015
R   30818.000-121.795 51      .015
WE  30818.000-121.795 50      .500
JX  30833.000-121.257 29  4   .015  384.000         -122.857         45.0
R   33350.000-117.298 29      .015
JX  33365.000-116.271 35 15   .015  653.000         -116.271         30.0
R   35999.000-111.500 35      .015
TS  36014.000-111.393 60      .015
WX  36014.000-111.393 61
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R   36054.000-111.107 61      .015
WE  36054.000-111.107 60      .500
TS  36075.000-110.900 35      .015
R   36115.000-110.850 35      .015
SH  36115.000-110.850 35
CD   1  3   8    .670   9.000  131.360  .000  .000   .00
CD   2  2   0    .000  11.000  131.360  .000  .000   .00
CD   3  1   0    .000  11.000  125.000 1.500 1.500   .00
CD   4  4   1    .000   5.000    0.000  .000  .000   .00
CD   5  1   0    .000  10.000  115.000 1.500 1.500   .00
CD   6  1   0    .000  10.000   96.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   91.000 1.500 1.500   .00
CD   8  1   0    .000  10.000   85.000 1.500 1.500   .00
CD   9  1   0    .000  10.000   74.000 1.500 1.500   .00
CD  10  2   0    .000  10.000  116.690  .000  .000   .00
CD  11  3   7    .670   7.000  116.690  .000  .000   .00
CD  12  1   0    .000  10.000   22.000 1.500 1.500   .00
CD  13  1   0    .000  10.000   12.000 1.500 1.500   .00
CD  14  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  15  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  16  1   0    .000  10.000   71.000 1.500 1.500   .00
CD  17  4   1    .000   8.000    0.000  .000  .000   .00
CD  18  1   0    .000  10.000   67.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   87.350  .000  .000   .00
CD  21  3   5    .670   7.000   87.350  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   75.350  .000  .000   .00
CD  31  3   5    .670   7.000   75.350  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   58.010  .000  .000   .00
CD  41  3   3    .670   7.000   58.010  .000  .000   .00
CD  50  2   0    .000  10.000   24.670  .000  .000   .00
CD  51  3   1    .670   7.000   24.670  .000  .000   .00
CD  60  2   0    .000  10.000   12.000  .000  .000   .00
CD  61  3   0    .670   6.000   12.000  .000  .000   .00
Q          772.000   .0
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FILE: N01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 6- 3-2014 Time:10:47:18

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	8	.670	9.000	131.360	.000	.000	.00										
CD	2	2	0	.000	11.000	131.360			.00										
CD	3	1	0	.000	11.000	125.000	1.500	1.500	.00										
CD	4	4	1		5.000														
CD	5	1	0	.000	10.000	115.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	96.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	91.000	1.500	1.500	.00										
CD	8	1	0	.000	10.000	85.000	1.500	1.500	.00										
CD	9	1	0	.000	10.000	74.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	116.690			.00										
CD	11	3	7	.670	7.000	116.690	.000	.000	.00										
CD	12	1	0	.000	10.000	22.000	1.500	1.500	.00										
CD	13	1	0	.000	10.000	12.000	1.500	1.500	.00										
CD	14	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	15	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	16	1	0	.000	10.000	71.000	1.500	1.500	.00										
CD	17	4	1		8.000														
CD	18	1	0	.000	10.000	67.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	87.350			.00										
CD	21	3	5	.670	7.000	87.350	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	75.350			.00										
CD	31	3	5	.670	7.000	75.350	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	58.010			.00										
CD	41	3	3	.670	7.000	58.010	.000	.000	.00										
CD	50	2	0	.000	10.000	24.670			.00										
CD	51	3	1	.670	7.000	24.670	.000	.000	.00										
CD	60	2	0	.000	10.000	12.000			.00										
CD	61	3	0	.670	6.000	12.000	.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 -
N01

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
	1155.080	-179.400	1	-170.300

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

```
                                                                  N01
                          1440.000 -178.700    1                .014                          .000     .000      .000     0
 ELEMENT NO   3 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT              FP
                          1440.000 -178.700    2                .500
 ELEMENT NO   4 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS   ANGLE
                          1470.000 -178.670    3                .015                          .000     .000
 ELEMENT NO   5 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                          2970.000 -177.000    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
                          3000.000 -176.600    5     4     0   .015   106.000      .000  -175.593      .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
                          4475.000 -175.100    5                .015                          .000     .000      .000     0
 ELEMENT NO   8 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS   ANGLE
                          4490.000 -175.062   10                .015                          .000     .000
 ELEMENT NO   9 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                          4490.000 -175.062   11
 ELEMENT NO  10 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                          4530.000 -174.862   11                .014                          .000     .000      .000     0
 ELEMENT NO  11 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT              FP
                          4530.000 -174.862   10                .500
                                                  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
                          4580.000 -174.224   28     4     0   .015   600.000      .000  -173.224      .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
                          7130.000 -171.800   28                .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
                          7150.000 -171.680    6    15     0   .015   599.000      .000  -172.080      .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  15 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                          9740.000 -169.153    6                .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
                          9760.000 -169.132    7    15     0   .015   120.000      .000  -168.132      .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
	12460.000	-166.000	7	.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
	12500.000	-165.330	9	15	0	.015	1151.000	.000	-165.530	.000	60.000	.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 19 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	15005.000	-160.650	9	.015	.000	.000	.000	0

ELEMENT NO 20 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	15020.000	-160.300	20	.015	.000	.000

ELEMENT NO 21 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	15020.000	-160.300	21

ELEMENT NO 22 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	15060.000	-160.100	21	.014	.000	.000	.000	0

ELEMENT NO 23 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	15060.000	-160.100	20	.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
	15090.000	-159.500	16	15	0	.015	210.000	.000	-158.500	.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 25 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	17500.000	-154.000	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
	17515.000	-153.853	18	17	0	.015	179.000	.000	-152.953	.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
	20250.000	-146.500	18	.015	.000	.000	.000	0

ELEMENT NO 28 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	20265.000	-146.374	30	.015	.000	.000

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 29 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	20265.000	-146.374	31

ELEMENT NO 30 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	20325.000	-146.162	31	.015	.000	.000	.000	0

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 ELEMENT NO  31 IS A  WALL  ENTRANCE                    *
                    U/S DATA   STATION    INVERT  SECT              FP
                              20325.000 -146.162   30              .500
 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
                              20410.000 -143.917   19    15     0   .015  1637.000      .000  -143.900      .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  33 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                           RADIUS    ANGLE     ANG PT  MAN H
                              22970.000 -139.309   19              .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
                              23000.000 -139.243   25    17     0   .015   609.000      .000  -138.243      .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 REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                           RADIUS    ANGLE     ANG PT  MAN H
                              25392.000 -134.037   25              .015                            .000     .000      .000     0
 ELEMENT NO  36 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                           RADIUS   ANGLE
                              25407.000 -133.502   40              .015                            .000     .000
 ELEMENT NO  37 IS A  WALL  EXIT                        *
                    U/S DATA   STATION    INVERT  SECT
                              25407.000 -133.502   41
                                                  W S P G W                                                          PAGE NO   6
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  38 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                           RADIUS    ANGLE     ANG PT  MAN H
                              25447.000 -133.000   41              .014                            .000     .000      .000     0
 ELEMENT NO  39 IS A  WALL  ENTRANCE                    *
                    U/S DATA   STATION    INVERT  SECT              FP
                              25447.000 -133.000   40              .500
 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
                              25522.000 -132.340   26    15     0   .015  1308.000      .000  -133.172      .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
                              28120.000 -127.900   26              .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
                              28140.000 -127.661   27    15     0   .015   757.000      .000  -127.561      .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  43 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                           RADIUS    ANGLE     ANG PT  MAN H
                              30763.000 -122.300   27              .015                            .000     .000      .000     0
 ELEMENT NO  44 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                           RADIUS   ANGLE
                              30778.000 -122.162   50              .015                            .000     .000
```

ELEMENT NO 45 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	30778.000	-122.162	51

ELEMENT NO 46 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	30818.000	-121.795	51	.015	.000	.000	.000	0

ELEMENT NO 47 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	30818.000	-121.795	50	.500

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 48 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	30833.000	-121.257	29	4	0	.015	384.000	.000	-122.857	.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 49 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	33350.000	-117.298	29	.015	.000	.000	.000	0

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
	33365.000	-116.271	35	15	0	.015	653.000	.000	-116.271	.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 51 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	35999.000	-111.500	35	.015	.000	.000	.000	0

ELEMENT NO 52 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	36014.000	-111.393	60	.015	.000	.000

ELEMENT NO 53 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	36014.000	-111.393	61

ELEMENT NO 54 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	36054.000	-111.107	61	.015	.000	.000	.000	0

ELEMENT NO 55 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	36054.000	-111.107	60	.500

ELEMENT NO 56 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	36075.000	-110.900	35	.015	.000	.000

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 57 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	36115.000	-110.850	35	.015	.000	.000	.000	0

ELEMENT NO 58 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	36115.000	-110.850	35	.000

CVWD
MDP
N01

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
1155.080	-179.400	9.100	-170.300	9085.00	8.01	1.00	-169.30	.00	5.45	131.36	9.000	131.360	.00	8 .7
103.047	.0025					.0015	.15	9.10	.48	6.20	.014	.00	.00	BOX
1258.127	-179.147	9.000	-170.147	9085.00	8.01	1.00	-169.15	.00	5.45	131.36	9.000	131.360	.00	8 .7
181.873	.0025					.0009	.17	9.00	.48	6.20	.014	.00	.00	BOX
1440.000	-178.700	8.645	-170.055	9085.00	8.34	1.08	-168.98	.00	5.45	131.36	9.000	131.360	.00	8 .7
WALL	ENTRANCE													
		---------- WARNING - Flow depth near top of box conduit ----------												
1440.000	-178.700	8.865	-169.835	9085.00	7.80	.95	-168.89	.00	5.30	131.36	11.000	131.360	.00	0 .0
TRANS STR	.0010					.0004	.01	8.86	.46		.015	.00	.00	RECTANG
1470.000	-178.670	8.975	-169.695	9085.00	7.31	.83	-168.87	.00	5.36	151.93	11.000	125.000	1.50	0 .0
404.421	.0011					.0004	.15	8.98	.45	6.35	.015	.00	1.50	TRAP
1874.421	-178.220	8.593	-169.627	9085.00	7.67	.91	-168.71	.00	5.36	150.78	11.000	125.000	1.50	0 .0
405.354	.0011					.0004	.18	8.59	.48	6.35	.015	.00	1.50	TRAP
2279.775	-177.768	8.226	-169.543	9085.00	8.04	1.00	-168.54	.00	5.36	149.68	11.000	125.000	1.50	0 .0
412.318	.0011					.0005	.21	8.23	.52	6.35	.015	.00	1.50	TRAP
2692.093	-177.309	7.873	-169.436	9085.00	8.43	1.10	-168.33	.00	5.36	148.62	11.000	125.000	1.50	0 .0
277.907	.0011					.0006	.16	7.87	.55	6.35	.015	.00	1.50	TRAP

CVWD
MDP
N01

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
2970.000	-177.000	7.650	-169.350	9085.00	8.70	1.18	-168.17	.00	5.36	147.95	11.000	125.000	1.50	0 .0
JUNCT STR	.0133					.0008	.03	7.65	.58		.015	.00	1.50	TRAP

3000.000	-176.600	6.689	-169.911	8979.00	10.74	1.79	-168.12	.00	5.60	135.07	10.000	115.000	1.50	0 .0
1475.000	.0010				.0010	1.54	6.69	.76	6.80	.015	.00	1.50	TRAP	
4475.000	-175.100	6.792	-168.308	8979.00	10.56	1.73	-166.58	.00	5.60	135.38	10.000	115.000	1.50	0 .0
TRANS STR	.0025				.0013	.02	6.79	.74		.015	.00	1.50	TRAP	
4490.000	-175.062	6.312	-168.750	8979.00	12.19	2.31	-166.44	.00	5.69	116.69	10.000	116.690	.00	0 .0
WALL EXIT														
4490.000	-175.062	6.313	-168.749	8979.00	12.70	2.50	-166.24	.00	5.84	116.69	7.000	116.690	.00	7 .7
12.917	.0050				.0029	.04	6.31	.91	5.17	.014	.00	.00	BOX	

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

4502.917	-174.997	6.175	-168.822	8979.00	12.98	2.62	-166.21	.00	5.84	116.69	7.000	116.690	.00	7 .7
HYDRAULIC JUMP														
4502.917	-174.997	5.522	-169.475	8979.00	14.52	3.27	-166.20	.00	5.84	116.69	7.000	116.690	.00	7 .7
9.874	.0050				.0041	.04	5.52	1.11	5.17	.014	.00	.00	BOX	
4512.791	-174.948	5.571	-169.377	8979.00	14.39	3.22	-166.16	.00	5.84	116.69	7.000	116.690	.00	7 .7
17.209	.0050				.0038	.07	5.57	1.10	5.17	.014	.00	.00	BOX	

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 6- 3-2014 Time:10:47:31

CVWD
MDP
N01

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
4530.000	-174.862	5.844	-169.018	8979.00	13.72	2.92	-166.10	.00	5.84	116.69	7.000	116.690	.00	7 .7
WALL ENTRANCE														
4530.000	-174.862	7.784	-167.078	8979.00	9.89	1.52	-165.56	.00	5.69	116.69	10.000	116.690	.00	0 .0
JUNCT STR	.0128				.0008	.04	7.78	.62		.015	.00	.00	RECTANG	

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

4580.000	-174.224	7.078	-167.146	8379.00	10.24	1.63	-165.52	.00	5.67	126.23	10.000	105.000	1.50	0 .0
2159.793	.0010				.0009	2.02	7.08	.71	7.02	.015	.00	1.50	TRAP	
6739.793	-172.171	7.019	-165.152	8379.00	10.33	1.66	-163.49	.00	5.67	126.06	10.000	105.000	1.50	0 .0
390.207	.0010				.0010	.37	7.02	.72	7.02	.015	.00	1.50	TRAP	
7130.000	-171.800	7.019	-164.781	8379.00	10.33	1.66	-163.12	.00	5.67	126.06	10.000	105.000	1.50	0 .0

JUNCT STR	.0060				.0010	.02	7.02	.72		.015	.00	1.50	TRAP	
7150.000	-171.680	7.068	-164.612	7780.00	10.33	1.66	-162.96	.00	5.71	117.20	10.000	96.000	1.50	0 .0
2035.932	.0010				.0010	1.96	7.07	.72	7.02	.015	.00	1.50	TRAP	
9185.932	-169.694	7.020	-162.674	7780.00	10.40	1.68	-160.99	.00	5.71	117.06	10.000	96.000	1.50	0 .0
554.068	.0010				.0010	.54	7.02	.73	7.02	.015	.00	1.50	TRAP	
9740.000	-169.153	7.020	-162.133	7780.00	10.40	1.68	-160.45	.00	5.71	117.06	10.000	96.000	1.50	0 .0
JUNCT STR	.0010				.0011	.02	7.02	.73		.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
9760.000	-169.132	6.867	-162.265	7660.00	11.01	1.88	-160.38	.00	5.84	111.60	10.000	91.000	1.50	0 .0
1349.451	.0012				.0011	1.55	6.87	.78	6.82	.015	.00	1.50	TRAP	
11109.450	-167.567	6.816	-160.751	7660.00	11.10	1.91	-158.84	.00	5.84	111.45	10.000	91.000	1.50	0 .0
1350.549	.0012				.0012	1.57	6.82	.79	6.82	.015	.00	1.50	TRAP	
12460.000	-166.000	6.816	-159.184	7660.00	11.10	1.91	-157.27	.00	5.84	111.45	10.000	91.000	1.50	0 .0
JUNCT STR	.0167						6.82	.79		.015	.00	1.50	TRAP	
12500.000	-165.330	5.962	-159.368	6509.00	13.16	2.69	-156.68	.00	5.96	91.89	10.000	74.000	1.50	0 .0
45.603	.0019				.0019	.09	5.96	1.00	6.06	.015	.00	1.50	TRAP	
12545.600	-165.245	6.056	-159.188	6509.00	12.94	2.60	-156.59	.00	5.96	92.17	10.000	74.000	1.50	0 .0
2459.397	.0019				.0019	4.59	6.06	.98	6.06	.015	.00	1.50	TRAP	
15005.000	-160.650	6.056	-154.594	6509.00	12.94	2.60	-152.00	.00	5.96	92.17	10.000	74.000	1.50	0 .0
TRANS STR	.0233						6.06	.98		.015	.00	1.50	TRAP	
15020.000	-160.300	4.801	-155.499	6509.00	15.52	3.74	-151.76	.00	5.57	87.35	10.000	87.350	.00	0 .0
WALL	EXIT													
15020.000	-160.300	5.092	-155.208	6509.00	15.22	3.60	-151.61	.00	5.71	87.35	7.000	87.350	.00	5 .7
40.000	.0050				.0048	.19	5.09	1.21	5.04	.014	.00	.00	BOX	
15060.000	-160.100	5.107	-154.993	6509.00	15.17	3.57	-151.42	.00	5.71	87.35	7.000	87.350	.00	5 .7
WALL	ENTRANCE													

CVWD
MDP
N01

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
15060.000	-160.100	4.260	-155.840	6509.00	17.49	4.75	-151.09	.00	5.57	87.35	10.000	87.350	.00	0 .0
JUNCT STR	.0200					.0037	.11	4.26	1.49		.015	.00	.00	RECTANG
				WARNING - Junction Analysis - Change in Channel Type										
15090.000	-159.500	5.734	-153.766	6299.00	13.80	2.96	-150.81	.00	5.99	88.20	10.000	71.000	1.50	0 .0
1742.442	.0023					.0023	3.98	5.73	1.07	5.73	.015	.00	1.50	TRAP
16832.440	-155.523	5.734	-149.789	6299.00	13.80	2.96	-146.83	.00	5.99	88.20	10.000	71.000	1.50	0 .0
213.986	.0023					.0023	.49	5.73	1.07	5.73	.015	.00	1.50	TRAP
17046.430	-155.035	5.728	-149.307	6299.00	13.82	2.96	-146.34	.00	5.99	88.19	10.000	71.000	1.50	0 .0
291.154	.0023					.0025	.72	5.73	1.07	5.73	.015	.00	1.50	TRAP
17337.580	-154.371	5.487	-148.884	6299.00	14.49	3.26	-145.62	.00	5.99	87.46	10.000	71.000	1.50	0 .0
162.416	.0023					.0029	.46	5.49	1.15	5.73	.015	.00	1.50	TRAP
17500.000	-154.000	5.255	-148.745	6299.00	15.20	3.59	-145.16	.00	5.99	86.76	10.000	71.000	1.50	0 .0
JUNCT STR	.0098					.0029	.04	5.25	1.23		.015	.00	1.50	TRAP
17515.000	-153.853	5.553	-148.300	6120.00	14.63	3.32	-144.98	.00	6.08	83.66	10.000	67.000	1.50	0 .0
2068.088	.0027					.0027	5.56	5.55	1.15	5.55	.015	.00	1.50	TRAP
19583.090	-148.293	5.553	-142.740	6120.00	14.63	3.32	-139.42	.00	6.08	83.66	10.000	67.000	1.50	0 .0
394.146	.0027					.0027	1.05	5.55	1.15	5.55	.015	.00	1.50	TRAP

CVWD
MDP
N01

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
19977.230	-147.233	5.582	-141.651	6120.00	14.55	3.29	-138.37	.00	6.08	83.75	10.000	67.000	1.50	0 .0
241.100	.0027					.0025	.59	5.58	1.14	5.55	.015	.00	1.50	TRAP

20218.330	-146.585	5.826	-140.759	6120.00	13.87	2.99	-137.77	.00	6.08	84.48	10.000	67.000	1.50	0 .0
31.666	.0027				.0021	.07	5.83	1.07	5.55	.015	.00	1.50	TRAP	
20250.000	-146.500	6.081	-140.419	6120.00	13.22	2.71	-137.70	.00	6.08	85.24	10.000	67.000	1.50	0 .0
TRANS STR	.0084						6.08	1.00		.015	.00	1.50	TRAP	
20265.000	-146.374	4.572	-141.802	6120.00	17.76	4.90	-136.90	.00	5.90	75.35	10.000	75.350	.00	0 .0
WALL	EXIT													
20265.000	-146.374	4.855	-141.519	6120.00	17.51	4.76	-136.76	.00	6.08	75.35	7.000	75.350	.00	5 .7
13.848	.0035				.0085	.12	4.85	1.43	6.70	.015	.00	.00	BOX	
20278.850	-146.325	4.786	-141.539	6120.00	17.76	4.90	-136.64	.00	6.08	75.35	7.000	75.350	.00	5 .7
46.152	.0035				.0093	.43	4.79	1.46	6.70	.015	.00	.00	BOX	
20325.000	-146.162	4.563	-141.599	6120.00	18.63	5.39	-136.21	.00	6.08	75.35	7.000	75.350	.00	5 .7
WALL	ENTRANCE													
20325.000	-146.162	3.960	-142.202	6120.00	20.51	6.53	-135.67	.00	5.90	75.35	10.000	75.350	.00	0 .0
JUNCT STR	.0264				.0049	.42	3.96	1.82		.015	.00	.00	RECTANG	

---------- 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
20410.000	-143.917	6.055	-137.862	4483.00	12.97	2.61	-135.25	.00	6.06	66.17	10.000	48.000	1.50	0 .0
102.428	.0018				.0019	.20	6.06	1.00	6.27	.015	.00	1.50	TRAP	
20512.430	-143.733	6.272	-137.461	4483.00	12.45	2.41	-135.05	.00	6.06	66.82	10.000	48.000	1.50	0 .0
2426.240	.0018				.0018	4.37	6.27	.95	6.27	.015	.00	1.50	TRAP	
22938.670	-139.365	6.272	-133.094	4483.00	12.45	2.41	-130.69	.00	6.06	66.82	10.000	48.000	1.50	0 .0
HYDRAULIC JUMP														
22938.670	-139.365	5.841	-133.524	4483.00	13.52	2.84	-130.69	.00	6.06	65.52	10.000	48.000	1.50	0 .0
31.332	.0018				.0024	.07	5.84	1.06	6.27	.015	.00	1.50	TRAP	
22970.000	-139.309	5.744	-133.565	4483.00	13.78	2.95	-130.61	.00	6.06	65.23	10.000	48.000	1.50	0 .0
JUNCT STR	.0022				.0023	.07	5.74	1.09		.015	.00	1.50	TRAP	

23000.000	-139.243	6.021	-133.222	3874.00	13.12	2.67	-130.55	.00	6.12	58.06	10.000	40.000	1.50	0 .0
2349.451	.0022					.0022	5.11	6.02	1.03	6.02	.015	.00	1.50	TRAP
25349.450	-134.130	6.021	-128.108	3874.00	13.12	2.67	-125.43	.00	6.12	58.06	10.000	40.000	1.50	0 .0
42.549	.0022					.0021	.09	6.02	1.03	6.02	.015	.00	1.50	TRAP
25392.000	-134.037	6.116	-127.921	3874.00	12.88	2.58	-125.34	.00	6.12	58.35	10.000	40.000	1.50	0 .0
TRANS STR	.0357					.0015	.02	6.12	1.00		.015	.00	1.50	TRAP
25407.000	-133.502	7.114	-126.388	3874.00	9.39	1.37	-125.02	.00	5.17	58.01	10.000	58.010	.00	0 .0
WALL	EXIT													

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
25407.000	-133.502	7.114	-126.388	3874.00	9.88	1.52	-124.87	.00	5.30	58.01	7.000	58.010	.00	3 .7
11.695	.0125					.0028	.03	7.11	.67	3.37	.014	.00	.00	BOX
25418.700	-133.355	7.000	-126.355	3874.00	9.88	1.52	-124.84	.00	5.30	58.01	7.000	58.010	.00	3 .7
16.102	.0125					.0016	.03	7.00	.67	3.37	.014	.00	.00	BOX
25434.800	-133.153	6.673	-126.480	3874.00	10.37	1.67	-124.81	.00	5.30	58.01	7.000	58.010	.00	3 .7
12.203	.0125					.0019	.02	6.67	.72	3.37	.014	.00	.00	BOX
---------- WARNING - Flow depth near top of box conduit ----------														
25447.000	-133.000	6.397	-126.603	3874.00	10.81	1.82	-124.79	.00	5.30	58.01	7.000	58.010	.00	3 .7
WALL	ENTRANCE													
---------- WARNING - Flow depth near top of box conduit ----------														
25447.000	-133.000	6.854	-126.146	3874.00	9.74	1.47	-124.67	.00	5.17	58.01	10.000	58.010	.00	0 .0
JUNCT STR	.0088					.0011	.08	6.85	.66		.015	.00	.00	RECTANG
---------- WARNING - Junction Analysis - Change in Channel Type ----------														
25522.000	-132.340	6.230	-126.110	2566.00	9.96	1.54	-124.57	.00	5.35	50.69	10.000	32.000	1.50	0 .0
246.432	.0017					.0014	.34	6.23	.78	5.73	.015	.00	1.50	TRAP

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CVWD
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N01

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
25768.430	-131.919	5.991	-125.927	2566.00	10.45	1.70	-124.23	.00	5.35	49.97	10.000	32.000	1.50	0 .0
437.871	.0017					.0016	.69	5.99	.83	5.73	.015	.00	1.50	TRAP
26206.300	-131.171	5.761	-125.409	2566.00	10.96	1.86	-123.54	.00	5.35	49.28	10.000	32.000	1.50	0 .0
382.543	.0017					.0017	.65	5.76	.89	5.73	.015	.00	1.50	TRAP
26588.850	-130.517	5.732	-124.785	2566.00	11.03	1.89	-122.90	.00	5.35	49.20	10.000	32.000	1.50	0 .0
1531.156	.0017					.0017	2.61	5.73	.89	5.73	.015	.00	1.50	TRAP
28120.000	-127.900	5.732	-122.168	2566.00	11.03	1.89	-120.28	.00	5.35	49.20	10.000	32.000	1.50	0 .0
JUNCT STR	.0119					.0019	.04	5.73	.89		.015	.00	1.50	TRAP
28140.000	-127.661	5.769	-121.892	1809.00	11.34	2.00	-119.90	.00	5.61	36.31	10.000	19.000	1.50	0 .0
174.926	.0020					.0020	.36	5.77	.95	5.78	.015	.00	1.50	TRAP
28314.930	-127.303	5.780	-121.524	1809.00	11.31	1.99	-119.54	.00	5.61	36.34	10.000	19.000	1.50	0 .0
2089.748	.0020					.0020	4.27	5.78	.95	5.78	.015	.00	1.50	TRAP
30404.670	-123.032	5.780	-117.253	1809.00	11.31	1.99	-115.27	.00	5.61	36.34	10.000	19.000	1.50	0 .0
HYDRAULIC JUMP														
30404.670	-123.032	5.445	-117.588	1809.00	12.23	2.32	-115.27	.00	5.61	35.33	10.000	19.000	1.50	0 .0
45.854	.0020					.0027	.12	5.44	1.05	5.78	.015	.00	1.50	TRAP
30450.530	-122.939	5.277	-117.662	1809.00	12.74	2.52	-115.14	.00	5.61	34.83	10.000	19.000	1.50	0 .0
59.744	.0020					.0031	.18	5.28	1.11	5.78	.015	.00	1.50	TRAP

CVWD
MDP
N01

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
30510.270	-122.817	5.085	-117.731	1809.00	13.36	2.77	-114.96	.00	5.61	34.26	10.000	19.000	1.50	0 .0
63.002	.0020					.0035	.22	5.09	1.18	5.78	.015	.00	1.50	TRAP
30573.270	-122.688	4.900	-117.788	1809.00	14.01	3.05	-114.74	.00	5.61	33.70	10.000	19.000	1.50	0 .0

63.822	.0020				.0040	.26	4.90	1.26	5.78	.015	.00	1.50	TRAP	
30637.100	-122.557	4.720	-117.837	1809.00	14.69	3.35	-114.48	.00	5.61	33.16	10.000	19.000	1.50	0 .0
63.457	.0020				.0046	.29	4.72	1.34	5.78	.015	.00	1.50	TRAP	
30700.550	-122.428	4.546	-117.882	1809.00	15.41	3.69	-114.19	.00	5.61	32.64	10.000	19.000	1.50	0 .0
62.447	.0020				.0052	.33	4.55	1.43	5.78	.015	.00	1.50	TRAP	
30763.000	-122.300	4.377	-117.923	1809.00	16.16	4.06	-113.87	.00	5.61	32.13	10.000	19.000	1.50	0 .0
TRANS STR	.0092				.0052	.08	4.38	1.53		.015	.00	1.50	TRAP	
30778.000	-122.162	4.744	-117.418	1809.00	15.46	3.71	-113.71	.00	5.51	24.67	10.000	24.670	.00	0 .0
WALL	EXIT													
30778.000	-122.162	4.942	-117.220	1809.00	15.25	3.61	-113.61	.00	5.61	24.67	7.000	24.670	.00	1 .7
19.697	.0092				.0060	.12	4.94	1.23	4.30	.015	.00	.00	BOX	
30797.700	-121.981	5.098	-116.883	1809.00	14.78	3.39	-113.49	.00	5.61	24.67	7.000	24.670	.00	1 .7
15.879	.0092				.0054	.09	5.10	1.17	4.30	.015	.00	.00	BOX	
30813.580	-121.836	5.347	-116.489	1809.00	14.10	3.09	-113.40	.00	5.61	24.67	7.000	24.670	.00	1 .7
4.422	.0092				.0048	.02	5.35	1.09	4.30	.015	.00	.00	BOX	

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CVWD
MDP
N01

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
30818.000	-121.795	5.609	-116.186	1809.00	13.44	2.80	-113.38	.00	5.61	24.67	7.000	24.670	.00	1 .7
WALL	ENTRANCE													
30818.000	-121.795	6.638	-115.157	1809.00	11.05	1.89	-113.26	.00	5.51	24.67	10.000	24.670	.00	0 .0
JUNCT STR	.0359				.0014	.02	6.64	.76		.015	.00	.00	RECTANG	
---------- WARNING - Junction Analysis - Change in Channel Type ----------														
30833.000	-121.257	6.898	-114.359	1425.00	8.48	1.12	-113.24	.00	5.57	34.70	10.000	14.000	1.50	0 .0
252.652	.0016				.0011	.28	6.90	.68	6.20	.015	.00	1.50	TRAP	
31085.650	-120.860	6.671	-114.189	1425.00	8.90	1.23	-112.96	.00	5.57	34.01	10.000	14.000	1.50	0 .0
324.766	.0016				.0013	.41	6.67	.72	6.20	.015	.00	1.50	TRAP	
31410.420	-120.349	6.450	-113.899	1425.00	9.33	1.35	-112.55	.00	5.57	33.35	10.000	14.000	1.50	0 .0

637.180	.0016				.0014	.92	6.45	.77	6.20	.015	.00	1.50	TRAP	
32047.600	-119.347	6.235	-113.112	1425.00	9.79	1.49	-111.62	.00	5.57	32.70	10.000	14.000	1.50	0 .0
633.307	.0016				.0016	.99	6.23	.82	6.20	.015	.00	1.50	TRAP	
32680.900	-118.350	6.202	-112.148	1425.00	9.86	1.51	-110.64	.00	5.57	32.61	10.000	14.000	1.50	0 .0
669.096	.0016				.0016	1.05	6.20	.83	6.20	.015	.00	1.50	TRAP	
33350.000	-117.298	6.202	-111.096	1425.00	9.86	1.51	-109.59	.00	5.57	32.61	10.000	14.000	1.50	0 .0
JUNCT STR	.0685				.0016	.02	6.20	.83		.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
33365.000	-116.271	5.879	-110.392	772.00	8.86	1.22	-109.17	.00	5.30	23.64	10.000	6.000	1.50	0 .0
480.582	.0018				.0018	.84	5.88	.81	5.79	.015	.00	1.50	TRAP	
33845.580	-115.401	5.788	-109.612	772.00	9.08	1.28	-108.33	.00	5.30	23.36	10.000	6.000	1.50	0 .0
1999.234	.0018				.0018	3.62	5.79	.84	5.79	.015	.00	1.50	TRAP	
35844.820	-111.779	5.788	-105.991	772.00	9.08	1.28	-104.71	.00	5.30	23.36	10.000	6.000	1.50	0 .0
HYDRAULIC JUMP														
35844.820	-111.779	4.844	-106.936	772.00	12.01	2.24	-104.69	.00	5.30	20.53	10.000	6.000	1.50	0 .0
7.074	.0018				.0039	.03	4.84	1.20	5.79	.015	.00	1.50	TRAP	
35851.890	-111.766	4.813	-106.953	772.00	12.13	2.29	-104.67	.00	5.30	20.44	10.000	6.000	1.50	0 .0
34.211	.0018				.0042	.14	4.81	1.21	5.79	.015	.00	1.50	TRAP	
35886.100	-111.704	4.667	-107.037	772.00	12.72	2.51	-104.52	.00	5.30	20.00	10.000	6.000	1.50	0 .0
36.520	.0018				.0048	.17	4.67	1.29	5.79	.015	.00	1.50	TRAP	
35922.620	-111.638	4.524	-107.114	772.00	13.34	2.77	-104.35	.00	5.30	19.57	10.000	6.000	1.50	0 .0
37.852	.0018				.0054	.21	4.52	1.37	5.79	.015	.00	1.50	TRAP	
35960.470	-111.570	4.385	-107.184	772.00	14.00	3.04	-104.14	.00	5.30	19.16	10.000	6.000	1.50	0 .0
38.527	.0018				.0062	.24	4.39	1.45	5.79	.015	.00	1.50	TRAP	
35999.000	-111.500	4.250	-107.250	772.00	14.68	3.35	-103.90	.00	5.30	18.75	10.000	6.000	1.50	0 .0
TRANS STR	.0071				.0061	.09	4.25	1.54		.015	.00	1.50	TRAP	

CVWD
MDP
N01

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
36014.000	-111.393	4.569	-106.824	772.00	14.08	3.08	-103.75	.00	5.05	12.00	10.000	12.000	.00	0 .0
WALL	EXIT													
36014.000	-111.393	4.567	-106.826	772.00	14.09	3.08	-103.74	.00	5.05	12.00	6.000	12.000	.00	0 .7
4.609	.0071					.0056	.03	4.57	1.16	4.20	.015	.00	.00	BOX
36018.610	-111.360	4.587	-106.773	772.00	14.02	3.05	-103.72	.00	5.05	12.00	6.000	12.000	.00	0 .7
28.457	.0071					.0053	.15	4.59	1.15	4.20	.015	.00	.00	BOX
36047.070	-111.157	4.811	-106.345	772.00	13.37	2.78	-103.57	.00	5.05	12.00	6.000	12.000	.00	0 .7
6.934	.0071					.0046	.03	4.81	1.07	4.20	.015	.00	.00	BOX
WALL	ENTRANCE													
36054.000	-111.107	5.048	-106.059	772.00	12.74	2.52	-103.54	.00	5.05	12.00	10.000	12.000	.00	0 .0
TRANS STR	.0099					.0025	.05	5.05	1.00		.015	.00	.00	RECTANG
36075.000	-110.900	7.033	-103.867	772.00	6.63	.68	-103.18	.00	5.30	27.10	10.000	6.000	1.50	0 .0
40.000	.0013					.0008	.03	7.03	.56	6.31	.015	.00	1.50	TRAP
36115.000	-110.850	7.006	-103.844	772.00	6.67	.69	-103.15	.00	5.30	27.02	10.000	6.000	1.50	0 .0

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T1 CVWD                                                                                  0
T2 MDP
T3 N01-01
SO   1074.700-174.185  1      .015                -167.146
R    3545.000-171.814  1      .015                                    .000
JX   3565.000-171.794  2 12   .015  313.000         -170.794         45.0
R    6224.000-169.135  2      .015
TS   6239.000-169.098 10      .015
WX   6239.000-169.098 11
R    6279.000-168.998 11      .015
WE   6279.000-168.998 10      .500
TS   6294.000-168.461  2      .015
R    6394.000-168.361  2      .015
SH   6394.000-168.361  2
CD   1  1   0    .000  10.000   14.000 1.500 1.500   .00
CD   2  1   0    .000  10.000    9.000 1.500 1.500   .00
CD   3  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   4  1   0    .000  10.000   32.000 1.500 1.500   .00
CD   5  1   0    .000  10.000   16.000 1.500 1.500   .00
CD   6  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   14.670  .000  .000   .00
CD  11  3   1    .670   7.000   14.670  .000  .000   .00
CD  12  4   1    .000   7.000    0.000  .000  .000   .00
CD  13  4   1    .000   3.000    0.000  .000  .000   .00
CD  14  4   1    .000   5.000     .000  .000  .000   .00
CD  15  4   1    .000   8.000     .000  .000  .000   .00
CD  16  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   14.670  .000  .000   .00
CD  21  3   1    .670   7.000   14.670  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   24.670  .000  .000   .00
CD  31  3   1    .670   7.000   24.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q          907.000   .0
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FILE: N01-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 5-30-2014 Time: 6: 4:59

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	10.000	14.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	9.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	16.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	14.670			.00										
CD	11	3	1	.670	7.000	14.670	.000	.000	.00										
CD	12	4	1		7.000														
CD	13	4	1		3.000														
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	14.670			.00										
CD	21	3	1	.670	7.000	14.670	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.000	.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 -
N01-01

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
	1074.700	-174.185	1	-167.146

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
	3545.000	-171.814	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

3565.000 -171.794 2 12 0 .015 313.000 .000 -170.794 .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
	6224.000	-169.135	2	.015	.000	.000	.000	0

ELEMENT NO 5 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	6239.000	-169.098	10	.015	.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	6239.000	-169.098	11

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6279.000	-168.998	11	.015	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	
	6279.000	-168.998	10	FP .500

ELEMENT NO 9 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	6294.000	-168.461	2	.015	.000	.000

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6394.000	-168.361	2	.015	.000	.000	.000	0

ELEMENT NO 11 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	6394.000	-168.361	2	.000

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

CVWD
MDP
N01-01

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
1074.700	-174.185	7.039	-167.146	1220.00	7.06	.77	-166.37	.00	5.11	35.12	10.000	14.000	1.50	0 .0
752.839	.0010					.0008	.57	7.04	.56	6.50	.015	.00	1.50	TRAP
1827.539	-173.462	6.808	-166.655	1220.00	7.40	.85	-165.80	.00	5.11	34.42	10.000	14.000	1.50	0 .0
1407.857	.0010					.0009	1.21	6.81	.60	6.50	.015	.00	1.50	TRAP
3235.396	-172.111	6.583	-165.529	1220.00	7.76	.94	-164.59	.00	5.11	33.75	10.000	14.000	1.50	0 .0
309.604	.0010					.0009	.29	6.58	.63	6.50	.015	.00	1.50	TRAP
3545.000	-171.814	6.563	-165.251	1220.00	7.80	.94	-164.31	.00	5.11	33.69	10.000	14.000	1.50	0 .0
JUNCT STR	.0010					.0009	.02	6.56	.64		.015	.00	1.50	TRAP
3565.000	-171.794	6.809	-164.985	907.00	6.93	.75	-164.24	.00	5.12	29.43	10.000	9.000	1.50	0 .0
913.271	.0010					.0009	.78	6.81	.58	6.45	.015	.00	1.50	TRAP
4478.271	-170.881	6.600	-164.281	907.00	7.27	.82	-163.46	.00	5.12	28.80	10.000	9.000	1.50	0 .0
1745.729	.0010					.0010	1.66	6.60	.62	6.45	.015	.00	1.50	TRAP
6224.000	-169.135	6.456	-162.679	907.00	7.52	.88	-161.80	.00	5.12	28.37	10.000	9.000	1.50	0 .0
TRANS STR	.0025					.0016	.02	6.46	.64		.015	.00	1.50	TRAP
6239.000	-169.098	6.037	-163.061	907.00	10.24	1.63	-161.43	.00	4.91	14.67	10.000	14.670	.00	0 .0
WALL EXIT														
6239.000	-169.098	6.038	-163.060	907.00	10.73	1.79	-161.27	.00	5.07	14.67	7.000	14.670	.00	1 .7
40.000	.0025					.0038	.15	6.04	.79	7.00	.015	.00	.00	BOX

CVWD
MDP
N01-01

	Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height/	Base Wt		No Wth

N01-01

Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	Dia.-FT	or I.D.	ZL	Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
6279.000	-168.998	6.175	-162.823	907.00	10.49	1.71	-161.11	.00	5.07	14.67	7.000	14.670	.00	1 .7
WALL	ENTRANCE													
6279.000	-168.998	6.703	-162.295	907.00	9.22	1.32	-160.97	.00	4.91	14.67	10.000	14.670	.00	0 .0
TRANS STR	.0358					.0012	.02	6.70	.63		.015	.00	.00	RECTANG
6294.000	-168.461	6.944	-161.517	907.00	6.73	.70	-160.81	.00	5.12	29.83	10.000	9.000	1.50	0 .0
100.000	.0010					.0007	.07	6.94	.56	6.45	.015	.00	1.50	TRAP
6394.000	-168.361	6.907	-161.454	907.00	6.78	.71	-160.74	.00	5.12	29.72	10.000	9.000	1.50	0 .0

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T1 CVWD                                                                                  0
T2 MDP
T3 N01-02
SO   1055.900-143.975  1      .015                -137.862
R    3500.000-141.531  1      .015                                    .000
JX   3520.000-141.511  2 16   .015  366.000         -140.511         45.0
R    6158.000-138.873  2      .015
TS   6173.000-138.835 10      .015
WX   6173.000-138.835 11
R    6213.000-138.735 11      .015
WE   6213.000-138.735 10      .500
TS   6228.000-138.198  2      .015
R    6328.000-138.098  2      .015
SH   6328.000-138.098  2
CD   1  1   0    .000  10.000   14.000 1.500 1.500   .00
CD   2  1   0    .000  10.000    9.000 1.500 1.500   .00
CD   3  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   4  1   0    .000  10.000   32.000 1.500 1.500   .00
CD   5  1   0    .000  10.000   16.000 1.500 1.500   .00
CD   6  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   14.670  .000  .000   .00
CD  11  3   1    .670   7.000   14.670  .000  .000   .00
CD  12  4   1    .000   7.000    0.000  .000  .000   .00
CD  13  4   1    .000   3.000    0.000  .000  .000   .00
CD  14  4   1    .000   5.000     .000  .000  .000   .00
CD  15  4   1    .000   8.000     .000  .000  .000   .00
CD  16  4   1    .000   7.000     .000  .000  .000   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   14.670  .000  .000   .00
CD  21  3   1    .670   7.000   14.670  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   24.670  .000  .000   .00
CD  31  3   1    .670   7.000   24.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q          794.000   .0
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FILE: N01-02.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 6- 3-2014 Time:10: 5:24

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	10.000	14.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	9.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	16.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	14.670			.00										
CD	11	3	1	.670	7.000	14.670	.000	.000	.00										
CD	12	4	1		7.000														
CD	13	4	1		3.000														
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	4	1		7.000														
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	14.670			.00										
CD	21	3	1	.670	7.000	14.670	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.000	.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 -
N01-02

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
	1055.900	-143.975	1	-137.862

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
                             3500.000 -141.531    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
                             3520.000 -141.511    2    16     0   .015   366.000      .000  -140.511      .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
                             6158.000 -138.873    2               .015                             .000     .000      .000     0
ELEMENT NO   5 IS A TRANSITION         *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                            RADIUS   ANGLE
                             6173.000 -138.835   10               .015                             .000     .000
ELEMENT NO   6 IS A  WALL  EXIT                    *
                  U/S DATA   STATION    INVERT  SECT
                             6173.000 -138.835   11
ELEMENT NO   7 IS A REACH              *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                             6213.000 -138.735   11               .015                             .000     .000      .000     0
ELEMENT NO   8 IS A  WALL  ENTRANCE               *
                  U/S DATA   STATION    INVERT  SECT              FP
                             6213.000 -138.735   10               .500
ELEMENT NO   9 IS A TRANSITION         *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                            RADIUS   ANGLE
                             6228.000 -138.198    2               .015                             .000     .000
ELEMENT NO  10 IS A REACH              *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                            RADIUS    ANGLE     ANG PT  MAN H
                             6328.000 -138.098    2               .015                             .000     .000      .000     0
ELEMENT NO  11 IS A SYSTEM HEADWORKS                 *                       *
                  U/S DATA   STATION    INVERT  SECT                                    W S ELEV
                             6328.000 -138.098    2                                       .000
                                                W S P G W                                                        PAGE NO   3
                                 WATER SURFACE PROFILE - ELEMENT CARD LISTING
```

CVWD
MDP
N01-02

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
1055.900	-143.975	6.113	-137.862	1160.00	8.19	1.04	-136.82	.00	4.97	32.34	10.000	14.000	1.50	0 .0
1695.179	.0010					.0011	1.78	6.11	.69	6.27	.015	.00	1.50	TRAP
2751.079	-142.280	6.270	-136.010	1160.00	7.91	.97	-135.04	.00	4.97	32.81	10.000	14.000	1.50	0 .0
748.921	.0010					.0010	.75	6.27	.66	6.27	.015	.00	1.50	TRAP
3500.000	-141.531	6.270	-135.261	1160.00	7.91	.97	-134.29	.00	4.97	32.81	10.000	14.000	1.50	0 .0
JUNCT STR	.0010					.0008	.02	6.27	.66		.015	.00	1.50	TRAP
3520.000	-141.511	6.612	-134.899	794.00	6.35	.63	-134.27	.00	4.77	28.84	10.000	9.000	1.50	0 .0
539.264	.0010					.0007	.40	6.61	.54	6.04	.015	.00	1.50	TRAP
4059.264	-140.972	6.408	-134.564	794.00	6.66	.69	-133.88	.00	4.77	28.22	10.000	9.000	1.50	0 .0
806.955	.0010					.0008	.68	6.41	.57	6.04	.015	.00	1.50	TRAP
4866.219	-140.165	6.209	-133.956	794.00	6.98	.76	-133.20	.00	4.77	27.63	10.000	9.000	1.50	0 .0
1291.781	.0010					.0009	1.21	6.21	.61	6.04	.015	.00	1.50	TRAP
6158.000	-138.873	6.073	-132.800	794.00	7.22	.81	-131.99	.00	4.77	27.22	10.000	9.000	1.50	0 .0
TRANS STR	.0025					.0014	.02	6.07	.63		.015	.00	1.50	TRAP
6173.000	-138.835	5.750	-133.085	794.00	9.41	1.38	-131.71	.00	4.50	14.67	10.000	14.670	.00	0 .0
WALL EXIT														
6173.000	-138.835	5.750	-133.085	794.00	9.86	1.51	-131.57	.00	4.64	14.67	7.000	14.670	.00	1 .7
40.000	.0025					.0034	.14	5.75	.74	6.60	.015	.00	.00	BOX

CVWD
MDP
N01-02

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

N01-02

6213.000	-138.735	5.830	-132.905	794.00	9.73	1.47	-131.44	.00	4.64	14.67	7.000	14.670	.00	1	.7		
WALL	ENTRANCE																
6213.000	-138.735	6.261	-132.474	794.00	8.65	1.16	-131.31	.00	4.50	14.67	10.000	14.670	.00	0	.0		
TRANS STR	.0358					.0012	.02	6.26	.61		.015	.00	.00	RECTANG			
6228.000	-138.198	6.260	-131.938	794.00	6.90	.74	-131.20	.00	4.77	27.78	10.000	9.000	1.50	0	.0		
100.000	.0010					.0009	.09	6.26	.60	6.04	.015	.00	1.50	TRAP			
6328.000	-138.098	6.240	-131.858	794.00	6.93	.75	-131.11	.00	4.77	27.72	10.000	9.000	1.50	0	.0		

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T1 CVWD                                                                                  0
T2 MDP
T3 N01-03
SO   1043.900-132.390  1      .015                -126.110
R    3500.000-129.934  1      .015                                        .000
JX   3520.000-129.914  2 16   .015  374.000         -128.914         45.0
R    6130.000-127.304  2      .015
TS   6145.000-127.266 10      .015
WX   6145.000-127.266 11
R    6185.000-127.166 11      .015
WE   6185.000-127.166 10      .500
TS   6200.000-126.629  2      .015
R    6300.000-126.529  2      .015
SH   6300.000-126.529  2
CD   1  1   0    .000  10.000   14.000 1.500 1.500   .00
CD   2  1   0    .000  10.000    9.000 1.500 1.500   .00
CD   3  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   4  1   0    .000  10.000   32.000 1.500 1.500   .00
CD   5  1   0    .000  10.000   16.000 1.500 1.500   .00
CD   6  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   14.670  .000  .000   .00
CD  11  3   1    .670   7.000   14.670  .000  .000   .00
CD  12  4   1    .000   7.000    0.000  .000  .000   .00
CD  13  4   1    .000   3.000    0.000  .000  .000   .00
CD  14  4   1    .000   5.000     .000  .000  .000   .00
CD  15  4   1    .000   8.000     .000  .000  .000   .00
CD  16  4   1    .000   7.000     .000  .000  .000   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   14.670  .000  .000   .00
CD  21  3   1    .670   7.000   14.670  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   24.670  .000  .000   .00
CD  31  3   1    .670   7.000   24.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q          717.000   .0
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FILE: N01-03.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 6- 3-2014 Time: 1:19:49

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	14.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	9.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	16.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	14.670			.00										
CD	11	3	1	.670	7.000	14.670	.000	.000	.00										
CD	12	4	1		7.000														
CD	13	4	1		3.000														
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	4	1		7.000														
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	14.670			.00										
CD	21	3	1	.670	7.000	14.670	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.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 -
N01-03

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
	1043.900	-132.390	1	-126.110

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
	3500.000	-129.934	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

```
                                3520.000 -129.914    2    16     0   .015   374.000      .000  -128.914      .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
                                6130.000 -127.304    2              .015                          .000     .000      .000     0
 ELEMENT NO   5 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                                6145.000 -127.266   10              .015                          .000     .000
 ELEMENT NO   6 IS A  WALL  EXIT                       *
                    U/S DATA   STATION    INVERT  SECT
                                6145.000 -127.266   11
 ELEMENT NO   7 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                                6185.000 -127.166   11              .015                          .000     .000      .000     0
 ELEMENT NO   8 IS A  WALL  ENTRANCE                   *
                    U/S DATA   STATION    INVERT  SECT             FP
                                6185.000 -127.166   10              .500
 ELEMENT NO   9 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                                6200.000 -126.629    2              .015                          .000     .000
 ELEMENT NO  10 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                                6300.000 -126.529    2              .015                          .000     .000      .000     0
 ELEMENT NO  11 IS A SYSTEM HEADWORKS                  *                     *
                    U/S DATA   STATION    INVERT  SECT                                   W S ELEV
                                6300.000 -126.529    2                                       .000
                                                       W S P G W                                                   PAGE NO   3
                           WATER SURFACE PROFILE - ELEMENT CARD LISTING
```

CVWD
MDP
N01-03

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
1043.900	-132.390	6.280	-126.110	1091.00	7.42	.85	-125.26	.00	4.80	32.84	10.000	14.000	1.50	0 .0
2014.813	.0010					.0009	1.89	6.28	.62	6.07	.015	.00	1.50	TRAP
3058.713	-130.375	6.073	-124.303	1091.00	7.77	.94	-123.36	.00	4.80	32.22	10.000	14.000	1.50	0 .0
441.287	.0010					.0010	.44	6.07	.66	6.07	.015	.00	1.50	TRAP
3500.000	-129.934	6.073	-123.861	1091.00	7.77	.94	-122.92	.00	4.80	32.22	10.000	14.000	1.50	0 .0
JUNCT STR	.0010					.0008	.02	6.07	.66		.015	.00	1.50	TRAP
3520.000	-129.914	6.460	-123.454	717.00	5.94	.55	-122.91	.00	4.51	28.38	10.000	9.000	1.50	0 .0
429.541	.0010					.0007	.28	6.46	.51	5.74	.015	.00	1.50	TRAP
3949.541	-129.484	6.260	-123.224	717.00	6.23	.60	-122.62	.00	4.51	27.78	10.000	9.000	1.50	0 .0
544.241	.0010					.0008	.41	6.26	.54	5.74	.015	.00	1.50	TRAP
4493.782	-128.940	6.065	-122.875	717.00	6.53	.66	-122.21	.00	4.51	27.20	10.000	9.000	1.50	0 .0
858.525	.0010					.0009	.73	6.07	.57	5.74	.015	.00	1.50	TRAP
5352.307	-128.082	5.875	-122.206	717.00	6.85	.73	-121.48	.00	4.51	26.63	10.000	9.000	1.50	0 .0
777.692	.0010					.0009	.73	5.88	.61	5.74	.015	.00	1.50	TRAP
6130.000	-127.304	5.796	-121.508	717.00	6.99	.76	-120.75	.00	4.51	26.39	10.000	9.000	1.50	0 .0
TRANS STR	.0025					.0013	.02	5.80	.62		.015	.00	1.50	TRAP
6145.000	-127.266	5.533	-121.733	717.00	8.83	1.21	-120.52	.00	4.20	14.67	10.000	14.670	.00	0 .0
WALL EXIT														

CVWD
MDP
N01-03

Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height/	Base Wt		No Wth

Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	Dia.-FT	or I.D.	ZL	Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
6145.000	-127.266	5.534	-121.732	717.00	9.25	1.33	-120.40	.00	4.33	14.67	7.000	14.670	.00	1 .7
40.000	.0025					.0031	.12	5.53	.71	6.07	.015	.00	.00	BOX
6185.000	-127.166	5.582	-121.584	717.00	9.18	1.31	-120.28	.00	4.33	14.67	7.000	14.670	.00	1 .7
WALL	ENTRANCE													
6185.000	-127.166	5.951	-121.215	717.00	8.21	1.05	-120.17	.00	4.20	14.67	10.000	14.670	.00	0 .0
TRANS STR	.0358					.0012	.02	5.95	.59		.015	.00	.00	RECTANG
6200.000	-126.629	5.777	-120.852	717.00	7.03	.77	-120.09	.00	4.51	26.33	10.000	9.000	1.50	0 .0
100.000	.0010					.0010	.10	5.78	.63	5.74	.015	.00	1.50	TRAP
6300.000	-126.529	5.773	-120.756	717.00	7.03	.77	-119.99	.00	4.51	26.32	10.000	9.000	1.50	0 .0

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                                                                                                                  O01
T1 CVWD                                                                                                                    0
T2 MDP
T3 O01
SO   1102.900-194.000  1      .014                -181.500
R    1438.000-193.157  1      .014                                        .000
WE   1438.000-193.157  2      .500
JX   1468.000-193.083  3  4   .015  247.000         -192.083         45.0
R    2340.000-192.206  3      .015
TS   2355.000-192.169 10      .015
WX   2355.000-192.169 11
R    2395.000-192.069 11      .015
WE   2395.000-192.069 10      .500
TS   2410.000-192.031  3      .015
R    4970.000-189.471  3      .015
JX   4990.000-189.451  5  4   .015  247.000         -188.451         45.0
R    7598.000-186.843  5      .015
TS   7613.000-186.535 20      .015
WX   7613.000-186.535 21
R    7653.000-186.247 21      .015
WE   7653.000-186.247 20      .500
JX   7668.000-185.939  6 15   .015  601.000         -186.139         30.0
R   10000.000-183.500  6      .015
JX  10030.000-182.900  7 15   .015  601.000         -183.400         30.0
R   12903.000-174.800  7      .015
TS  12918.000-174.486 30      .015
WX  12918.000-174.486 31
R   12958.000-174.214 31      .015
WE  12958.000-174.214 30      .500
JX  12988.000-173.700  8  4   .015  333.000         -173.000         45.0
R   15091.000-163.330  8      .015
TS  15106.000-163.220 40      .015
WX  15106.000-163.220 41
R   15161.000-162.820 41      .015
WE  15161.000-162.820 40      .500
JX  15191.000-162.010  9  4   .015  334.000         -161.710         45.0
R   17832.000-143.234  9      .015
JX  17862.000-143.021 16 15   .015  328.000         -143.021         30.0
R   18090.000-141.400 16      .015
TS  18105.000-140.800 50      .015
WX  18105.000-140.800 51
R   18205.000-140.050 51      .015
WE  18205.000-140.050 50      .500
TS  18220.000-139.830 17      .015
R   20740.000-121.897 17      .015
JX  20770.000-120.383 17  4   .015  329.000         -119.683         45.0
R   23255.000-105.000 17      .015
TS  23270.000-104.000 60      .015
WX  23270.000-104.000 61
R   23330.000-103.350 61      .015
WE  23330.000-103.350 60      .500
JX  23370.000-102.000 17 15   .015  627.000         -102.140         30.0
R   26000.000-092.000 17      .015
JX  26020.000-091.866 18  4   .015  386.000         -090.966         45.0
R   28565.000-087.500 18      .015
TS  28580.000-087.136 70      .015
WX  28580.000-087.136 71
R   28620.000-086.900 71      .015
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WE  28620.000-086.900 70      .500
JX  28650.000-086.300 18  4   .015  386.000         -085.800         45.0
R   32790.140-081.300 18      .015
SH  32790.140-081.300 18
CD   1  3   5    .670  11.000   87.350  .000  .000   .00
CD   2  2   0    .000  14.000   87.350  .000  .000   .00
CD   3  1   0    .000  14.000   80.000 1.500 1.500   .00
CD   4  4   1    .000   5.000    0.000  .000  .000   .00
CD   5  1   0    .000  13.000   76.000 1.500 1.500   .00
CD   6  1   0    .000  10.500   72.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   54.000 1.500 1.500   .00
CD   8  1   0    .000  10.000   45.000 1.500 1.500   .00
CD   9  1   0    .000  10.000   36.000 1.500 1.500   .00
CD  10  2   0    .000  14.000   87.350  .000  .000   .00
CD  11  3   5    .670  10.000   87.350  .000  .000   .00
CD  12  1   0    .000  10.000   22.000 1.500 1.500   .00
CD  13  1   0    .000  10.000   12.000 1.500 1.500   .00
CD  14  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  15  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  16  1   0    .000  10.000   30.000 1.500 1.500   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  11.000   87.350  .000  .000   .00
CD  21  3   5    .670   8.000   87.350  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   62.680  .000  .000   .00
CD  31  3   4    .670   7.000   62.680  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   52.680  .000  .000   .00
CD  41  3   4    .670   7.000   52.680  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q         2373.000   .0
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FILE: o01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 5-15-2014 Time: 4:50:19

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	3	5	.670	11.000	87.350	.000	.000	.00										
CD	2	2	0	.000	14.000	87.350			.00										
CD	3	1	0	.000	14.000	80.000	1.500	1.500	.00										
CD	4	4	1		5.000														
CD	5	1	0	.000	13.000	76.000	1.500	1.500	.00										
CD	6	1	0	.000	10.500	72.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	54.000	1.500	1.500	.00										
CD	8	1	0	.000	10.000	45.000	1.500	1.500	.00										
CD	9	1	0	.000	10.000	36.000	1.500	1.500	.00										
CD	10	2	0	.000	14.000	87.350			.00										
CD	11	3	5	.670	10.000	87.350	.000	.000	.00										
CD	12	1	0	.000	10.000	22.000	1.500	1.500	.00										
CD	13	1	0	.000	10.000	12.000	1.500	1.500	.00										
CD	14	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	15	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	16	1	0	.000	10.000	30.000	1.500	1.500	.00										
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	11.000	87.350			.00										
CD	21	3	5	.670	8.000	87.350	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	62.680			.00										
CD	31	3	4	.670	7.000	62.680	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	52.680			.00										
CD	41	3	4	.670	7.000	52.680	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.000	.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 -
o01

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
	1102.900	-194.000	1	-181.500

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

ELEMENT NO 2 IS A REACH * * *

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                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               1438.000 -193.157    1              .014                           .000     .000      .000     0
 ELEMENT NO   3 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT             FP
                               1438.000 -193.157    2              .500
 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
                               1468.000 -193.083    3     4     0   .015   247.000      .000  -192.083      .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
                               2340.000 -192.206    3              .015                           .000     .000      .000     0
 ELEMENT NO   6 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               2355.000 -192.169   10              .015                           .000     .000
 ELEMENT NO   7 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                               2355.000 -192.169   11
 ELEMENT NO   8 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               2395.000 -192.069   11              .015                           .000     .000      .000     0
 ELEMENT NO   9 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT             FP
                               2395.000 -192.069   10              .500
 ELEMENT NO  10 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               2410.000 -192.031    3              .015                           .000     .000
 ELEMENT NO  11 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               4970.000 -189.471    3              .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
                               4990.000 -189.451    5     4     0   .015   247.000      .000  -188.451      .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
                               7598.000 -186.843    5              .015                           .000     .000      .000     0
 ELEMENT NO  14 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               7613.000 -186.535   20              .015                           .000     .000
 ELEMENT NO  15 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                               7613.000 -186.535   21
 ELEMENT NO  16 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               7653.000 -186.247   21              .015                           .000     .000      .000     0
 ELEMENT NO  17 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT             FP
                               7653.000 -186.247   20              .500
 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
```

7668.000 -185.939 6 15 0 .015 601.000 .000 -186.139 .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 19 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	10000.000	-183.500	6	.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
	10030.000	-182.900	7	15	0	.015	601.000	.000	-183.400	.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 21 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	12903.000	-174.800	7	.015	.000	.000	.000	0

ELEMENT NO 22 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	12918.000	-174.486	30	.015	.000	.000

ELEMENT NO 23 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	12918.000	-174.486	31

ELEMENT NO 24 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	12958.000	-174.214	31	.015	.000	.000	.000	0

ELEMENT NO 25 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	12958.000	-174.214	30	.500

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
	12988.000	-173.700	8	4	0	.015	333.000	.000	-173.000	.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 27 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	15091.000	-163.330	8	.015	.000	.000	.000	0

ELEMENT NO 28 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	15106.000	-163.220	40	.015	.000	.000

ELEMENT NO 29 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	15106.000	-163.220	41

ELEMENT NO 30 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	15161.000	-162.820	41	.015	.000	.000	.000	0

ELEMENT NO 31 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	15161.000	-162.820	40	.500

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
	15191.000	-162.010	9	4	0	.015	334.000	.000	-161.710	.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

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                    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
                            17832.000 -143.234    9              .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
                            17862.000 -143.021   16    15     0   .015   328.000      .000  -143.021      .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  35 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                            18090.000 -141.400   16              .015                           .000     .000      .000     0
 ELEMENT NO  36 IS A TRANSITION       *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                            18105.000 -140.800   50              .015                           .000     .000
 ELEMENT NO  37 IS A  WALL  EXIT                      *
                  U/S DATA   STATION    INVERT  SECT
                            18105.000 -140.800   51
 ELEMENT NO  38 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                            18205.000 -140.050   51              .015                           .000     .000      .000     0
 ELEMENT NO  39 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT             FP
                            18205.000 -140.050   50              .500
 ELEMENT NO  40 IS A TRANSITION       *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                            18220.000 -139.830   17              .015                           .000     .000
 ELEMENT NO  41 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                            20740.000 -121.897   17              .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
                            20770.000 -120.383   17     4     0   .015   329.000      .000  -119.683      .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
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                    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
                            23255.000 -105.000   17              .015                           .000     .000      .000     0
 ELEMENT NO  44 IS A TRANSITION       *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                            23270.000 -104.000   60              .015                           .000     .000
 ELEMENT NO  45 IS A  WALL  EXIT                      *
                  U/S DATA   STATION    INVERT  SECT
                            23270.000 -104.000   61
 ELEMENT NO  46 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                            23330.000 -103.350   61              .015                           .000     .000      .000     0
 ELEMENT NO  47 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT             FP
                            23330.000 -103.350   60              .500
 ELEMENT NO  48 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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                                                                o01
                          23370.000 -102.000   17    15     0   .015   627.000      .000  -102.140      .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  49 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          26000.000  -92.000   17              .015                            .000     .000      .000     0
 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
                          26020.000  -91.866   18     4     0   .015   386.000      .000   -90.966      .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
                          28565.000  -87.500   18              .015                            .000     .000      .000     0
 ELEMENT NO  52 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                          28580.000  -87.136   70              .015                            .000     .000
                                                   W S P G W                                                          PAGE NO   7
                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  53 IS A  WALL  EXIT                   *
                    U/S DATA   STATION    INVERT  SECT
                          28580.000  -87.136   71
 ELEMENT NO  54 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          28620.000  -86.900   71              .015                            .000     .000      .000     0
 ELEMENT NO  55 IS A  WALL  ENTRANCE               *
                    U/S DATA   STATION    INVERT  SECT             FP
                          28620.000  -86.900   70              .500
 ELEMENT NO  56 IS A JUNCTION         *         *     *     *                  *                  *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                          28650.000  -86.300   18     4     0   .015   386.000      .000   -85.800      .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
 ELEMENT NO  57 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          32790.140  -81.300   18              .015                            .000     .000      .000     0
 ELEMENT NO  58 IS A SYSTEM HEADWORKS              *                  *
                    U/S DATA   STATION    INVERT  SECT                                  W S ELEV
                          32790.140  -81.300   18                                         .000
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CVWD
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o01

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
1102.900	-194.000	12.500	-181.500	6792.00	7.35	.84	-180.66	.00	5.88	87.35	11.000	87.350	.00	5 .7
335.100	.0025					.0011	.36	12.50	.40	6.69	.014	.00	.00	BOX
1438.000	-193.157	12.016	-181.141	6792.00	7.35	.84	-180.30	.00	5.88	87.35	11.000	87.350	.00	5 .7
WALL	ENTRANCE													
1438.000	-193.157	12.351	-180.806	6792.00	6.30	.62	-180.19	.00	5.73	87.35	14.000	87.350	.00	0 .0
JUNCT STR	.0025					.0002	.01	12.35	.32		.015	.00	.00	RECTANG
---------- WARNING - Junction Analysis - Change in Channel Type ----------														
1468.000	-193.083	12.434	-180.649	6545.00	5.34	.44	-180.21	.00	5.71	117.30	14.000	80.000	1.50	0 .0
519.502	.0010					.0001	.08	12.43	.29	6.97	.015	.00	1.50	TRAP
1987.502	-192.561	11.944	-180.616	6545.00	5.60	.49	-180.13	.00	5.71	115.83	14.000	80.000	1.50	0 .0
352.498	.0010					.0002	.06	11.94	.31	6.97	.015	.00	1.50	TRAP
2340.000	-192.206	11.616	-180.590	6545.00	5.78	.52	-180.07	.00	5.71	114.85	14.000	80.000	1.50	0 .0
TRANS STR	.0025					.0002	.00	11.62	.32		.015	.00	1.50	TRAP
2355.000	-192.169	11.513	-180.656	6545.00	6.51	.66	-180.00	.00	5.59	87.35	14.000	87.350	.00	0 .0
WALL	EXIT													
2355.000	-192.169	11.514	-180.655	6545.00	7.79	.94	-179.71	.00	5.73	87.35	10.000	87.350	.00	5 .7
40.000	.0025					.0015	.06	11.51	.44	6.87	.015	.00	.00	BOX

CVWD
MDP
o01

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
2395.000	-192.069	11.473	-180.596	6545.00	7.79	.94	-179.65	.00	5.73	87.35	10.000	87.350	.00	5 .7
WALL	ENTRANCE													

2395.000	-192.069	11.975	-180.094	6545.00	6.26	.61	-179.49	.00	5.59	87.35	14.000	87.350	.00	0 .0
TRANS STR	.0025				.0002	.00	11.97	.32			.015	.00	.00	RECTANG
2410.000	-192.031	12.111	-179.920	6545.00	5.50	.47	-179.45	.00	5.71	116.33	14.000	80.000	1.50	0 .0
515.177	.0010				.0002	.08	12.11	.30	6.99	.015	.00	1.50	TRAP	
2925.177	-191.516	11.633	-179.883	6545.00	5.77	.52	-179.37	.00	5.71	114.90	14.000	80.000	1.50	0 .0
504.433	.0010				.0002	.09	11.63	.32	6.99	.015	.00	1.50	TRAP	
3429.610	-191.011	11.171	-179.840	6545.00	6.06	.57	-179.27	.00	5.71	113.51	14.000	80.000	1.50	0 .0
495.369	.0010				.0002	.11	11.17	.35	6.99	.015	.00	1.50	TRAP	
3924.979	-190.516	10.725	-179.791	6545.00	6.35	.63	-179.16	.00	5.71	112.18	14.000	80.000	1.50	0 .0
488.349	.0010				.0002	.12	10.73	.37	6.99	.015	.00	1.50	TRAP	
4413.328	-190.028	10.295	-179.733	6545.00	6.66	.69	-179.04	.00	5.71	110.89	14.000	80.000	1.50	0 .0
483.912	.0010				.0003	.14	10.30	.39	6.99	.015	.00	1.50	TRAP	
4897.239	-189.544	9.880	-179.663	6545.00	6.99	.76	-178.91	.00	5.71	109.64	14.000	80.000	1.50	0 .0
72.761	.0010				.0003	.02	9.88	.42	6.99	.015	.00	1.50	TRAP	
4970.000	-189.471	9.819	-179.652	6545.00	7.04	.77	-178.88	.00	5.71	109.46	14.000	80.000	1.50	0 .0
JUNCT STR	.0010				.0003	.01	9.82	.43			.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
4990.000	-189.451	9.775	-179.676	6298.00	7.11	.78	-178.89	.00	5.75	105.32	13.000	76.000	1.50	0 .0
483.721	.0010				.0003	.17	9.77	.43	7.03	.015	.00	1.50	TRAP	
5473.721	-188.967	9.381	-179.586	6298.00	7.45	.86	-178.72	.00	5.75	104.14	13.000	76.000	1.50	0 .0
489.923	.0010				.0004	.20	9.38	.46	7.03	.015	.00	1.50	TRAP	
5963.645	-188.477	9.001	-179.476	6298.00	7.82	.95	-178.53	.00	5.75	103.00	13.000	76.000	1.50	0 .0
504.291	.0010				.0005	.23	9.00	.49	7.03	.015	.00	1.50	TRAP	
6467.936	-187.973	8.635	-179.338	6298.00	8.20	1.04	-178.29	.00	5.75	101.91	13.000	76.000	1.50	0 .0
532.107	.0010				.0005	.28	8.64	.53	7.03	.015	.00	1.50	TRAP	

7000.043	-187.441	8.283	-179.158	6298.00	8.60	1.15	-178.01	.00	5.75	100.85	13.000	76.000	1.50	0	.0	
584.965	.0010					.0006	.36	8.28	.56	7.03	.015	.00	1.50	TRAP		
7585.008	-186.856	7.943	-178.913	6298.00	9.02	1.26	-177.65	.00	5.75	99.83	13.000	76.000	1.50	0	.0	
12.992	.0010					.0007	.01	7.94	.60	7.03	.015	.00	1.50	TRAP		
7598.000	-186.843	7.937	-178.906	6298.00	9.03	1.27	-177.64	.00	5.75	99.81	13.000	76.000	1.50	0	.0	
TRANS STR	.0205					.0007	.01	7.94	.60		.015	.00	1.50	TRAP		
7613.000	-186.535	7.568	-178.967	6298.00	9.53	1.41	-177.56	.00	5.45	87.35	11.000	87.350	.00	0	.0	
WALL	EXIT															
7613.000	-186.535	7.569	-178.966	6298.00	9.91	1.52	-177.44	.00	5.59	87.35	8.000	87.350	.00	5	.7	
37.768	.0072					.0018	.07	7.57	.65	4.54	.015	.00	.00	BOX		

WARNING - Flow depth near top of box conduit

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
7650.768	-186.263	7.217	-179.046	6298.00	10.39	1.68	-177.37	.00	5.59	87.35	8.000	87.350	.00	5 .7
2.232	.0072					.0020	.00	7.22	.69	4.54	.015	.00	.00	BOX

WARNING - Flow depth near top of box conduit

7653.000	-186.247	7.195	-179.052	6298.00	10.42	1.69	-177.37	.00	5.59	87.35	8.000	87.350	.00	5	.7	
WALL	ENTRANCE															
7653.000	-186.247	7.606	-178.641	6298.00	9.48	1.40	-177.25	.00	5.45	87.35	11.000	87.350	.00	0	.0	
JUNCT STR	.0205					.0007	.01	7.61	.61		.015	.00	.00	RECTANG		

WARNING - Junction Analysis - Change in Channel Type

7668.000	-185.939	7.605	-178.334	5697.00	8.98	1.25	-177.08	.00	5.57	94.82	10.500	72.000	1.50	0	.0	
630.127	.0010					.0007	.47	7.61	.61	6.75	.015	.00	1.50	TRAP		
8298.127	-185.280	7.293	-177.987	5697.00	9.42	1.38	-176.61	.00	5.57	93.88	10.500	72.000	1.50	0	.0	
898.022	.0010					.0009	.78	7.29	.65	6.75	.015	.00	1.50	TRAP		
9196.149	-184.341	6.991	-177.349	5697.00	9.88	1.52	-175.83	.00	5.57	92.97	10.500	72.000	1.50	0	.0	
713.140	.0010					.0010	.68	6.99	.70	6.75	.015	.00	1.50	TRAP		

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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
9909.289	-183.595	6.866	-176.729	5697.00	10.08	1.58	-175.15	.00	5.57	92.60	10.500	72.000	1.50	0 .0
HYDRAULIC JUMP														
9909.289	-183.595	4.429	-179.166	5697.00	16.36	4.15	-175.01	.00	5.57	85.29	10.500	72.000	1.50	0 .0
28.782	.0010					.0045	.13	4.43	1.43	6.75	.015	.00	1.50	TRAP
9938.071	-183.565	4.343	-179.222	5697.00	16.71	4.33	-174.89	.00	5.57	85.03	10.500	72.000	1.50	0 .0
61.929	.0010					.0050	.31	4.34	1.47	6.75	.015	.00	1.50	TRAP
10000.000	-183.500	4.156	-179.344	5697.00	17.52	4.77	-174.58	.00	5.57	84.47	10.500	72.000	1.50	0 .0
JUNCT STR	.0200					.0041	.12	4.16	1.57		.015	.00	1.50	TRAP
10030.000	-182.900	5.556	-177.344	5096.00	14.71	3.36	-173.98	.00	6.14	70.67	10.000	54.000	1.50	0 .0
2487.672	.0028					.0028	7.01	5.56	1.17	5.56	.015	.00	1.50	TRAP
12517.670	-175.886	5.556	-170.330	5096.00	14.71	3.36	-166.97	.00	6.14	70.67	10.000	54.000	1.50	0 .0
385.328	.0028					.0027	1.04	5.56	1.17	5.56	.015	.00	1.50	TRAP
12903.000	-174.800	5.706	-169.094	5096.00	14.28	3.16	-165.93	.00	6.14	71.12	10.000	54.000	1.50	0 .0
TRANS STR	.0209					.0040	.06	5.71	1.12		.015	.00	1.50	TRAP
12918.000	-174.486	4.505	-169.981	5096.00	18.05	5.06	-164.92	.00	5.90	62.68	10.000	62.680	.00	0 .0
WALL EXIT														
12918.000	-174.486	4.767	-169.719	5096.00	17.82	4.93	-164.79	.00	6.07	62.68	7.000	62.680	.00	4 .7
40.000	.0068					.0090	.36	4.77	1.47	5.24	.015	.00	.00	BOX

CVWD
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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
12958.000	-174.214	4.689	-169.525	5096.00	18.11	5.09	-164.43	.00	6.07	62.68	7.000	62.680	.00	4 .7
WALL ENTRANCE														

12958.000	-174.214	4.064	-170.150	5096.00	20.00	6.21	-163.94	.00	5.90	62.68	10.000	62.680	.00	0 .0
JUNCT STR	.0171					.0062	.18	4.06	1.75		.015	.00	.00	RECTANG

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

12988.000	-173.700	5.022	-168.678	4763.00	18.05	5.06	-163.62	.00	6.52	60.07	10.000	45.000	1.50	0 .0
355.045	.0049					.0049	1.75	5.02	1.52	5.02	.015	.00	1.50	TRAP
13343.040	-171.949	5.022	-166.927	4763.00	18.05	5.06	-161.87	.00	6.52	60.07	10.000	45.000	1.50	0 .0
773.923	.0049					.0049	3.79	5.02	1.52	5.02	.015	.00	1.50	TRAP
14116.970	-168.133	5.041	-163.092	4763.00	17.98	5.02	-158.07	.00	6.52	60.12	10.000	45.000	1.50	0 .0
628.944	.0049					.0045	2.86	5.04	1.51	5.02	.015	.00	1.50	TRAP
14745.910	-165.032	5.255	-159.777	4763.00	17.14	4.56	-155.21	.00	6.52	60.76	10.000	45.000	1.50	0 .0
194.947	.0049					.0039	.77	5.25	1.41	5.02	.015	.00	1.50	TRAP
14940.860	-164.070	5.476	-158.594	4763.00	16.34	4.15	-154.45	.00	6.52	61.43	10.000	45.000	1.50	0 .0
97.153	.0049					.0034	.33	5.48	1.32	5.02	.015	.00	1.50	TRAP
15038.010	-163.591	5.707	-157.885	4763.00	15.58	3.77	-154.11	.00	6.52	62.12	10.000	45.000	1.50	0 .0
52.987	.0049					.0030	.16	5.71	1.24	5.02	.015	.00	1.50	TRAP

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 5-15-2014 Time: 4:50:27

CVWD
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o01

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
15091.000	-163.330	5.946	-157.384	4763.00	14.86	3.43	-153.96	.00	6.52	62.84	10.000	45.000	1.50	0 .0
TRANS STR	.0073					.0047	.07	5.95	1.16		.015	.00	1.50	TRAP
15106.000	-163.220	4.537	-158.683	4763.00	19.93	6.17	-152.52	.00	6.33	52.68	10.000	52.680	.00	0 .0
WALL	EXIT													
15106.000	-163.220	4.840	-158.380	4763.00	19.68	6.01	-152.36	.00	6.56	52.68	7.000	52.680	.00	4 .7
55.000	.0073					.0125	.69	4.84	1.62	5.83	.015	.00	.00	BOX
15161.000	-162.820	4.663	-158.157	4763.00	20.43	6.48	-151.68	.00	6.56	52.68	7.000	52.680	.00	4 .7
WALL	ENTRANCE													
15161.000	-162.820	4.014	-158.806	4763.00	22.53	7.88	-150.93	.00	6.33	52.68	10.000	52.680	.00	0 .0
JUNCT STR	.0270					.0085	.25	4.01	1.98		.015	.00	.00	RECTANG

WARNING - Junction Analysis - Change in Channel Type

15191.000	-162.010	4.893	-157.117	4429.00	20.88	6.77	-150.34	.00	7.02	50.68	10.000	36.000	1.50	0 .0
808.168	.0071				.0071	5.75	4.89	1.80	4.89	.015	.00	1.50	TRAP	
15999.170	-156.264	4.893	-151.371	4429.00	20.88	6.77	-144.60	.00	7.02	50.68	10.000	36.000	1.50	0 .0
892.283	.0071				.0070	6.25	4.89	1.80	4.89	.015	.00	1.50	TRAP	
16891.450	-149.921	4.937	-144.983	4429.00	20.67	6.63	-138.35	.00	7.02	50.81	10.000	36.000	1.50	0 .0
594.498	.0071				.0064	3.83	4.94	1.77	4.89	.015	.00	1.50	TRAP	

CVWD
MDP
o01

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
17485.950	-145.694	5.142	-140.552	4429.00	19.70	6.03	-134.52	.00	7.02	51.43	10.000	36.000	1.50	0 .0
221.967	.0071				.0056	1.24	5.14	1.66	4.89	.015	.00	1.50	TRAP	
17707.920	-144.116	5.354	-138.762	4429.00	18.79	5.48	-133.28	.00	7.02	52.06	10.000	36.000	1.50	0 .0
124.084	.0071				.0049	.60	5.35	1.56	4.89	.015	.00	1.50	TRAP	
17832.000	-143.234	5.574	-137.660	4429.00	17.91	4.98	-132.68	.00	7.02	52.72	10.000	36.000	1.50	0 .0
JUNCT STR	.0071				.0048	.14	5.57	1.46		.015	.00	1.50	TRAP	
17862.000	-143.021	5.684	-137.337	4101.00	18.73	5.45	-131.89	.00	7.33	47.05	10.000	30.000	1.50	0 .0
99.502	.0071				.0048	.48	5.68	1.53	5.16	.015	.00	1.50	TRAP	
17961.500	-142.314	5.874	-136.439	4101.00	17.99	5.02	-131.42	.00	7.33	47.62	10.000	30.000	1.50	0 .0
77.490	.0071				.0042	.33	5.87	1.45	5.16	.015	.00	1.50	TRAP	
18038.990	-141.763	6.106	-135.656	4101.00	17.15	4.57	-131.09	.00	7.33	48.32	10.000	30.000	1.50	0 .0
51.008	.0071				.0037	.19	6.11	1.36	5.16	.015	.00	1.50	TRAP	
18090.000	-141.400	6.346	-135.054	4101.00	16.35	4.15	-130.90	.00	7.33	49.04	10.000	30.000	1.50	0 .0
TRANS STR	.0400				.0055	.08	6.35	1.27		.015	.00	1.50	TRAP	
18105.000	-140.800	4.558	-136.242	4101.00	20.76	6.69	-129.55	.00	6.53	43.34	10.000	43.340	.00	0 .0
WALL EXIT														
18105.000	-140.800	4.734	-136.066	4101.00	20.62	6.60	-129.46	.00	6.67	43.34	7.000	43.340	.00	2 .7
100.000	.0075				.0116	1.16	4.73	1.70	5.41	.015	.00	.00	BOX	

CVWD
MDP
o01

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
18205.000	-140.050	4.528	-135.522	4101.00	21.56	7.22	-128.30	.00	6.67	43.34	7.000	43.340	.00	2 .7
WALL	ENTRANCE													
18205.000	-140.050	4.148	-135.902	4101.00	22.81	8.08	-127.82	.00	6.53	43.34	10.000	43.340	.00	0 .0
TRANS STR	.0147					.0086	.13	4.15	1.97		.015	.00	.00	RECTANG
18220.000	-139.830	5.344	-134.486	4101.00	21.31	7.05	-127.44	.00	7.57	44.03	10.000	28.000	1.50	0 .0
1574.627	.0071					.0071	11.21	5.34	1.80	5.34	.015	.00	1.50	TRAP
19794.630	-128.625	5.344	-123.281	4101.00	21.31	7.05	-116.23	.00	7.57	44.03	10.000	28.000	1.50	0 .0
945.373	.0071					.0071	6.70	5.34	1.80	5.34	.015	.00	1.50	TRAP
20740.000	-121.897	5.357	-116.540	4101.00	21.24	7.01	-109.53	.00	7.57	44.07	10.000	28.000	1.50	0 .0
JUNCT STR	.0505					.0066	.20	5.36	1.79		.015	.00	1.50	TRAP
20770.000	-120.383	5.302	-115.081	3772.00	19.79	6.08	-109.00	.00	7.21	43.90	10.000	28.000	1.50	0 .0
965.523	.0062					.0062	5.98	5.30	1.67	5.30	.015	.00	1.50	TRAP
21735.520	-114.406	5.302	-109.104	3772.00	19.79	6.08	-103.02	.00	7.21	43.90	10.000	28.000	1.50	0 .0
866.041	.0062					.0059	5.13	5.30	1.67	5.30	.015	.00	1.50	TRAP
22601.560	-109.045	5.436	-103.609	3772.00	19.19	5.72	-97.89	.00	7.21	44.31	10.000	28.000	1.50	0 .0
343.479	.0062					.0053	1.82	5.44	1.61	5.30	.015	.00	1.50	TRAP
22945.040	-106.919	5.651	-101.268	3772.00	18.30	5.20	-96.07	.00	7.21	44.95	10.000	28.000	1.50	0 .0
159.814	.0062					.0046	.74	5.65	1.51	5.30	.015	.00	1.50	TRAP

CVWD
MDP
o01

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

23104.860	-105.929	5.873	-100.056	3772.00	17.45	4.73	-95.33	.00	7.21	45.62	10.000	28.000	1.50	0	.0
92.719	.0062					.0040	.37	5.87	1.41	5.30	.015	.00	1.50	TRAP	
23197.580	-105.355	6.103	-99.253	3772.00	16.64	4.30	-94.96	.00	7.21	46.31	10.000	28.000	1.50	0	.0
57.424	.0062					.0035	.20	6.10	1.32	5.30	.015	.00	1.50	TRAP	
23255.000	-105.000	6.340	-98.660	3772.00	15.86	3.91	-94.75	.00	7.21	47.02	10.000	28.000	1.50	0	.0
TRANS STR	.0667					.0040	.06	6.34	1.24		.015	.00	1.50	TRAP	
23270.000	-104.000	5.014	-98.986	3772.00	17.36	4.68	-94.31	.00	6.17	43.34	10.000	43.340	.00	0	.0
WALL	EXIT														
23270.000	-104.000	5.236	-98.764	3772.00	17.15	4.57	-94.20	.00	6.31	43.34	7.000	43.340	.00	2	.7
5.055	.0108					.0069	.03	5.24	1.34	4.46	.015	.00	.00	BOX	
23275.050	-103.945	5.264	-98.682	3772.00	17.06	4.52	-94.16	.00	6.31	43.34	7.000	43.340	.00	2	.7
34.916	.0108					.0064	.22	5.26	1.33	4.46	.015	.00	.00	BOX	
23309.970	-103.567	5.521	-98.046	3772.00	16.27	4.11	-93.94	.00	6.31	43.34	7.000	43.340	.00	2	.7
20.029	.0108					.0056	.11	5.52	1.24	4.46	.015	.00	.00	BOX	
23330.000	-103.350	5.790	-97.560	3772.00	15.51	3.74	-93.82	.00	6.31	43.34	7.000	43.340	.00	2	.7
WALL	ENTRANCE														
23330.000	-103.350	4.898	-98.452	3772.00	17.77	4.90	-93.55	.00	6.17	43.34	10.000	43.340	.00	0	.0
JUNCT STR	.0337					.0044	.18	4.90	1.41		.015	.00	.00	RECTANG	

---------- 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
23370.000	-102.000	5.491	-96.509	3145.00	15.81	3.88	-92.63	.00	6.48	44.47	10.000	28.000	1.50	0	.0
1872.457	.0038					.0038	7.12	5.49	1.32	5.49	.015	.00	1.50	TRAP	
25242.460	-94.880	5.491	-89.390	3145.00	15.81	3.88	-85.51	.00	6.48	44.47	10.000	28.000	1.50	0	.0
559.008	.0038					.0036	1.99	5.49	1.32	5.49	.015	.00	1.50	TRAP	
25801.460	-92.755	5.701	-87.054	3145.00	15.09	3.54	-83.52	.00	6.48	45.10	10.000	28.000	1.50	0	.0
142.270	.0038					.0031	.44	5.70	1.24	5.49	.015	.00	1.50	TRAP	

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25943.730   -92.214    5.925   -86.289   3145.00   14.39    3.22   -83.07     .00    6.48    45.77   10.000   28.000  1.50   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
   56.266    .0038                                          .0027      .15    5.92    1.16    5.49    .015      .00  1.50  TRAP
         |         |        |         |         |          |         |        |        |        |        |        |        |
26000.000   -92.000    6.156   -85.844   3145.00   13.72    2.92   -82.92     .00    6.48    46.47   10.000   28.000  1.50   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
JUNCT STR   .0067                                          .0023      .05    6.16    1.09            .015      .00  1.50  TRAP
         |         |        |         |         |          |         |        |        |        |        |        |        |
26020.000   -91.866    6.451   -85.415   2759.00   12.70    2.50   -82.91     .00    6.45    43.35   10.000   24.000  1.50   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
   49.697    .0017                                          .0020      .10    6.45    1.00    6.86    .015      .00  1.50  TRAP
         |         |        |         |         |          |         |        |        |        |        |        |        |
26069.700   -91.781    6.694   -85.087   2759.00   12.11    2.28   -82.81     .00    6.45    44.08   10.000   24.000  1.50   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
  325.637    .0017                                          .0018      .59    6.69     .94    6.86    .015      .00  1.50  TRAP
         |         |        |         |         |          |         |        |        |        |        |        |        |
26395.330   -91.222    6.863   -84.359   2759.00   11.72    2.13   -82.23     .00    6.45    44.59   10.000   24.000  1.50   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
 2169.666    .0017                                          .0017     3.72    6.86     .90    6.86    .015      .00  1.50  TRAP
 FILE: o01.WSW                          W S P G W - CIVILDESIGN Version 14.06                                    PAGE   12
                          Program Package Serial Number: 1585
                                          WATER SURFACE PROFILE LISTING                  Date: 5-15-2014  Time: 4:50:27
                      CVWD
                        MDP
                          O01
************************************************************************************************************************ ********
         | Invert  |  Depth |  Water  |    Q    |  Vel     Vel  |  Energy | Super |Critical|Flow Top|Height/|Base Wt|      |No Wth
 Station |  Elev   |  (FT)  |  Elev   |  (CFS)  | (FPS)    Head |  Grd.El.|  Elev | Depth  | Width  |Dia.-FT|or I.D.|  ZL  |Prs/Pip
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-    -|
 L/Elem  |Ch Slope |        |         |         |        SF Ave|    HF   |SE Dpth|Froude N|Norm Dp |  "N"  | X-Fall|  ZR  |Type Ch
*********|*********|********|*********|*********|*******|*******|*********|*******|********|********|*******|*******|*****|*******
         |         |        |         |         |          |         |        |        |        |        |        |        |
28565.000   -87.500    6.863   -80.637   2759.00   11.72    2.13   -78.50     .00    6.45    44.59   10.000   24.000  1.50   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
TRANS STR   .0243                                          .0015      .02    6.86     .90            .015      .00  1.50  TRAP
         |         |        |         |         |          |         |        |        |        |        |        |        |
28580.000   -87.136    7.067   -80.069   2759.00   10.46    1.70   -78.37     .00    5.54    37.34   10.000   37.340   .00   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
 WALL  EXIT
         |         |        |         |         |          |         |        |        |        |        |        |        |
28580.000   -87.136    7.068   -80.068   2759.00   10.95    1.86   -78.21     .00    5.67    37.34    7.000   37.340   .00   2   .7
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
   40.000    .0059                                          .0042      .17    7.07     .74    5.12    .015      .00   .00  BOX
         |         |        |         |         |          |         |        |        |        |        |        |        |
28620.000   -86.900    7.002   -79.898   2759.00   10.95    1.86   -78.04     .00    5.67    37.34    7.000   37.340   .00   2   .7
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
 WALL  ENTRANCE
         |         |        |         |         |          |         |        |        |        |        |        |        |
28620.000   -86.900    7.583   -79.317   2759.00    9.74    1.47   -77.84     .00    5.54    37.34   10.000   37.340   .00   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
JUNCT STR   .0200                                          .0011      .03    7.58     .62            .015      .00   .00  RECTANG
                   -------------------- WARNING - Junction Analysis - Change in Channel Type ---------------
         |         |        |         |         |          |         |        |        |        |        |        |        |
28650.000   -86.300    6.980   -79.320   2373.00    9.86    1.51   -77.81     .00    5.90    44.94   10.000   24.000  1.50   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
 1270.938    .0012                                          .0012     1.52    6.98     .75    6.96    .015      .00  1.50  TRAP
         |         |        |         |         |          |         |        |        |        |        |        |        |
29920.940   -84.765    6.957   -77.808   2373.00    9.91    1.52   -76.28     .00    5.90    44.87   10.000   24.000  1.50   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
 2869.203    .0012                                          .0012     3.46    6.96     .76    6.96    .015      .00  1.50  TRAP
         |         |        |         |         |          |         |        |        |        |        |        |        |
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o01

32790.140 -81.300 6.957 -74.343 2373.00 9.91 1.52 -72.82 .00 5.90 44.87 10.000 24.000 1.50 0 .0

-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-

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T1 CVWD                                                                                  0
T2 MDP
T3 O01-01
SO   1051.900-141.133  1      .015                -137.337
R    1250.000-134.000  1      .015
R    2780.000-116.000  1      .015
JX   2800.000-114.710  1 16   .015  190.000         -116.710         45.0
R    5393.000-077.991  1      .015
TS   5408.000-077.790 10      .015
WX   5408.000-077.790 11
R    5448.000-077.254 11      .015
WE   5448.000-077.254 10      .500
TS   5463.000-076.500  1      .015
R    5563.000-076.300  1      .015
SH   5563.000-076.300  1
CD   1  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   2  1   0    .000  10.000    9.000 1.500 1.500   .00
CD   3  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   4  1   0    .000  10.000   32.000 1.500 1.500   .00
CD   5  1   0    .000  10.000   16.000 1.500 1.500   .00
CD   6  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   12.000  .000  .000   .00
CD  11  3   0    .000   6.000   12.000  .000  .000   .00
CD  12  4   1    .000   5.000    0.000  .000  .000   .00
CD  13  4   1    .000   3.000    0.000  .000  .000   .00
CD  14  4   1    .000   5.000     .000  .000  .000   .00
CD  15  4   1    .000   8.000     .000  .000  .000   .00
CD  16  4   1    .000   6.000     .000  .000  .000   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   12.670  .000  .000   .00
CD  21  3   1    .670   6.000   12.670  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   24.670  .000  .000   .00
CD  31  3   1    .670   7.000   24.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q          845.000   .0
```

FILE: O01-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 6- 6-2014 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	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	9.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	16.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	12.000			.00										
CD	11	3	0	.000	6.000	12.000	.000	.000	.00										
CD	12	4	1		5.000														
CD	13	4	1		3.000														
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	4	1		6.000														
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	12.670			.00										
CD	21	3	1	.670	6.000	12.670	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.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 -
O01-01

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
	1051.900	-141.133	1	-137.337

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
                               1250.000 -134.000    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
                               2780.000 -116.000    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
                               2800.000 -114.710    1    16     0   .015   190.000      .000  -116.710      .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
                               5393.000  -77.991    1              .015                           .000     .000      .000     0
 ELEMENT NO   6 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               5408.000  -77.790   10              .015                           .000     .000
 ELEMENT NO   7 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                               5408.000  -77.790   11
 ELEMENT NO   8 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               5448.000  -77.254   11              .015                           .000     .000      .000     0
 ELEMENT NO   9 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT             FP
                               5448.000  -77.254   10              .500
 ELEMENT NO  10 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               5463.000  -76.500    1              .015                           .000     .000
 ELEMENT NO  11 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               5563.000  -76.300    1              .015                           .000     .000      .000     0
                                                      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
                               5563.000  -76.300    1                                      .000
```

CVWD
MDP
O01-01

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
1051.900	-141.133	3.568	-137.565	1035.00	25.55	10.14	-127.43	.00	6.14	16.70	10.000	6.000	1.50	0 .0
34.211	.0360					.0232	.79	3.57	2.89	3.22	.015	.00	1.50	TRAP
1086.111	-139.901	3.630	-136.271	1035.00	24.91	9.64	-126.63	.00	6.14	16.89	10.000	6.000	1.50	0 .0
50.689	.0360					.0211	1.07	3.63	2.80	3.22	.015	.00	1.50	TRAP
1136.800	-138.076	3.749	-134.327	1035.00	23.75	8.76	-125.57	.00	6.14	17.25	10.000	6.000	1.50	0 .0
38.555	.0360					.0185	.71	3.75	2.63	3.22	.015	.00	1.50	TRAP
1175.356	-136.688	3.871	-132.817	1035.00	22.65	7.97	-124.85	.00	6.14	17.61	10.000	6.000	1.50	0 .0
30.341	.0360					.0163	.49	3.87	2.48	3.22	.015	.00	1.50	TRAP
1205.697	-135.595	3.996	-131.599	1035.00	21.60	7.24	-124.36	.00	6.14	17.99	10.000	6.000	1.50	0 .0
24.402	.0360					.0143	.35	4.00	2.33	3.22	.015	.00	1.50	TRAP
1230.099	-134.717	4.125	-130.592	1035.00	20.59	6.58	-124.01	.00	6.14	18.37	10.000	6.000	1.50	0 .0
19.901	.0360					.0126	.25	4.12	2.19	3.22	.015	.00	1.50	TRAP
1250.000	-134.000	4.257	-129.743	1035.00	19.63	5.98	-123.76	.00	6.14	18.77	10.000	6.000	1.50	0 .0
566.266	.0118					.0118	6.66	4.26	2.06	4.26	.015	.00	1.50	TRAP
1816.266	-127.338	4.257	-123.081	1035.00	19.63	5.98	-117.10	.00	6.14	18.77	10.000	6.000	1.50	0 .0
575.919	.0118					.0114	6.55	4.26	2.06	4.26	.015	.00	1.50	TRAP
2392.185	-120.563	4.328	-116.235	1035.00	19.15	5.69	-110.54	.00	6.14	18.98	10.000	6.000	1.50	0 .0
264.962	.0118					.0103	2.74	4.33	2.00	4.26	.015	.00	1.50	TRAP

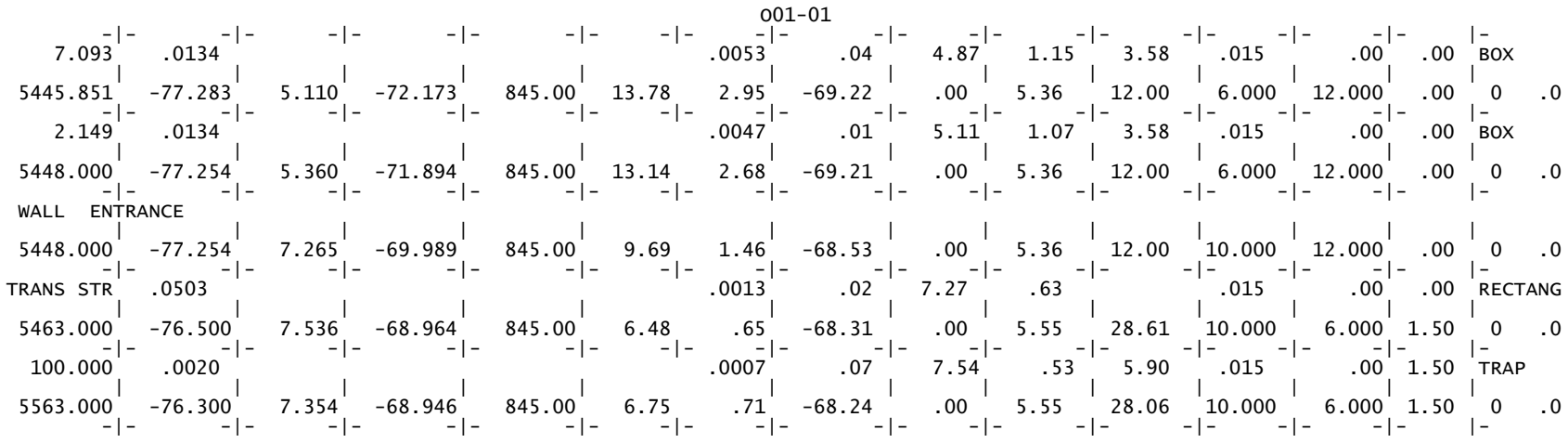
CVWD
MDP
O01-01

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

2657.147	-117.445	4.465	-112.980	1035.00	18.25	5.17	-107.81	.00	6.14	19.40	10.000	6.000	1.50	0	.0
122.853	.0118					.0091	1.12	4.47	1.88	4.26	.015	.00	1.50	TRAP	
2780.000	-116.000	4.606	-111.394	1035.00	17.41	4.70	-106.69	.00	6.14	19.82	10.000	6.000	1.50	0	.0
JUNCT STR	.0645					.0113	.23	4.61	1.77		.015	.00	1.50	TRAP	
2800.000	-114.710	3.679	-111.031	845.00	19.94	6.17	-104.86	.00	5.55	17.04	10.000	6.000	1.50	0	.0
1450.622	.0142					.0142	20.54	3.68	2.23	3.68	.015	.00	1.50	TRAP	
4250.621	-94.168	3.679	-90.489	845.00	19.94	6.17	-84.31	.00	5.55	17.04	10.000	6.000	1.50	0	.0
515.793	.0142					.0140	7.21	3.68	2.23	3.68	.015	.00	1.50	TRAP	
4766.414	-86.864	3.703	-83.161	845.00	19.75	6.06	-77.10	.00	5.55	17.11	10.000	6.000	1.50	0	.0
358.750	.0142					.0130	4.65	3.70	2.20	3.68	.015	.00	1.50	TRAP	
5125.164	-81.784	3.824	-77.960	845.00	18.83	5.51	-72.45	.00	5.55	17.47	10.000	6.000	1.50	0	.0
136.014	.0142					.0114	1.55	3.82	2.07	3.68	.015	.00	1.50	TRAP	
5261.177	-79.858	3.948	-75.910	845.00	17.95	5.01	-70.90	.00	5.55	17.84	10.000	6.000	1.50	0	.0
79.019	.0142					.0100	.79	3.95	1.95	3.68	.015	.00	1.50	TRAP	
5340.196	-78.739	4.075	-74.664	845.00	17.12	4.55	-70.11	.00	5.55	18.23	10.000	6.000	1.50	0	.0
52.804	.0142					.0088	.46	4.08	1.83	3.68	.015	.00	1.50	TRAP	
5393.000	-77.991	4.206	-73.785	845.00	16.32	4.14	-69.65	.00	5.55	18.62	10.000	6.000	1.50	0	.0
TRANS STR	.0134					.0077	.12	4.21	1.72		.015	.00	1.50	TRAP	

CVWD
MDP
O01-01

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
5408.000	-77.790	4.466	-73.324	845.00	15.77	3.86	-69.46	.00	5.36	12.00	10.000	12.000	.00	0 .0
WALL	EXIT													
5408.000	-77.790	4.465	-73.325	845.00	15.77	3.86	-69.46	.00	5.36	12.00	6.000	12.000	.00	0 .0
17.394	.0134					.0069	.12	4.46	1.32	3.58	.015	.00	.00	BOX
5425.394	-77.557	4.645	-72.912	845.00	15.16	3.57	-69.34	.00	5.36	12.00	6.000	12.000	.00	0 .0
13.365	.0134					.0061	.08	4.65	1.24	3.58	.015	.00	.00	BOX
5438.758	-77.378	4.872	-72.506	845.00	14.45	3.24	-69.26	.00	5.36	12.00	6.000	12.000	.00	0 .0


O01-01
7.093 .0134 .0053 .04 4.87 1.15 3.58 .015 .00 .00 BOX
5445.851 -77.283 5.110 -72.173 845.00 13.78 2.95 -69.22 .00 5.36 12.00 6.000 12.000 .00 0 .0
2.149 .0134 .0047 .01 5.11 1.07 3.58 .015 .00 .00 BOX
5448.000 -77.254 5.360 -71.894 845.00 13.14 2.68 -69.21 .00 5.36 12.00 6.000 12.000 .00 0 .0
WALL ENTRANCE
5448.000 -77.254 7.265 -69.989 845.00 9.69 1.46 -68.53 .00 5.36 12.00 10.000 12.000 .00 0 .0
TRANS STR .0503 .0013 .02 7.27 .63 .015 .00 .00 RECTANG
5463.000 -76.500 7.536 -68.964 845.00 6.48 .65 -68.31 .00 5.55 28.61 10.000 6.000 1.50 0 .0
100.000 .0020 .0007 .07 7.54 .53 5.90 .015 .00 1.50 TRAP
5563.000 -76.300 7.354 -68.946 845.00 6.75 .71 -68.24 .00 5.55 28.06 10.000 6.000 1.50 0 .0

```
T1 CVWD                                                                                  0
T2 MDP
T3 O02
SO   1046.170-182.100  1      .014                -177.100
R    1250.000-181.000  1      .014                                    .000
WE   1250.000-181.000  2      .500
TS   1270.000-179.575  3      .015
R    3800.000-165.219  3      .015
JX   3815.000-163.719  3  4   .015  414.000         -162.719         45.0
R    6425.000-150.383  3      .015
TS   6440.000-150.307 10      .015
WX   6440.000-150.307 11
R    6480.000-150.102 11      .014
WE   6480.000-150.102 10      .500
TS   6495.000-149.500  3      .015
R    6527.030-149.349  3      .015
SH   6527.030-149.349  3
CD   1  3   1    .670   6.000   16.670  .000  .000   .00
CD   2  2   0    .000  10.000   16.670  .000  .000   .00
CD   3  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   4  4   1    .000   6.000    0.000  .000  .000   .00
CD   5  1   0    .000  13.000   76.000 1.500 1.500   .00
CD   6  1   0    .000  10.500   72.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   54.000 1.500 1.500   .00
CD   8  1   0    .000  10.000   45.000 1.500 1.500   .00
CD   9  1   0    .000  10.000   36.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   12.000  .000  .000   .00
CD  11  3   0    .670   6.000   12.000  .000  .000   .00
CD  12  1   0    .000  10.000   22.000 1.500 1.500   .00
CD  13  1   0    .000  10.000   12.000 1.500 1.500   .00
CD  14  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  15  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  16  1   0    .000  10.000   30.000 1.500 1.500   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  11.000   87.350  .000  .000   .00
CD  21  3   5    .670   8.000   87.350  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   62.680  .000  .000   .00
CD  31  3   4    .670   7.000   62.680  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   52.680  .000  .000   .00
CD  41  3   4    .670   7.000   52.680  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q          791.000   .0
```

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	3	1	.670	6.000	16.670	.000	.000	.00										
CD	2	2	0	.000	10.000	16.670			.00										
CD	3	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	4	4	1		6.000														
CD	5	1	0	.000	13.000	76.000	1.500	1.500	.00										
CD	6	1	0	.000	10.500	72.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	54.000	1.500	1.500	.00										
CD	8	1	0	.000	10.000	45.000	1.500	1.500	.00										
CD	9	1	0	.000	10.000	36.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	12.000			.00										
CD	11	3	0	.670	6.000	12.000	.000	.000	.00										
CD	12	1	0	.000	10.000	22.000	1.500	1.500	.00										
CD	13	1	0	.000	10.000	12.000	1.500	1.500	.00										
CD	14	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	15	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	16	1	0	.000	10.000	30.000	1.500	1.500	.00										
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	11.000	87.350			.00										
CD	21	3	5	.670	8.000	87.350	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	62.680			.00										
CD	31	3	4	.670	7.000	62.680	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	52.680			.00										
CD	41	3	4	.670	7.000	52.680	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
O02

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1046.170	-182.100	1	-177.100

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
	1250.000	-181.000	1	.014	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP

```
                                                                  O02
                              1250.000 -181.000    2              .500
 ELEMENT NO   4 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                              1270.000 -179.575    3              .015                          .000     .000
 ELEMENT NO   5 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              3800.000 -165.219    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
                              3815.000 -163.719    3     4     0   .015   414.000      .000  -162.719      .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
                              6425.000 -150.383    3              .015                          .000     .000      .000     0
 ELEMENT NO   8 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                              6440.000 -150.307   10              .015                          .000     .000
 ELEMENT NO   9 IS A  WALL  EXIT                       *
                    U/S DATA   STATION    INVERT  SECT
                              6440.000 -150.307   11
 ELEMENT NO  10 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              6480.000 -150.102   11              .014                          .000     .000      .000     0
 ELEMENT NO  11 IS A  WALL  ENTRANCE                   *
                    U/S DATA   STATION    INVERT  SECT             FP
                              6480.000 -150.102   10              .500
                                                      W S P G W                                                    PAGE NO   3
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  12 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                              6495.000 -149.500    3              .015                          .000     .000
 ELEMENT NO  13 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              6527.030 -149.349    3              .015                          .000     .000      .000     0
 ELEMENT NO  14 IS A SYSTEM HEADWORKS                  *                    *
                    U/S DATA   STATION    INVERT  SECT                                  W S ELEV
                              6527.030 -149.349    3                                       .000
```

CVWD
MDP
O02

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
1046.170	-182.100	4.895	-177.205	1205.00	15.39	3.68	-173.53	.00	5.61	16.67	6.000	16.670	.00	1 .7
48.765	.0054					.0077	.38	4.89	1.25	5.51	.014	.00	.00	BOX
1094.935	-181.837	4.702	-177.134	1205.00	16.02	3.98	-173.15	.00	5.61	16.67	6.000	16.670	.00	1 .7
54.513	.0054					.0087	.47	4.70	1.33	5.51	.014	.00	.00	BOX
1149.448	-181.543	4.484	-177.059	1205.00	16.80	4.38	-172.68	.00	5.61	16.67	6.000	16.670	.00	1 .7
51.546	.0054					.0098	.51	4.48	1.43	5.51	.014	.00	.00	BOX
1200.995	-181.264	4.275	-176.990	1205.00	17.62	4.82	-172.17	.00	5.61	16.67	6.000	16.670	.00	1 .7
49.005	.0054					.0112	.55	4.27	1.53	5.51	.014	.00	.00	BOX
1250.000	-181.000	4.076	-176.924	1205.00	18.48	5.30	-171.62	.00	5.61	16.67	6.000	16.670	.00	1 .7
WALL	ENTRANCE													
1250.000	-181.000	3.604	-177.396	1205.00	20.05	6.25	-171.15	.00	5.46	16.67	10.000	16.670	.00	0 .0
TRANS STR	.0713					.0088	.18	3.60	1.86		.015	.00	.00	RECTANG
1270.000	-179.575	5.456	-174.119	1205.00	15.57	3.77	-170.35	.00	6.61	22.37	10.000	6.000	1.50	0 .0
1773.254	.0057					.0057	10.06	5.46	1.48	5.46	.015	.00	1.50	TRAP
3043.254	-169.513	5.456	-164.057	1205.00	15.57	3.77	-160.29	.00	6.61	22.37	10.000	6.000	1.50	0 .0
517.653	.0057					.0054	2.79	5.46	1.48	5.46	.015	.00	1.50	TRAP
3560.907	-166.576	5.598	-160.978	1205.00	14.95	3.47	-157.51	.00	6.61	22.79	10.000	6.000	1.50	0 .0
162.716	.0057					.0048	.78	5.60	1.40	5.46	.015	.00	1.50	TRAP

CVWD
MDP
O02

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
3723.624	-165.652	5.768	-159.884	1205.00	14.26	3.16	-156.73	.00	6.61	23.30	10.000	6.000	1.50	0 .0
76.376	.0057					.0042	.32	5.77	1.32	5.46	.015	.00	1.50	TRAP
3800.000	-165.219	5.943	-159.276	1205.00	13.59	2.87	-156.41	.00	6.61	23.83	10.000	6.000	1.50	0 .0
JUNCT STR	.1000					.0045	.07	5.94	1.24		.015	.00	1.50	TRAP
3815.000	-163.719	4.575	-159.144	791.00	13.44	2.81	-156.34	.00	5.37	19.72	10.000	6.000	1.50	0 .0
2021.227	.0051					.0051	10.33	4.57	1.37	4.57	.015	.00	1.50	TRAP
5836.228	-153.391	4.575	-148.817	791.00	13.44	2.81	-146.01	.00	5.37	19.72	10.000	6.000	1.50	0 .0
394.227	.0051					.0053	2.10	4.57	1.37	4.57	.015	.00	1.50	TRAP
6230.455	-151.377	4.483	-146.894	791.00	13.87	2.99	-143.91	.00	5.37	19.45	10.000	6.000	1.50	0 .0
194.545	.0051					.0059	1.15	4.48	1.43	4.57	.015	.00	1.50	TRAP
6425.000	-150.383	4.345	-146.038	791.00	14.54	3.28	-142.75	.00	5.37	19.04	10.000	6.000	1.50	0 .0
TRANS STR	.0051					.0058	.09	4.35	1.52		.015	.00	1.50	TRAP
6440.000	-150.307	4.802	-145.505	791.00	13.73	2.93	-142.58	.00	5.13	12.00	10.000	12.000	.00	0 .0
WALL	EXIT													
6440.000	-150.307	4.800	-145.507	791.00	13.73	2.93	-142.58	.00	5.13	12.00	6.000	12.000	.00	0 .7
23.575	.0051					.0044	.10	4.80	1.10	4.59	.014	.00	.00	BOX
6463.575	-150.186	4.890	-145.296	791.00	13.48	2.82	-142.47	.00	5.13	12.00	6.000	12.000	.00	0 .7
16.425	.0051					.0040	.07	4.89	1.07	4.59	.014	.00	.00	BOX

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 5-23-2014 Time: 3:28:40

CVWD
MDP
O02

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													
6480.000	-150.102	5.131	-144.971	791.00	12.85	2.56	-142.41	.00	5.13	12.00	10.000	12.000	.00	0 .0
TRANS STR	.0401					.0027	.04	5.13	1.00		.015	.00	.00	RECTANG

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T1 CVWD                                                                                  0
T2 MDP
T3 O03
SO   1076.200-137.700  1      .015                -132.900
R    1260.490-130.000  1      .015                                  .000
R    3242.000-111.990  1      .015
TS   3257.000-110.800 10      .015
WX   3257.000-110.800 11      .015
R    3317.000-110.400 11      .015
WE   3317.000-110.400 10      .500
TS   3342.000-109.000  1      .015
R    6140.000-084.011  1      .015
JX   6170.000-081.500  2  3   .015 1187.000         -081.100         30.0
R    6410.000-080.500  2      .015
TS   6425.000-080.382 20      .015
WX   6425.000-080.382 21
R    6585.000-079.118 21      .015
WE   6585.000-079.118 20      .500
TS   6600.000-079.000  2      .015
R    9200.000-059.600  2      .015
JX   9220.000-057.600  2 16   .015  397.000         -058.474         45.0
R   12000.000-042.000  2      .015
JX  12020.000-041.900  5 17   .015  251.000         -040.900         45.0
WX  12020.000-041.900  6
R   16870.000 050.452  6      .013
WE  16870.000 050.452  5      .500
SH  16870.000 050.452  5
CD   1  1   0    .000  10.000   10.000 1.500 1.500   .00
CD   2  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   3  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   4  1   0    .000  10.000   32.000 1.500 1.500   .00
CD   5  1   0    .000  10.000    9.000  .000  .000   .00
CD   6  4   1    .000   7.000     .000  .000  .000   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   20.670  .000  .000   .00
CD  11  3   1    .670   7.000   20.670  .000  .000   .00
CD  12  4   1    .000   7.000    0.000  .000  .000   .00
CD  13  4   1    .000   3.000    0.000  .000  .000   .00
CD  14  4   1    .000   5.000     .000  .000  .000   .00
CD  15  4   1    .000   8.000     .000  .000  .000   .00
CD  16  4   1    .000   7.000     .000  .000  .000   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   14.670  .000  .000   .00
CD  21  3   1    .670   7.000   14.670  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   24.670  .000  .000   .00
CD  31  3   1    .670   7.000   24.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
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CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q           565.000   .0
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FILE: O03.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 6- 6-2014 Time:10:31:23

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	10.000	10.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	9.000	.000	.000	.00										
CD	6	4	1		7.000														
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	20.670			.00										
CD	11	3	1	.670	7.000	20.670	.000	.000	.00										
CD	12	4	1		7.000														
CD	13	4	1		3.000														
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	4	1		7.000														
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	14.670			.00										
CD	21	3	1	.670	7.000	14.670	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.000	.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 -
O03

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
	1076.200	-137.700	1	-132.900

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

ELEMENT NO 2 IS A REACH * * *

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                                                                                O03
                    U/S DATA   STATION    INVERT  SECT                N                                RADIUS    ANGLE     ANG PT  MAN H
                               1260.490 -130.000    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
                               3242.000 -111.990    1                .015                                 .000     .000      .000     0
 ELEMENT NO   4 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT                N                                RADIUS   ANGLE
                               3257.000 -110.800   10                .015                                 .000     .000
 ELEMENT NO   5 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                               3257.000 -110.800   11
 ELEMENT NO   6 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT                N                                RADIUS    ANGLE     ANG PT  MAN H
                               3317.000 -110.400   11                .015                                 .000     .000      .000     0
 ELEMENT NO   7 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT               FP
                               3317.000 -110.400   10                .500
 ELEMENT NO   8 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT                N                                RADIUS   ANGLE
                               3342.000 -109.000    1                .015                                 .000     .000
 ELEMENT NO   9 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT                N                                RADIUS    ANGLE     ANG PT  MAN H
                               6140.000  -84.011    1                .015                                 .000     .000      .000     0
 ELEMENT NO  10 IS A JUNCTION         *         *     *     *                   *                      *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                               6170.000  -81.500    2     3     0   .015  1187.000      .000   -81.100      .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  11 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT                N                                RADIUS    ANGLE     ANG PT  MAN H
                               6410.000  -80.500    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 TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT                N                                RADIUS   ANGLE
                               6425.000  -80.382   20                .015                                 .000     .000
 ELEMENT NO  13 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                               6425.000  -80.382   21
 ELEMENT NO  14 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT                N                                RADIUS    ANGLE     ANG PT  MAN H
                               6585.000  -79.118   21                .015                                 .000     .000      .000     0
 ELEMENT NO  15 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT               FP
                               6585.000  -79.118   20                .500
 ELEMENT NO  16 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT                N                                RADIUS   ANGLE
                               6600.000  -79.000    2                .015                                 .000     .000
 ELEMENT NO  17 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT                N                                RADIUS    ANGLE     ANG PT  MAN H
                               9200.000  -59.600    2                .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
                               9220.000  -57.600    2    16     0   .015   397.000      .000   -58.474      .000  45.000     .000
                                                                                                          RADIUS    ANGLE
                                                                                                            .000     .000
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O03

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
	12000.000	-42.000	2	.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
	12020.000	-41.900	5	17	0	.015	251.000	.000	-40.900	.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 WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	12020.000	-41.900	6

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
	16870.000	50.452	6	.013	.000	.000	.000	0

ELEMENT NO 23 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	16870.000	50.452	5	.500

ELEMENT NO 24 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	16870.000	50.452	5	.000

CVWD
MDP
O03

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1076.200	-137.700	4.759	-132.941	2400.00	29.43	13.45	-119.50	.00	8.23	24.28	10.000	10.000	1.50	0 .0
10.707	.0418					.0201	.22	4.76	2.83	3.95	.015	.00	1.50	TRAP
1086.907	-137.253	4.792	-132.461	2400.00	29.14	13.18	-119.28	.00	8.23	24.38	10.000	10.000	1.50	0 .0
44.680	.0418					.0186	.83	4.79	2.79	3.95	.015	.00	1.50	TRAP
1131.587	-135.386	4.955	-130.431	2400.00	27.78	11.99	-118.44	.00	8.23	24.87	10.000	10.000	1.50	0 .0
36.225	.0418					.0163	.59	4.96	2.63	3.95	.015	.00	1.50	TRAP
1167.813	-133.872	5.123	-128.749	2400.00	26.49	10.90	-117.85	.00	8.23	25.37	10.000	10.000	1.50	0 .0
29.813	.0418					.0143	.43	5.12	2.47	3.95	.015	.00	1.50	TRAP
1197.625	-132.627	5.296	-127.331	2400.00	25.26	9.91	-117.43	.00	8.23	25.89	10.000	10.000	1.50	0 .0
24.778	.0418					.0126	.31	5.30	2.32	3.95	.015	.00	1.50	TRAP
1222.403	-131.591	5.473	-126.118	2400.00	24.08	9.00	-117.11	.00	8.23	26.42	10.000	10.000	1.50	0 .0
20.717	.0418					.0111	.23	5.47	2.18	3.95	.015	.00	1.50	TRAP
1243.120	-130.726	5.655	-125.070	2400.00	22.96	8.19	-116.88	.00	8.23	26.97	10.000	10.000	1.50	0 .0
17.370	.0418					.0097	.17	5.66	2.06	3.95	.015	.00	1.50	TRAP
1260.490	-130.000	5.843	-124.157	2400.00	21.89	7.44	-116.72	.00	8.23	27.53	10.000	10.000	1.50	0 .0
1096.747	.0091					.0091	9.97	5.84	1.93	5.84	.015	.00	1.50	TRAP
2357.237	-120.032	5.843	-114.189	2400.00	21.89	7.44	-106.75	.00	8.23	27.53	10.000	10.000	1.50	0 .0
884.763	.0091					.0096	8.45	5.84	1.93	5.84	.015	.00	1.50	TRAP

CVWD
MDP
O03

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
3242.000	-111.990	5.701	-106.289	2400.00	22.69	7.99	-98.29	.00	8.23	27.10	10.000	10.000	1.50	0 .0
TRANS STR	.0793					.0096	.14	5.70	2.02		.015	.00	1.50	TRAP
3257.000	-110.800	5.287	-105.513	2400.00	21.96	7.49	-98.02	.00	7.48	20.67	10.000	20.670	.00	0 .0
WALL	EXIT													
3257.000	-110.800	5.504	-105.296	2400.00	21.80	7.38	-97.91	.00	7.00	20.67	7.000	20.670	.00	1 .7
60.000	.0067					.0143	.86	5.50	1.67	7.00	.015	.00	.00	BOX
3317.000	-110.400	5.260	-105.140	2400.00	22.81	8.08	-97.06	.00	7.00	20.67	7.000	20.670	.00	1 .7
WALL	ENTRANCE													
3317.000	-110.400	4.793	-105.607	2400.00	24.23	9.11	-96.49	.00	7.48	20.67	10.000	20.670	.00	0 .0
TRANS STR	.0560					.0106	.27	4.79	1.95		.015	.00	.00	RECTANG
3342.000	-109.000	5.868	-103.132	2400.00	21.75	7.35	-95.79	.00	8.23	27.60	10.000	10.000	1.50	0 .0
749.812	.0089					.0089	6.70	5.87	1.92	5.87	.015	.00	1.50	TRAP
4091.813	-102.303	5.868	-96.435	2400.00	21.75	7.35	-89.09	.00	8.23	27.60	10.000	10.000	1.50	0 .0
881.269	.0089					.0088	7.78	5.87	1.92	5.87	.015	.00	1.50	TRAP
4973.082	-94.433	5.903	-88.530	2400.00	21.56	7.22	-81.31	.00	8.23	27.71	10.000	10.000	1.50	0 .0
626.235	.0089					.0082	5.13	5.90	1.90	5.87	.015	.00	1.50	TRAP
5599.316	-88.840	6.097	-82.743	2400.00	20.56	6.56	-76.18	.00	8.23	28.29	10.000	10.000	1.50	0 .0
229.432	.0089					.0072	1.65	6.10	1.78	5.87	.015	.00	1.50	TRAP

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 6- 6-2014 Time:10:31:26

CVWD
MDP
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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
5828.748	-86.791	6.297	-80.494	2400.00	19.60	5.97	-74.53	.00	8.23	28.89	10.000	10.000	1.50	0 .0
129.683	.0089					.0063	.82	6.30	1.68	5.87	.015	.00	1.50	TRAP
5958.431	-85.633	6.501	-79.131	2400.00	18.69	5.42	-73.71	.00	8.23	29.50	10.000	10.000	1.50	0 .0

83.944	.0089					.0056	.47	6.50	1.58	5.87	.015	.00	1.50	TRAP					
6042.375	-84.883	6.711	-78.171	2400.00	17.82	4.93	-73.24	.00	8.23	30.13	10.000	10.000	1.50	0	.0				
57.497	.0089					.0049	.28	6.71	1.49	5.87	.015	.00	1.50	TRAP					
6099.872	-84.369	6.927	-77.442	2400.00	16.99	4.48	-72.96	.00	8.23	30.78	10.000	10.000	1.50	0	.0				
40.128	.0089					.0043	.17	6.93	1.40	5.87	.015	.00	1.50	TRAP					
6140.000	-84.011	7.149	-76.862	2400.00	16.20	4.08	-72.79	.00	8.23	31.45	10.000	10.000	1.50	0	.0				
JUNCT STR	.0837					.0040	.12	7.15	1.32		.015	.00	1.50	TRAP					
6170.000	-81.500	5.978	-75.522	1213.00	13.56	2.85	-72.67	.00	6.63	23.93	10.000	6.000	1.50	0	.0				
111.517	.0042					.0038	.42	5.98	1.24	5.88	.015	.00	1.50	TRAP					
6281.517	-81.035	6.069	-74.967	1213.00	13.23	2.72	-72.25	.00	6.63	24.21	10.000	6.000	1.50	0	.0				
87.825	.0042					.0034	.30	6.07	1.20	5.88	.015	.00	1.50	TRAP					
6369.342	-80.669	6.251	-74.418	1213.00	12.62	2.47	-71.95	.00	6.63	24.75	10.000	6.000	1.50	0	.0				
32.602	.0042					.0030	.10	6.25	1.13	5.88	.015	.00	1.50	TRAP					
6401.944	-80.534	6.439	-74.095	1213.00	12.03	2.25	-71.85	.00	6.63	25.32	10.000	6.000	1.50	0	.0				
8.056	.0042					.0027	.02	6.44	1.06	5.88	.015	.00	1.50	TRAP					

CVWD
MDP
O03

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
6410.000	-80.500	6.632	-73.868	1213.00	11.47	2.04	-71.83	.00	6.63	25.90	10.000	6.000	1.50	0 .0
TRANS STR	.0079							6.63	1.00		.015	.00	1.50	TRAP
6425.000	-80.382	5.402	-74.980	1213.00	15.31	3.64	-71.34	.00	5.97	14.67	10.000	14.670	.00	0 .0
WALL EXIT														
6425.000	-80.382	5.838	-74.544	1213.00	14.84	3.42	-71.12	.00	6.15	14.67	7.000	14.670	.00	1 .7
74.838	.0079					.0079	.59	5.84	1.11	5.84	.015	.00	.00	BOX
6499.838	-79.791	5.838	-73.953	1213.00	14.84	3.42	-70.53	.00	6.15	14.67	7.000	14.670	.00	1 .7

85.162	.0079				.0077	.66	5.84	1.11	5.84	.015	.00	.00	BOX	
6585.000	-79.118	5.949	-73.169	1213.00	14.56	3.29	-69.88	.00	6.15	14.67	7.000	14.670	.00	1 .7
WALL	ENTRANCE													
6585.000	-79.118	4.573	-74.545	1213.00	18.08	5.08	-69.47	.00	5.97	14.67	10.000	14.670	.00	0 .0
TRANS STR	.0079				.0079	.12	4.57	1.49		.015	.00	.00	RECTANG	
6600.001	-79.000	5.129	-73.871	1213.00	17.27	4.63	-69.24	.00	6.63	21.39	10.000	6.000	1.50	0 .0
1562.985	.0075				.0075	11.66	5.13	1.68	5.13	.015	.00	1.50	TRAP	
8162.986	-67.338	5.129	-62.209	1213.00	17.27	4.63	-57.58	.00	6.63	21.39	10.000	6.000	1.50	0 .0
588.598	.0075				.0071	4.20	5.13	1.68	5.13	.015	.00	1.50	TRAP	
8751.584	-62.946	5.242	-57.704	1213.00	16.69	4.33	-53.38	.00	6.63	21.73	10.000	6.000	1.50	0 .0
217.982	.0075				.0064	1.39	5.24	1.61	5.13	.015	.00	1.50	TRAP	

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 6- 6-2014 Time:10:31:26

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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
8969.566	-61.319	5.403	-55.916	1213.00	15.92	3.93	-51.98	.00	6.63	22.21	10.000	6.000	1.50	0 .0
104.737	.0075				.0056	.59	5.40	1.51	5.13	.015	.00	1.50	TRAP	
9074.304	-60.538	5.569	-54.969	1213.00	15.17	3.58	-51.39	.00	6.63	22.71	10.000	6.000	1.50	0 .0
61.847	.0075				.0050	.31	5.57	1.43	5.13	.015	.00	1.50	TRAP	
9136.150	-60.076	5.739	-54.337	1213.00	14.47	3.25	-51.09	.00	6.63	23.22	10.000	6.000	1.50	0 .0
39.063	.0075				.0044	.17	5.74	1.34	5.13	.015	.00	1.50	TRAP	
9175.214	-59.785	5.913	-53.872	1213.00	13.79	2.95	-50.92	.00	6.63	23.74	10.000	6.000	1.50	0 .0
24.786	.0075				.0038	.10	5.91	1.26	5.13	.015	.00	1.50	TRAP	
9200.000	-59.600	6.092	-53.508	1213.00	13.15	2.69	-50.82	.00	6.63	24.28	10.000	6.000	1.50	0 .0
JUNCT STR	.1000				.0046	.09	6.09	1.19		.015	.00	1.50	TRAP	
9220.000	-57.600	4.540	-53.060	816.00	14.03	3.06	-50.00	.00	5.45	19.62	10.000	6.000	1.50	0 .0
2081.603	.0056				.0056	11.68	4.54	1.44	4.54	.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
11301.600	-45.919	4.540	-41.379	816.00	14.03	3.06	-38.32	.00	5.45	19.62	10.000	6.000	1.50	0 .0
420.241	.0056					.0057	2.41	4.54	1.44	4.54	.015	.00	1.50	TRAP
11721.840	-43.561	4.495	-39.066	816.00	14.25	3.15	-35.91	.00	5.45	19.49	10.000	6.000	1.50	0 .0
278.156	.0056					.0062	1.74	4.50	1.46	4.54	.015	.00	1.50	TRAP
12000.000	-42.000	4.357	-37.643	816.00	14.94	3.47	-34.18	.00	5.45	19.07	10.000	6.000	1.50	0 .0
JUNCT STR	.0050					.0208	.42	4.36	1.56		.015	.00	1.50	TRAP

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 6- 6-2014 Time:10:31:26

CVWD
MDP
O03

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
12020.000	-41.900	2.478	-39.422	565.00	25.34	9.97	-29.46	.00	4.97	9.00	10.000	9.000	.00	0 .0
WALL	EXIT													
12020.000	-41.900	4.074	-37.826	565.00	24.31	9.18	-28.65	.00	6.13	6.91	7.000	.000	.00	1 .0
3199.197	.0190					.0190	60.92	4.07	2.34	4.07	.013	.00	.00	PIPE
15219.200	19.018	4.074	23.092	565.00	24.31	9.18	32.27	.00	6.13	6.91	7.000	.000	.00	1 .0
618.133	.0190					.0190	11.75	4.07	2.34	4.07	.013	.00	.00	PIPE
15837.330	30.788	4.078	34.866	565.00	24.27	9.15	44.02	.00	6.13	6.90	7.000	.000	.00	1 .0
572.593	.0190					.0179	10.24	4.08	2.33	4.07	.013	.00	.00	PIPE
16409.920	41.691	4.244	45.935	565.00	23.15	8.32	54.25	.00	6.13	6.84	7.000	.000	.00	1 .0
181.025	.0190					.0158	2.87	4.24	2.16	4.07	.013	.00	.00	PIPE
16590.950	45.138	4.419	49.557	565.00	22.07	7.56	57.12	.00	6.13	6.75	7.000	.000	.00	1 .0
100.250	.0190					.0140	1.41	4.42	2.00	4.07	.013	.00	.00	PIPE
16691.200	47.047	4.605	51.652	565.00	21.04	6.87	58.53	.00	6.13	6.64	7.000	.000	.00	1 .0
64.740	.0190					.0125	.81	4.61	1.84	4.07	.013	.00	.00	PIPE
16755.940	48.280	4.805	53.085	565.00	20.06	6.25	59.33	.00	6.13	6.50	7.000	.000	.00	1 .0
44.693	.0190					.0111	.50	4.81	1.70	4.07	.013	.00	.00	PIPE

16800.630	49.131	5.019	54.150	565.00	19.13	5.68	59.83	.00	6.13	6.31	7.000	.000	.00	1 .0
31.037	.0190					.0099	.31	5.02	1.56	4.07	.013	.00	.00	PIPE

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 6- 6-2014 Time:10:31:26

CVWD
MDP
O03

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT or I.D. / X-Fall	Base Wt / ZR	ZL	No Wth Prs/Pip / Type Ch
16831.670	49.722	5.253	54.975	565.00	18.24	5.17	60.14	.00	6.13	6.06	7.000	.000	.00	1 .0
21.113	.0190					.0089	.19	5.25	1.42	4.07	.013	.00	.00	PIPE
16852.780	50.124	5.509	55.633	565.00	17.39	4.70	60.33	.00	6.13	5.73	7.000	.000	.00	1 .0
12.748	.0190					.0081	.10	5.51	1.29	4.07	.013	.00	.00	PIPE
16865.530	50.367	5.796	56.163	565.00	16.58	4.27	60.43	.00	6.13	5.28	7.000	.000	.00	1 .0
4.471	.0190					.0074	.03	5.80	1.15	4.07	.013	.00	.00	PIPE
16870.000	50.452	6.133	56.585	565.00	15.81	3.88	60.46	.00	6.13	4.61	7.000	.000	.00	1 .0
WALL	ENTRANCE													
16870.000	50.452	12.593	63.045	565.00	4.99	.39	63.43	.00	4.97	9.00	10.000	9.000	.00	0 .0

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T1 CVWD                                                                                  0
T2 MDP
T3 O03-01
SO   1026.500-082.441  1      .015                -075.522
R    1180.000-079.807  1      .015
TS   1195.000-079.550 20      .015
WX   1195.000-079.550 21
R    1255.000-078.520 21      .015
WE   1255.000-078.520 20      .500
TS   1270.000-078.263  1      .015
R    3500.000-040.000  1      .015                                        .000
JX   3520.000-039.719 10 12   .015  198.000         -038.719         45.0
WX   3520.000-039.719 11      .015
R    6300.000-000.702 11      .015
WE   6300.000-000.702 10      .500
TS   6335.000 007.900  2      .015
R    6400.000 008.000  2      .015
SH   6400.000 008.000  2
CD   1  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   2  1   0    .000  10.000    9.000 1.500 1.500   .00
CD   3  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   4  1   0    .000  10.000   32.000 1.500 1.500   .00
CD   5  1   0    .000  10.000   16.000 1.500 1.500   .00
CD   6  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000    9.000  .000  .000   .00
CD  11  4   1    .000   8.000     .000  .000  .000   .00
CD  12  4   1    .000   5.000    0.000  .000  .000   .00
CD  13  4   1    .000   3.000    0.000  .000  .000   .00
CD  14  4   1    .000   5.000     .000  .000  .000   .00
CD  15  4   1    .000   8.000     .000  .000  .000   .00
CD  16  4   1    .000   7.000     .000  .000  .000   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   12.670  .000  .000   .00
CD  21  3   1    .670   6.000   12.670  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   24.670  .000  .000   .00
CD  31  3   1    .670   7.000   24.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q          840.000   .0
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FILE: O03-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 6- 5-2014 Time: 4:46:52

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	10.000	6.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	9.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	16.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	9.000			.00										
CD	11	4	1		8.000														
CD	12	4	1		5.000														
CD	13	4	1		3.000														
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	4	1		7.000														
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	12.670			.00										
CD	21	3	1	.670	6.000	12.670	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CVWD

HEADING LINE NO 2 IS -
MDP

HEADING LINE NO 3 IS -
O03-01

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1026.500	-82.441	1	-75.522

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
                               1180.000  -79.807    1              .015                           .000     .000      .000     0
 ELEMENT NO   3 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               1195.000  -79.550   20              .015                           .000     .000
 ELEMENT NO   4 IS A  WALL  EXIT                       *
                    U/S DATA   STATION    INVERT  SECT
                               1195.000  -79.550   21
 ELEMENT NO   5 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               1255.000  -78.520   21              .015                           .000     .000      .000     0
 ELEMENT NO   6 IS A  WALL  ENTRANCE                   *
                    U/S DATA   STATION    INVERT  SECT             FP
                               1255.000  -78.520   20              .500
 ELEMENT NO   7 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               1270.000  -78.263    1              .015                           .000     .000
 ELEMENT NO   8 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               3500.000  -40.000    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
                               3520.000  -39.719   10    12     0   .015   198.000      .000   -38.719      .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  WALL  EXIT                       *
                    U/S DATA   STATION    INVERT  SECT
                               3520.000  -39.719   11
 ELEMENT NO  11 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               6300.000    -.702   11              .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
                               6300.000    -.702   10              .500
 ELEMENT NO  13 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               6335.000    7.900    2              .015                           .000     .000
 ELEMENT NO  14 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               6400.000    8.000    2              .015                           .000     .000      .000     0
 ELEMENT NO  15 IS A SYSTEM HEADWORKS                  *                    *
                    U/S DATA   STATION    INVERT  SECT                                   W S ELEV
                               6400.000    8.000    2                                       .000
```

CVWD
MDP
O03-01

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
1026.500	-82.441	4.052	-78.389	1038.00	21.21	6.99	-71.40	.00	6.15	18.16	10.000	6.000	1.50	0 .0
20.753	.0172					.0144	.30	4.05	2.28	3.89	.015	.00	1.50	TRAP
1047.253	-82.085	4.066	-78.019	1038.00	21.10	6.91	-71.10	.00	6.15	18.20	10.000	6.000	1.50	0 .0
132.747	.0172					.0134	1.78	4.07	2.26	3.89	.015	.00	1.50	TRAP
1180.000	-79.807	4.196	-75.611	1038.00	20.12	6.29	-69.32	.00	6.15	18.59	10.000	6.000	1.50	0 .0
TRANS STR	.0171					.0129	.19	4.20	2.13		.015	.00	1.50	TRAP
1195.000	-79.550	3.970	-75.580	1038.00	20.64	6.61	-68.97	.00	5.93	12.67	10.000	12.670	.00	0 .0
WALL	EXIT													
1195.000	-79.550	4.233	-75.317	1038.00	20.44	6.48	-68.83	.00	6.00	12.67	6.000	12.670	.00	1 .7
60.000	.0172					.0207	1.24	4.23	1.80	4.50	.015	.00	.00	BOX
1255.000	-78.520	4.135	-74.385	1038.00	20.92	6.80	-67.59	.00	6.00	12.67	6.000	12.670	.00	1 .7
WALL	ENTRANCE													
1255.000	-78.520	3.572	-74.948	1038.00	22.94	8.17	-66.78	.00	5.93	12.67	10.000	12.670	.00	0 .0
TRANS STR	.0171					.0175	.26	3.57	2.14		.015	.00	.00	RECTANG
1270.000	-78.263	3.885	-74.378	1038.00	22.59	7.92	-66.45	.00	6.15	17.66	10.000	6.000	1.50	0 .0
1202.018	.0172					.0172	20.63	3.89	2.47	3.89	.015	.00	1.50	TRAP
2472.018	-57.638	3.885	-53.753	1038.00	22.59	7.92	-45.83	.00	6.15	17.66	10.000	6.000	1.50	0 .0
572.932	.0172					.0168	9.60	3.89	2.47	3.89	.015	.00	1.50	TRAP

CVWD
MDP
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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

3044.950	-47.808	3.931	-43.877	1038.00	22.19	7.65	-36.23	.00	6.15	17.79	10.000	6.000	1.50	0	.0
317.520	.0172					.0154	4.88	3.93	2.41	3.89	.015	.00	1.50	TRAP	
3362.470	-42.360	4.058	-38.302	1038.00	21.16	6.95	-31.35	.00	6.15	18.17	10.000	6.000	1.50	0	.0
137.530	.0172					.0135	1.86	4.06	2.27	3.89	.015	.00	1.50	TRAP	
3500.000	-40.000	4.189	-35.811	1038.00	20.18	6.32	-29.49	.00	6.15	18.57	10.000	6.000	1.50	0	.0
JUNCT STR	.0140					.0154	.31	4.19	2.14		.015	.00	1.50	TRAP	

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

3520.000	-39.719	4.174	-35.545	840.00	22.36	7.77	-27.78	.00	6.47	9.00	10.000	9.000	.00	0	.0
WALL	EXIT														
3520.000	-39.719	5.917	-33.802	840.00	21.07	6.90	-26.91	.00	7.17	7.02	8.000	.000	.00	1	.0
2024.193	.0140					.0140	28.41	5.92	1.56	5.92	.015	.00	.00	PIPE	
5544.193	-11.310	5.917	-5.393	840.00	21.07	6.90	1.50	.00	7.17	7.02	8.000	.000	.00	1	.0
491.521	.0140					.0135	6.66	5.92	1.56	5.92	.015	.00	.00	PIPE	
6035.714	-4.411	6.105	1.694	840.00	20.41	6.47	8.16	.00	7.17	6.80	8.000	.000	.00	1	.0
175.767	.0140					.0124	2.18	6.11	1.46	5.92	.015	.00	.00	PIPE	
6211.481	-1.944	6.409	4.465	840.00	19.46	5.88	10.34	.00	7.17	6.39	8.000	.000	.00	1	.0
68.396	.0140					.0113	.77	6.41	1.32	5.92	.015	.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
6279.877	-.984	6.754	5.770	840.00	18.55	5.34	11.11	.00	7.17	5.80	8.000	.000	.00	1	.0
20.123	.0140					.0104	.21	6.75	1.17	5.92	.015	.00	.00	PIPE	
6300.000	-.702	7.167	6.465	840.00	17.69	4.86	11.32	.00	7.17	4.89	8.000	.000	.00	1	.0
WALL	ENTRANCE														
6300.000	-.702	15.194	14.492	840.00	6.14	.59	15.08	.00	6.47	9.00	10.000	9.000	.00	0	.0
TRANS STR	.2458					.0008	.03	15.19	.28		.015	.00	.00	RECTANG	
6335.000	7.900	6.498	14.398	840.00	6.90	.74	15.14	.00	4.91	28.49	10.000	9.000	1.50	0	.0
65.000	.0015					.0008	.06	6.50	.59	5.58	.015	.00	1.50	TRAP	

O03-01

6400.000	8.000	6.429	14.429	840.00	7.01	.76	15.19	.00	4.91	28.29	10.000	9.000	1.50	0	.0

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                                                                                                                P01
T1 CVWD                                                                                                                    0
T2 MDP
T3 P01
SO   1266.910-232.873  1      .015                -230.000
TS   2025.500-232.589  2      .015                                        .000
JX   2145.940-231.479  3  4   .015 2247.000         -232.390          30.0

R    5576.000-227.180  3      .015
TS   5591.000-227.159 10      .015
WX   5591.000-227.159 11
R    5780.000-226.300 11      .015
WE   5780.000-226.300 10      .500
JX   5810.000-225.500  6  5   .015  656.000         -224.800          45.0
R    9000.000-212.000  6      .015
JX   9030.000-210.500  7  5   .015  657.000         -209.500          45.0
R   12048.670-183.058  7      .015
JX  12078.000-182.491  8 15   .015  917.000         -182.491          30.0
R   12165.000-182.000  8      .015
TS  12180.000-181.833 20      .015
WX  12180.000-181.833 21
R   12220.000-181.389 21      .015
WE  12220.000-181.389 20      .500
TS  12235.000-181.222  9      .015
R   14250.000-158.828  9      .015
TS  14265.000-158.661 30      .015
WX  14265.000-158.661 31
R   14365.000-157.550 31      .015
WE  14365.000-157.550 30      .500
TS  14380.000-157.383  9      .015
R   14423.860-156.896  9      .015
JX  14453.000-156.000 16 15   .015 1130.000         -156.000          30.0
R   17455.000-123.145 16      .015
TS  17470.000-122.587 40      .015
WX  17470.000-122.587 41
R   17510.000-122.066 41      .015
WE  17510.000-122.066 40      .500
TS  17540.000-121.000 16      .015
R   18000.000-117.420 16      .015
SH  18000.000-117.420 16
CD   1  1   0    .000   6.000  500.000 1.500 1.500   .00
CD   2  1   0    .000  10.000   95.000  .000  .000   .00
CD   3  1   0    .000  10.000   55.000 1.500 1.500   .00
CD   4  1   0    .000  10.000   43.000 1.500 1.500   .00
CD   5  4   1    .000   8.000    0.000  .000  .000   .00
CD   6  1   0    .000  10.000   40.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   58.010  .000  .000   .00
CD  11  3   3    .670   7.000   58.010  .000  .000   .00
CD  12  1   0    .000  10.000   22.000 1.500 1.500   .00
CD  13  1   0    .000  10.000   12.000 1.500 1.500   .00
CD  14  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  15  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  16  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
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CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   28.670  .000  .000   .00
CD  21  3   1    .670   7.000   28.670  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   28.670  .000  .000   .00
CD  31  3   1    .670   7.000   28.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q         1845.000   .0
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FILE: P01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 5-28-2014 Time: 2:39:27

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	6.000	500.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	95.000	.000	.000	.00										
CD	3	1	0	.000	10.000	55.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	43.000	1.500	1.500	.00										
CD	5	4	1		8.000														
CD	6	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	58.010			.00										
CD	11	3	3	.670	7.000	58.010	.000	.000	.00										
CD	12	1	0	.000	10.000	22.000	1.500	1.500	.00										
CD	13	1	0	.000	10.000	12.000	1.500	1.500	.00										
CD	14	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	15	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	16	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	28.670			.00										
CD	21	3	1	.670	7.000	28.670	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	28.670			.00										
CD	31	3	1	.670	7.000	28.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.000	.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 -
P01

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
	1266.910	-232.873	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 TRANSITION * * *

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                    U/S DATA   STATION    INVERT  SECT                N                          RADIUS   ANGLE
                               2025.500 -232.589    2                .015                          .000     .000
 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
                               2145.940 -231.479    3     4     0   .015  2247.000      .000  -232.390      .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
                               5576.000 -227.180    3                .015                          .000     .000      .000     0
 ELEMENT NO   5 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT                N                          RADIUS   ANGLE
                               5591.000 -227.159   10                .015                          .000     .000
 ELEMENT NO   6 IS A  WALL  EXIT                       *
                    U/S DATA   STATION    INVERT  SECT
                               5591.000 -227.159   11
 ELEMENT NO   7 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT                N                          RADIUS    ANGLE     ANG PT  MAN H
                               5780.000 -226.300   11                .015                          .000     .000      .000     0
 ELEMENT NO   8 IS A  WALL  ENTRANCE                   *
                    U/S DATA   STATION    INVERT  SECT               FP
                               5780.000 -226.300   10                .500
 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
                               5810.000 -225.500    6     5     0   .015   656.000      .000  -224.800      .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   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
                               9000.000 -212.000    6                .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
                               9030.000 -210.500    7     5     0   .015   657.000      .000  -209.500      .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  12 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT                N                          RADIUS    ANGLE     ANG PT  MAN H
                              12048.670 -183.058    7                .015                          .000     .000      .000     0
 ELEMENT NO  13 IS A JUNCTION          *         *     *     *                *                  *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                              12078.000 -182.491    8    15     0   .015   917.000      .000  -182.491      .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  14 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT                N                          RADIUS    ANGLE     ANG PT  MAN H
                              12165.000 -182.000    8                .015                          .000     .000      .000     0
 ELEMENT NO  15 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT                N                          RADIUS   ANGLE
                              12180.000 -181.833   20                .015                          .000     .000
 ELEMENT NO  16 IS A  WALL  EXIT                       *
                    U/S DATA   STATION    INVERT  SECT
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                          12180.000 -181.833   21
 ELEMENT NO  17 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          12220.000 -181.389   21              .015                          .000     .000      .000     0
 ELEMENT NO  18 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT             FP
                          12220.000 -181.389   20              .500
 ELEMENT NO  19 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                          12235.000 -181.222    9              .015                          .000     .000
                                                  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
                          14250.000 -158.828    9              .015                          .000     .000      .000     0
 ELEMENT NO  21 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                          14265.000 -158.661   30              .015                          .000     .000
 ELEMENT NO  22 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                          14265.000 -158.661   31
 ELEMENT NO  23 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          14365.000 -157.550   31              .015                          .000     .000      .000     0
 ELEMENT NO  24 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT             FP
                          14365.000 -157.550   30              .500
 ELEMENT NO  25 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                          14380.000 -157.383    9              .015                          .000     .000
 ELEMENT NO  26 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          14423.860 -156.896    9              .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
                          14453.000 -156.000   16    15     0   .015  1130.000      .000  -156.000      .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  28 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                          17455.000 -123.145   16              .015                          .000     .000      .000     0
 ELEMENT NO  29 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                          17470.000 -122.587   40              .015                          .000     .000
 ELEMENT NO  30 IS A  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                          17470.000 -122.587   41
                                                  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
                          17510.000 -122.066   41              .015                          .000     .000      .000     0
 ELEMENT NO  32 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT             FP
                          17510.000 -122.066   40              .500
 ELEMENT NO  33 IS A TRANSITION       *         *     *
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U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	17540.000	-121.000	16	.015	.000	.000

ELEMENT NO 34 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	18000.000	-117.420	16	.015	.000	.000	.000	0

ELEMENT NO 35 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	18000.000	-117.420	16	.000

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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
1266.910	-232.873	2.873	-230.000	7452.00	5.14	.41	-229.59	.00	1.90	508.62	6.000	500.000	1.50	0 .0
TRANS STR	.0004							2.87	.54		.015	.00	1.50	TRAP
2025.500	-232.589	5.760	-226.829	7452.00	13.62	2.88	-223.95	.00	5.76	95.00	10.000	95.000	.00	0 .0
JUNCT STR	.0092					.0020	.24	5.76	1.00		.015	.00	.00	TRAP
2145.940	-231.479	6.320	-225.159	5205.00	12.77	2.53	-222.63	.00	6.16	73.96	10.000	55.000	1.50	0 .0
82.296	.0013					.0017	.14	6.32	.96	7.05	.015	.00	1.50	TRAP
2228.236	-231.376	6.588	-224.788	5205.00	12.18	2.30	-222.49	.00	6.16	74.76	10.000	55.000	1.50	0 .0
301.474	.0013					.0015	.45	6.59	.90	7.05	.015	.00	1.50	TRAP
2529.710	-230.998	6.865	-224.133	5205.00	11.61	2.09	-222.04	.00	6.16	75.60	10.000	55.000	1.50	0 .0
1000.614	.0013					.0013	1.31	6.87	.84	7.05	.015	.00	1.50	TRAP
3530.324	-229.744	7.051	-222.692	5205.00	11.26	1.97	-220.73	.00	6.16	76.15	10.000	55.000	1.50	0 .0
1848.516	.0013					.0013	2.32	7.05	.80	7.05	.015	.00	1.50	TRAP
5378.841	-227.427	7.051	-220.376	5205.00	11.26	1.97	-218.41	.00	6.16	76.15	10.000	55.000	1.50	0 .0
HYDRAULIC JUMP														
5378.841	-227.427	5.333	-222.094	5205.00	15.49	3.73	-218.37	.00	6.16	71.00	10.000	55.000	1.50	0 .0
56.314	.0013					.0035	.20	5.33	1.26	7.05	.015	.00	1.50	TRAP
5435.155	-227.357	5.148	-222.209	5205.00	16.12	4.04	-218.17	.00	6.16	70.44	10.000	55.000	1.50	0 .0
69.625	.0013					.0040	.28	5.15	1.33	7.05	.015	.00	1.50	TRAP

CVWD
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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

5504.779	-227.269	4.933	-222.336	5205.00	16.91	4.44	-217.90	.00	6.16	69.80	10.000	55.000	1.50	0	.0
71.221	.0013					.0046	.33	4.93	1.42	7.05	.015	.00	1.50	TRAP	
5576.000	-227.180	4.727	-222.453	5205.00	17.73	4.88	-217.57	.00	6.16	69.18	10.000	55.000	1.50	0	.0
TRANS STR	.0014					.0044	.07	4.73	1.52		.015	.00	1.50	TRAP	
5591.000	-227.159	5.364	-221.795	5205.00	16.73	4.35	-217.45	.00	6.30	58.01	10.000	58.010	.00	0	.0
WALL	EXIT														
5591.000	-227.159	5.649	-221.510	5205.00	16.45	4.20	-217.31	.00	6.45	58.01	7.000	58.010	.00	3	.7
37.449	.0045					.0062	.23	5.65	1.24	6.27	.015	.00	.00	BOX	
5628.449	-226.989	5.532	-221.457	5205.00	16.80	4.38	-217.07	.00	6.45	58.01	7.000	58.010	.00	3	.7
78.849	.0045					.0068	.54	5.53	1.28	6.27	.015	.00	.00	BOX	
5707.298	-226.630	5.274	-221.356	5205.00	17.62	4.82	-216.53	.00	6.45	58.01	7.000	58.010	.00	3	.7
72.702	.0045					.0078	.57	5.27	1.38	6.27	.015	.00	.00	BOX	
5780.000	-226.300	5.029	-221.271	5205.00	18.48	5.30	-215.97	.00	6.45	58.01	7.000	58.010	.00	3	.7
WALL	ENTRANCE														
5780.000	-226.300	4.461	-221.839	5205.00	20.11	6.28	-215.56	.00	6.30	58.01	10.000	58.010	.00	0	.0
JUNCT STR	.0267					.0055	.17	4.46	1.68		.015	.00	.00	RECTANG	

---------- 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
5810.001	-225.500	5.453	-220.047	4549.00	17.31	4.66	-215.39	.00	6.75	56.36	10.000	40.000	1.50	0	.0
1310.110	.0042					.0042	5.54	5.45	1.41	5.45	.015	.00	1.50	TRAP	
7120.111	-219.956	5.453	-214.503	4549.00	17.31	4.66	-209.85	.00	6.75	56.36	10.000	40.000	1.50	0	.0
761.169	.0042					.0044	3.38	5.45	1.41	5.45	.015	.00	1.50	TRAP	
7881.280	-216.734	5.309	-211.426	4549.00	17.87	4.96	-206.47	.00	6.75	55.93	10.000	40.000	1.50	0	.0
369.508	.0042					.0050	1.85	5.31	1.48	5.45	.015	.00	1.50	TRAP	
8250.788	-215.171	5.095	-210.075	4549.00	18.74	5.45	-204.62	.00	6.75	55.29	10.000	40.000	1.50	0	.0
222.780	.0042					.0058	1.28	5.10	1.58	5.45	.015	.00	1.50	TRAP	

8473.568	-214.228	4.890	-209.338	4549.00	19.65	6.00	-203.34	.00	6.75	54.67	10.000	40.000	1.50	0	.0
167.102	.0042					.0066	1.11	4.89	1.68	5.45	.015	.00	1.50	TRAP	
8640.670	-213.521	4.692	-208.829	4549.00	20.61	6.60	-202.23	.00	6.75	54.08	10.000	40.000	1.50	0	.0
137.098	.0042					.0077	1.05	4.69	1.80	5.45	.015	.00	1.50	TRAP	
8777.768	-212.940	4.501	-208.440	4549.00	21.62	7.26	-201.18	.00	6.75	53.50	10.000	40.000	1.50	0	.0
117.915	.0042					.0088	1.04	4.50	1.92	5.45	.015	.00	1.50	TRAP	
8895.683	-212.441	4.317	-208.125	4549.00	22.67	7.98	-200.14	.00	6.75	52.95	10.000	40.000	1.50	0	.0
104.317	.0042					.0102	1.06	4.32	2.05	5.45	.015	.00	1.50	TRAP	
9000.000	-212.000	4.140	-207.860	4549.00	23.78	8.78	-199.08	.00	6.75	52.42	10.000	40.000	1.50	0	.0
JUNCT STR	.0500					.0100	.30	4.14	2.19		.015	.00	1.50	TRAP	

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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
9030.000	-210.500	4.293	-206.207	3892.00	21.88	7.43	-198.78	.00	6.58	47.88	10.000	35.000	1.50	0	.0
2195.336	.0091					.0091	19.96	4.29	2.00	4.29	.015	.00	1.50	TRAP	
11225.340	-190.543	4.293	-186.249	3892.00	21.88	7.43	-178.82	.00	6.58	47.88	10.000	35.000	1.50	0	.0
823.334	.0091					.0090	7.42	4.29	2.00	4.29	.015	.00	1.50	TRAP	
12048.670	-183.058	4.316	-178.742	3892.00	21.74	7.34	-171.40	.00	6.58	47.95	10.000	35.000	1.50	0	.0
JUNCT STR	.0193					.0101	.30	4.32	1.98		.015	.00	1.50	TRAP	
12078.000	-182.491	4.131	-178.360	2975.00	23.09	8.28	-170.08	.00	6.62	37.39	10.000	25.000	1.50	0	.0
87.000	.0056					.0121	1.05	4.13	2.19	5.04	.015	.00	1.50	TRAP	
12165.000	-182.000	3.993	-178.007	2975.00	24.04	8.97	-169.03	.00	6.62	36.98	10.000	25.000	1.50	0	.0
TRANS STR	.0111					.0120	.18	3.99	2.32		.015	.00	1.50	TRAP	
12180.000	-181.833	4.402	-177.431	2975.00	23.57	8.63	-168.80	.00	6.94	28.67	10.000	28.670	.00	0	.0
WALL	EXIT														
12180.000	-181.833	4.522	-177.311	2975.00	23.50	8.57	-168.74	.00	7.00	28.67	7.000	28.670	.00	1	.7
40.000	.0111					.0149	.59	4.52	1.97	4.99	.015	.00	.00	BOX	
12220.000	-181.389	4.469	-176.920	2975.00	23.78	8.78	-168.14	.00	7.00	28.67	7.000	28.670	.00	1	.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													
12220.000	-181.389	4.201	-177.188	2975.00	24.70	9.47	-167.71	.00	6.94	28.67	10.000	28.670	.00	0 .0
TRANS STR	.0111					.0120	.18	4.20	2.12		.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
12235.000	-181.222	4.895	-176.327	2975.00	23.98	8.93	-167.40	.00	7.61	32.68	10.000	18.000	1.50	0 .0
8.199	.0111					.0111	.09	4.89	2.17	4.89	.015	.00	1.50	TRAP
12243.200	-181.131	4.895	-176.236	2975.00	23.98	8.93	-167.30	.00	7.61	32.68	10.000	18.000	1.50	0 .0
899.085	.0111					.0108	9.74	4.89	2.17	4.89	.015	.00	1.50	TRAP
13142.290	-171.139	4.965	-166.173	2975.00	23.54	8.61	-157.57	.00	7.61	32.90	10.000	18.000	1.50	0 .0
486.991	.0111					.0099	4.82	4.97	2.12	4.89	.015	.00	1.50	TRAP
13629.280	-165.727	5.151	-160.575	2975.00	22.45	7.83	-152.75	.00	7.61	33.45	10.000	18.000	1.50	0 .0
210.770	.0111					.0086	1.82	5.15	1.99	4.89	.015	.00	1.50	TRAP
13840.050	-163.384	5.343	-158.041	2975.00	21.40	7.11	-150.93	.00	7.61	34.03	10.000	18.000	1.50	0 .0
126.561	.0111					.0076	.96	5.34	1.87	4.89	.015	.00	1.50	TRAP
13966.610	-161.978	5.541	-156.437	2975.00	20.41	6.47	-149.97	.00	7.61	34.62	10.000	18.000	1.50	0 .0
85.504	.0111					.0066	.57	5.54	1.75	4.89	.015	.00	1.50	TRAP
14052.110	-161.027	5.744	-155.283	2975.00	19.46	5.88	-149.40	.00	7.61	35.23	10.000	18.000	1.50	0 .0
61.017	.0111					.0058	.35	5.74	1.65	4.89	.015	.00	1.50	TRAP
14113.130	-160.349	5.954	-154.395	2975.00	18.55	5.34	-149.05	.00	7.61	35.86	10.000	18.000	1.50	0 .0
44.635	.0111					.0051	.23	5.95	1.55	4.89	.015	.00	1.50	TRAP
14157.760	-159.853	6.170	-153.683	2975.00	17.69	4.86	-148.82	.00	7.61	36.51	10.000	18.000	1.50	0 .0
32.821	.0111					.0044	.15	6.17	1.45	4.89	.015	.00	1.50	TRAP

P01

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
14190.580	-159.488	6.393	-153.095	2975.00	16.87	4.42	-148.68	.00	7.61	37.18	10.000	18.000	1.50	0 .0
23.835	.0111					.0039	.09	6.39	1.36	4.89	.015	.00	1.50	TRAP
14214.420	-159.223	6.623	-152.601	2975.00	16.08	4.02	-148.59	.00	7.61	37.87	10.000	18.000	1.50	0 .0
16.723	.0111					.0034	.06	6.62	1.28	4.89	.015	.00	1.50	TRAP
14231.140	-159.038	6.859	-152.179	2975.00	15.33	3.65	-148.53	.00	7.61	38.58	10.000	18.000	1.50	0 .0
10.914	.0111					.0030	.03	6.86	1.20	4.89	.015	.00	1.50	TRAP
14242.060	-158.916	7.102	-151.814	2975.00	14.62	3.32	-148.50	.00	7.61	39.31	10.000	18.000	1.50	0 .0
6.051	.0111					.0026	.02	7.10	1.13	4.89	.015	.00	1.50	TRAP
14248.110	-158.849	7.352	-151.497	2975.00	13.94	3.02	-148.48	.00	7.61	40.06	10.000	18.000	1.50	0 .0
1.894	.0111					.0023	.00	7.35	1.06	4.89	.015	.00	1.50	TRAP
14250.000	-158.828	7.611	-151.217	2975.00	13.29	2.74	-148.48	.00	7.61	40.83	10.000	18.000	1.50	0 .0
TRANS STR	.0111							7.61	1.00		.015	.00	1.50	TRAP
14265.000	-158.661	5.136	-153.525	2975.00	20.20	6.34	-147.19	.00	6.94	28.67	10.000	28.670	.00	0 .0
WALL EXIT														
14265.000	-158.661	5.291	-153.370	2975.00	20.08	6.26	-147.11	.00	7.00	28.67	7.000	28.670	.00	1 .7
100.000	.0111					.0091	.91	5.29	1.56	4.99	.015	.00	.00	BOX
14365.000	-157.550	5.452	-152.098	2975.00	19.49	5.90	-146.20	.00	7.00	28.67	7.000	28.670	.00	1 .7
WALL ENTRANCE														

CVWD
MDP
P01

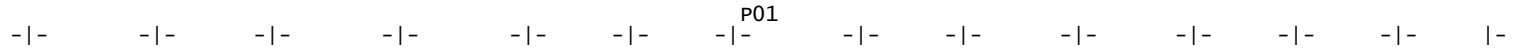
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
14365.000	-157.550	5.026	-152.524	2975.00	20.65	6.62	-145.90	.00	6.94	28.67	10.000	28.670	.00	0 .0
TRANS STR	.0111					.0070	.10	5.03	1.62		.015	.00	.00	RECTANG
14380.000	-157.383	5.685	-151.698	2975.00	19.73	6.04	-145.66	.00	7.61	35.06	10.000	18.000	1.50	0 .0
43.860	.0111					.0062	.27	5.69	1.68	4.90	.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
14423.860	-156.896	5.811	-151.085	2975.00	19.16	5.70	-145.38	.00	7.61	35.43	10.000	18.000	1.50	0 .0
JUNCT STR	.0307					.0084	.25	5.81	1.61		.015	.00	1.50	TRAP
14453.000	-156.000	5.265	-150.735	1845.00	22.04	7.55	-143.19	.00	7.63	23.79	10.000	8.000	1.50	0 .0
1336.181	.0109					.0109	14.62	5.26	2.07	5.26	.015	.00	1.50	TRAP
15789.180	-141.376	5.265	-136.111	1845.00	22.04	7.55	-128.57	.00	7.63	23.79	10.000	8.000	1.50	0 .0
781.123	.0109					.0107	8.33	5.26	2.07	5.26	.015	.00	1.50	TRAP
16570.300	-132.827	5.333	-127.494	1845.00	21.62	7.26	-120.23	.00	7.63	24.00	10.000	8.000	1.50	0 .0
412.035	.0109					.0098	4.02	5.33	2.02	5.26	.015	.00	1.50	TRAP
16982.340	-128.318	5.505	-122.813	1845.00	20.62	6.60	-116.21	.00	7.63	24.51	10.000	8.000	1.50	0 .0
179.172	.0109					.0086	1.54	5.50	1.90	5.26	.015	.00	1.50	TRAP
17161.510	-126.357	5.681	-120.676	1845.00	19.66	6.00	-114.68	.00	7.63	25.04	10.000	8.000	1.50	0 .0
107.162	.0109					.0075	.81	5.68	1.79	5.26	.015	.00	1.50	TRAP
17268.670	-125.184	5.862	-119.322	1845.00	18.74	5.45	-113.87	.00	7.63	25.59	10.000	8.000	1.50	0 .0
71.920	.0109					.0066	.48	5.86	1.68	5.26	.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
17340.590	-124.397	6.048	-118.349	1845.00	17.87	4.96	-113.39	.00	7.63	26.14	10.000	8.000	1.50	0 .0
50.887	.0109					.0058	.30	6.05	1.58	5.26	.015	.00	1.50	TRAP
17391.480	-123.840	6.239	-117.602	1845.00	17.04	4.51	-113.09	.00	7.63	26.72	10.000	8.000	1.50	0 .0
36.822	.0109					.0051	.19	6.24	1.49	5.26	.015	.00	1.50	TRAP
17428.300	-123.437	6.434	-117.003	1845.00	16.24	4.10	-112.91	.00	7.63	27.30	10.000	8.000	1.50	0 .0
26.697	.0109					.0045	.12	6.43	1.40	5.26	.015	.00	1.50	TRAP
17455.000	-123.145	6.635	-116.510	1845.00	15.49	3.73	-112.78	.00	7.63	27.91	10.000	8.000	1.50	0 .0
TRANS STR	.0372					.0062	.09	6.64	1.32		.015	.00	1.50	TRAP
17470.000	-122.587	4.997	-117.590	1845.00	19.78	6.07	-111.52	.00	6.72	18.67	10.000	18.670	.00	0 .0
WALL	EXIT													

17470.000	-122.587	5.234	-117.353	1845.00	19.58	5.96	-111.40	.00	6.89	18.67	7.000	18.670	.00	1	.7		
40.000	.0130					.0119	.48	5.23	1.54	5.08	.015	.00	.00	BOX			
17510.000	-122.066	5.269	-116.797	1845.00	19.45	5.88	-110.92	.00	6.89	18.67	7.000	18.670	.00	1	.7		
WALL	ENTRANCE																
17510.000	-122.066	4.675	-117.391	1845.00	21.14	6.94	-110.45	.00	6.72	18.67	10.000	18.670	.00	0	.0		
TRANS STR	.0355					.0083	.25	4.68	1.72		.015	.00	.00	RECTANG			
17540.000	-121.000	5.949	-115.051	1845.00	18.33	5.22	-109.84	.00	7.63	25.85	10.000	8.000	1.50	0	.0		
34.717	.0078					.0066	.23	5.95	1.64	5.72	.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
17574.710	-120.730	5.974	-114.756	1845.00	18.21	5.15	-109.61	.00	7.63	25.92	10.000	8.000	1.50	0 .0
169.912	.0078					.0061	1.04	5.97	1.62	5.72	.015	.00	1.50	TRAP
17744.630	-119.407	6.162	-113.245	1845.00	17.36	4.68	-108.56	.00	7.63	26.49	10.000	8.000	1.50	0 .0
97.252	.0078					.0054	.53	6.16	1.53	5.72	.015	.00	1.50	TRAP
17841.880	-118.651	6.356	-112.295	1845.00	16.55	4.26	-108.04	.00	7.63	27.07	10.000	8.000	1.50	0 .0
61.988	.0078					.0047	.29	6.36	1.44	5.72	.015	.00	1.50	TRAP
17903.870	-118.168	6.555	-111.613	1845.00	15.78	3.87	-107.74	.00	7.63	27.66	10.000	8.000	1.50	0 .0
40.969	.0078					.0042	.17	6.55	1.35	5.72	.015	.00	1.50	TRAP
17944.840	-117.849	6.759	-111.090	1845.00	15.05	3.52	-107.57	.00	7.63	28.28	10.000	8.000	1.50	0 .0
26.881	.0078					.0037	.10	6.76	1.27	5.72	.015	.00	1.50	TRAP
17971.720	-117.640	6.968	-110.672	1845.00	14.35	3.20	-107.47	.00	7.63	28.90	10.000	8.000	1.50	0 .0
16.688	.0078					.0032	.05	6.97	1.20	5.72	.015	.00	1.50	TRAP
17988.400	-117.510	7.183	-110.327	1845.00	13.68	2.91	-107.42	.00	7.63	29.55	10.000	8.000	1.50	0 .0
8.898	.0078					.0028	.03	7.18	1.13	5.72	.015	.00	1.50	TRAP
17997.300	-117.441	7.403	-110.038	1845.00	13.04	2.64	-107.40	.00	7.63	30.21	10.000	8.000	1.50	0 .0
2.697	.0078					.0025	.01	7.40	1.06	5.72	.015	.00	1.50	TRAP
18000.000	-117.420	7.630	-109.790	1845.00	12.44	2.40	-107.39	.00	7.63	30.89	10.000	8.000	1.50	0 .0


P01

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T1 CVWD                                                                                  0
T2 MDP
T3 P01-01
SO   1038.700-182.537  1      .015                -178.360
R    2000.000-178.692  1      .015
JX   2020.000-177.852  2 16   .015   71.000         -176.852         45.0
R    3783.170-175.126  2      .015
SH   3783.170-175.126  2
CD   1  1   0    .000  10.000   14.000 1.500 1.500   .00
CD   2  1   0    .000  10.000   12.000 1.500 1.500   .00
CD   3  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   4  1   0    .000  10.000   32.000 1.500 1.500   .00
CD   5  1   0    .000  10.000   16.000 1.500 1.500   .00
CD   6  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   12.000  .000  .000   .00
CD  11  3   0    .000   6.000   12.000  .000  .000   .00
CD  12  4   1    .000   5.000    0.000  .000  .000   .00
CD  13  4   1    .000   3.000    0.000  .000  .000   .00
CD  14  4   1    .000   5.000     .000  .000  .000   .00
CD  15  4   1    .000   8.000     .000  .000  .000   .00
CD  16  4   1    .000   4.000     .000  .000  .000   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   12.670  .000  .000   .00
CD  21  3   1    .670   6.000   12.670  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   24.670  .000  .000   .00
CD  31  3   1    .670   7.000   24.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q          990.000   .0
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FILE: P01-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 6- 6-2014 Time: 4: 1: 0

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	10.000	14.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	12.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	16.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	12.000			.00										
CD	11	3	0	.000	6.000	12.000	.000	.000	.00										
CD	12	4	1		5.000														
CD	13	4	1		3.000														
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	4	1		4.000														
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	12.670			.00										
CD	21	3	1	.670	6.000	12.670	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.000	.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 -
O01-01

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
	1038.700	-182.537	1	-178.360

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
	2000.000	-178.692	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

2020.000	-177.852	2	16	0	.015	71.000	.000	-176.852	.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
	3783.170	-175.126	2	.015	.000	.000	.000	0

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	3783.170	-175.126	2	.000

CVWD
MDP
P01-01

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
1038.700	-182.537	4.133	-178.404	1061.00	12.71	2.51	-175.90	.00	4.72	26.40	10.000	14.000	1.50	0 .0
245.179	.0040					.0040	.98	4.13	1.26	4.13	.015	.00	1.50	TRAP
1283.879	-181.556	4.133	-177.423	1061.00	12.71	2.51	-174.92	.00	4.72	26.40	10.000	14.000	1.50	0 .0
350.254	.0040					.0042	1.47	4.13	1.26	4.13	.015	.00	1.50	TRAP
1634.133	-180.155	4.024	-176.132	1061.00	13.16	2.69	-173.44	.00	4.72	26.07	10.000	14.000	1.50	0 .0
169.533	.0040					.0047	.80	4.02	1.32	4.13	.015	.00	1.50	TRAP
1803.665	-179.477	3.879	-175.599	1061.00	13.80	2.96	-172.64	.00	4.72	25.64	10.000	14.000	1.50	0 .0
110.008	.0040					.0054	.60	3.88	1.40	4.13	.015	.00	1.50	TRAP
1913.673	-179.037	3.738	-175.299	1061.00	14.48	3.25	-172.04	.00	4.72	25.21	10.000	14.000	1.50	0 .0
86.327	.0040					.0062	.53	3.74	1.50	4.13	.015	.00	1.50	TRAP
2000.000	-178.692	3.601	-175.091	1061.00	15.18	3.58	-171.51	.00	4.72	24.80	10.000	14.000	1.50	0 .0
JUNCT STR	.0420					.0045	.09	3.60	1.59		.015	.00	1.50	TRAP
2020.000	-177.852	4.835	-173.017	990.00	10.64	1.76	-171.26	.00	4.84	26.51	10.000	12.000	1.50	0 .0
12.928	.0015					.0023	.03	4.84	1.00	5.47	.015	.00	1.50	TRAP
2032.928	-177.832	5.005	-172.827	990.00	10.14	1.60	-171.23	.00	4.84	27.01	10.000	12.000	1.50	0 .0
59.488	.0015					.0020	.12	5.00	.94	5.47	.015	.00	1.50	TRAP
2092.416	-177.740	5.180	-172.560	990.00	9.67	1.45	-171.11	.00	4.84	27.54	10.000	12.000	1.50	0 .0
194.325	.0015					.0018	.35	5.18	.88	5.47	.015	.00	1.50	TRAP

CVWD
MDP
O01-01

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

P01-01

2286.740	-177.440	5.359	-172.080	990.00	9.22	1.32	-170.76	.00	4.84	28.08	10.000	12.000	1.50	0	.0		
596.148	.0015					.0016	.96	5.36	.83	5.47	.015	.00	1.50	TRAP			
2882.888	-176.518	5.472	-171.046	990.00	8.95	1.24	-169.80	.00	4.84	28.41	10.000	12.000	1.50	0	.0		
900.281	.0015					.0015	1.39	5.47	.80	5.47	.015	.00	1.50	TRAP			
3783.170	-175.126	5.472	-169.654	990.00	8.95	1.24	-168.41	.00	4.84	28.41	10.000	12.000	1.50	0	.0		

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T1 CVWD                                                                                  0
T2 MDP
T3 P01-02
SO   1037.000-155.967  1      .015                -150.735
R    3750.000-145.000  1      .015                                  .000
JX   3770.000-144.700  2 12   .015  127.000         -143.700         45.0
R    5000.260-139.500  2      .015
R    6139.000-130.909  2      .015
JX   6154.000-130.789 10 12   .015  643.000         -130.909         45.0
WX   6154.000-130.789 11
R    9208.000-108.800 11      .013
WE   9208.000-108.800 10      .500
TS   9233.000-107.000  3      .015
R    9260.000-106.800  3
SH   9260.000-106.800  3
CD   1  1   0    .000  10.000   10.000 1.500 1.500   .00
CD   2  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   3  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   4  1   0    .000  10.000   32.000 1.500 1.500   .00
CD   5  1   0    .000  10.000   16.000 1.500 1.500   .00
CD   6  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000    8.000  .000  .000   .00
CD  11  4   1    .000   7.500     .000  .000  .000   .00
CD  12  4   1    .000   7.000    0.000  .000  .000   .00
CD  13  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  14  4   1    .000   5.000     .000  .000  .000   .00
CD  15  4   1    .000   8.000     .000  .000  .000   .00
CD  16  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   50.010  .000  .000   .00
CD  21  3   3    .670   7.000   50.010  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   24.670  .000  .000   .00
CD  31  3   1    .670   7.000   24.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q          455.000   .0
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FILE: P01-02.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 5-28-2014 Time:10: 2:36

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	10.000	10.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	16.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	8.000			.00										
CD	11	4	1		7.500														
CD	12	4	1		7.000														
CD	13	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	50.010			.00										
CD	21	3	3	.670	7.000	50.010	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.000	.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 -
P01-02

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
	1037.000	-155.967	1	-150.735

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
	3750.000	-145.000	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

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                              3770.000 -144.700    2    12     0   .015   127.000      .000  -143.700      .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
                              5000.260 -139.500    2              .015                           .000     .000      .000     0
 ELEMENT NO   5 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              6139.000 -130.909    2              .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
                              6154.000 -130.789   10    12     0   .015   643.000      .000  -130.909      .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  WALL  EXIT                      *
                    U/S DATA   STATION    INVERT  SECT
                              6154.000 -130.789   11
 ELEMENT NO   8 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              9208.000 -108.800   11              .013                           .000     .000      .000     0
 ELEMENT NO   9 IS A  WALL  ENTRANCE                  *
                    U/S DATA   STATION    INVERT  SECT             FP
                              9208.000 -108.800   10              .500
                                                      W S P G W                                                    PAGE NO   3
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  10 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                              9233.000 -107.000    3              .015                           .000     .000
 ELEMENT NO  11 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              9260.000 -106.800    3              .014                           .000     .000      .000     0
 ELEMENT NO  12 IS A SYSTEM HEADWORKS                 *                     *
                    U/S DATA   STATION    INVERT  SECT                                   W S ELEV
                              9260.000 -106.800    3                                        .000
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CVWD
MDP
P01-02

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
1037.000	-155.967	5.103	-150.864	1225.00	13.60	2.87	-147.99	.00	5.80	25.31	10.000	10.000	1.50	0 .0
2265.403	.0040					.0040	9.16	5.10	1.27	5.10	.015	.00	1.50	TRAP
3302.403	-146.809	5.103	-141.707	1225.00	13.60	2.87	-138.84	.00	5.80	25.31	10.000	10.000	1.50	0 .0
361.611	.0040					.0038	1.37	5.10	1.27	5.10	.015	.00	1.50	TRAP
3664.014	-145.348	5.274	-140.074	1225.00	12.97	2.61	-137.46	.00	5.80	25.82	10.000	10.000	1.50	0 .0
85.986	.0040					.0033	.29	5.27	1.20	5.10	.015	.00	1.50	TRAP
3750.000	-145.000	5.450	-139.550	1225.00	12.37	2.37	-137.18	.00	5.80	26.35	10.000	10.000	1.50	0 .0
JUNCT STR	.0150					.0037	.07	5.45	1.12		.015	.00	1.50	TRAP
3770.000	-144.700	5.153	-139.547	1098.00	13.54	2.85	-136.70	.00	5.87	23.46	10.000	8.000	1.50	0 .0
257.198	.0042					.0042	1.09	5.15	1.28	5.15	.015	.00	1.50	TRAP
4027.198	-143.613	5.153	-138.459	1098.00	13.54	2.85	-135.61	.00	5.87	23.46	10.000	8.000	1.50	0 .0
405.499	.0042					.0044	1.77	5.15	1.28	5.15	.015	.00	1.50	TRAP
4432.696	-141.899	5.075	-136.824	1098.00	13.86	2.98	-133.84	.00	5.87	23.23	10.000	8.000	1.50	0 .0
237.786	.0042					.0048	1.14	5.08	1.32	5.15	.015	.00	1.50	TRAP
4670.482	-140.894	4.915	-135.979	1098.00	14.53	3.28	-132.70	.00	5.87	22.74	10.000	8.000	1.50	0 .0
138.266	.0042					.0055	.76	4.91	1.41	5.15	.015	.00	1.50	TRAP
4808.748	-140.309	4.759	-135.551	1098.00	15.24	3.61	-131.94	.00	5.87	22.28	10.000	8.000	1.50	0 .0
104.468	.0042					.0062	.65	4.76	1.49	5.15	.015	.00	1.50	TRAP

CVWD
MDP
P01-02

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
4913.215	-139.868	4.607	-135.261	1098.00	15.99	3.97	-131.29	.00	5.87	21.82	10.000	8.000	1.50	0 .0
87.044	.0042					.0071	.62	4.61	1.59	5.15	.015	.00	1.50	TRAP
5000.260	-139.500	4.459	-135.041	1098.00	16.77	4.37	-130.68	.00	5.87	21.38	10.000	8.000	1.50	0 .0
152.745	.0075					.0075	1.15	4.46	1.69	4.46	.015	.00	1.50	TRAP
5153.005	-138.348	4.459	-133.889	1098.00	16.77	4.37	-129.52	.00	5.87	21.38	10.000	8.000	1.50	0 .0
546.262	.0075					.0072	3.96	4.46	1.69	4.46	.015	.00	1.50	TRAP
5699.267	-134.226	4.553	-129.673	1098.00	16.26	4.11	-125.57	.00	5.87	21.66	10.000	8.000	1.50	0 .0
217.152	.0075					.0065	1.42	4.55	1.62	4.46	.015	.00	1.50	TRAP
5916.419	-132.588	4.704	-127.884	1098.00	15.50	3.73	-124.15	.00	5.87	22.11	10.000	8.000	1.50	0 .0
101.606	.0075					.0057	.58	4.70	1.53	4.46	.015	.00	1.50	TRAP
6018.025	-131.822	4.859	-126.963	1098.00	14.78	3.39	-123.57	.00	5.87	22.58	10.000	8.000	1.50	0 .0
59.545	.0075					.0050	.30	4.86	1.44	4.46	.015	.00	1.50	TRAP
6077.570	-131.372	5.017	-126.355	1098.00	14.09	3.08	-123.27	.00	5.87	23.05	10.000	8.000	1.50	0 .0
37.551	.0075					.0044	.17	5.02	1.35	4.46	.015	.00	1.50	TRAP
6115.121	-131.089	5.181	-125.908	1098.00	13.44	2.80	-123.10	.00	5.87	23.54	10.000	8.000	1.50	0 .0
23.879	.0075					.0039	.09	5.18	1.27	4.46	.015	.00	1.50	TRAP
6139.000	-130.909	5.348	-125.561	1098.00	12.81	2.55	-123.01	.00	5.87	24.04	10.000	8.000	1.50	0 .0
JUNCT STR	.0080					.0087	.13	5.35	1.20		.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
6154.000	-130.789	3.302	-127.487	455.00	17.22	4.61	-122.88	.00	4.65	8.00	10.000	8.000	.00	0 .0
WALL	EXIT													

6153.999	-130.789	4.616	-126.173	455.00	15.95	3.95	-122.22	.00	5.53	7.30	7.500	.000	.00	1	.0
2225.183	.0072					.0072	16.02	4.62	1.42	4.62	.013	.00	.00	PIPE	
8379.182	-114.768	4.616	-110.151	455.00	15.95	3.95	-106.20	.00	5.53	7.30	7.500	.000	.00	1	.0
432.461	.0072					.0071	3.07	4.62	1.42	4.62	.013	.00	.00	PIPE	
8811.643	-111.654	4.657	-106.997	455.00	15.78	3.87	-103.13	.00	5.53	7.28	7.500	.000	.00	1	.0
268.268	.0072					.0066	1.77	4.66	1.40	4.62	.013	.00	.00	PIPE	
9079.910	-109.722	4.852	-104.870	455.00	15.05	3.52	-101.35	.00	5.53	7.17	7.500	.000	.00	1	.0
85.021	.0072					.0059	.50	4.85	1.29	4.62	.013	.00	.00	PIPE	
9164.931	-109.110	5.059	-104.051	455.00	14.35	3.20	-100.85	.00	5.53	7.03	7.500	.000	.00	1	.0
34.300	.0072					.0052	.18	5.06	1.19	4.62	.013	.00	.00	PIPE	
9199.230	-108.863	5.282	-103.581	455.00	13.68	2.91	-100.67	.00	5.53	6.85	7.500	.000	.00	1	.0
8.770	.0072					.0047	.04	5.28	1.09	4.62	.013	.00	.00	PIPE	
9208.000	-108.800	5.525	-103.275	455.00	13.04	2.64	-100.63	.00	5.53	6.61	7.500	.000	.00	1	.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
9208.000	-108.800	8.466	-100.334	455.00	6.72	.70	-99.63	.00	4.65	8.00	10.000	8.000	.00	0 .0
TRANS STR	.0720					.0007	.02	8.47	.41		.015	.00	.00	RECTANG
9233.000	-107.000	7.216	-99.784	455.00	3.75	.22	-99.57	.00	4.05	27.65	10.000	6.000	1.50	0 .0
25.737	.0074					.0002	.01	7.22	.32	3.06	.014	.00	1.50	TRAP
9258.737	-106.809	7.009	-99.800	455.00	3.93	.24	-99.56	.00	4.05	27.03	10.000	6.000	1.50	0 .0
1.263	.0074					.0002	.00	7.01	.33	3.06	.014	.00	1.50	TRAP
9260.000	-106.800	6.999	-99.801	455.00	3.94	.24	-99.56	.00	4.05	27.00	10.000	6.000	1.50	0 .0

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                                                                                                                P02
T1 CVWD                                                                                                                                  0
T2 MDP
T3 P02
SO   1010.680-232.043  1      .015                -225.150
R    4000.000-229.237  1      .015                                                .000
JX   4015.000-229.223  2 12   .015   94.000         -228.223         45.0
R    7773.000-225.465  2      .015
TS   7788.000-225.450 10      .015
WX   7788.000-225.450 11      .015
R    7848.000-225.300 11      .015
WE   7848.000-225.300 10      .015
TS   7863.000-224.900  2      .015
R   10184.000-222.579  2      .015
JX  10214.000-222.247  3 13   .015  829.000         -222.247         30.0
R   11750.000-220.711  3      .015
JX  11780.000-220.380  4 13   .015  767.000         -220.380         30.0
R   14043.000-218.117  4      .015
TS  14058.000-218.080 20      .015
WX  14058.000-218.080 21      .015
R   14318.000-217.430 21      .015
WE  14318.000-217.430 20      .015
JX  14333.000-217.392  4 14   .015  469.000         -216.392         45.0
R   16600.000-215.204  4      .015
JX  16630.000-215.200  5 14   .015  469.000         -214.200         45.0
R   19691.000-212.300  5      .015
TS  19706.000-212.163 30      .015
WX  19706.000-212.163 31      .015
R   19746.000-212.063 31      .015
WE  19746.000-212.063 30      .015
JX  19761.000-212.026  6 15   .015  569.000         -211.026         45.0
R   23821.260-207.960  6      .015
SH  23821.260-207.960  6
CD   1  1   0    .000  10.000   50.000 1.500 1.500   .00
CD   2  1   0    .000  10.000   48.000 1.500 1.500   .00
CD   3  1   0    .000  10.000   40.000 1.500 1.500   .00
CD   4  1   0    .000  10.000   32.000 1.500 1.500   .00
CD   5  1   0    .000  10.000   16.000 1.500 1.500   .00
CD   6  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   58.010  .000  .000   .00
CD  11  3   3    .670   7.000   58.010  .000  .000   .00
CD  12  4   1    .000   4.000    0.000  .000  .000   .00
CD  13  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  14  4   1    .000   5.000     .000  .000  .000   .00
CD  15  4   1    .000   8.000     .000  .000  .000   .00
CD  16  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   50.010  .000  .000   .00
CD  21  3   3    .670   7.000   50.010  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
                                                                                                                Page 1
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CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   24.670  .000  .000   .00
CD  31  3   1    .670   7.000   24.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q           569.000   .0
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FILE: P02.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 5-28-2014 Time: 3:25:29

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	50.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	16.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	58.010			.00										
CD	11	3	3	.670	7.000	58.010	.000	.000	.00										
CD	12	4	1		4.000														
CD	13	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	50.010			.00										
CD	21	3	3	.670	7.000	50.010	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.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 -
P02

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
	1010.680	-232.043	1	-225.150

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
	4000.000	-229.237	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

```
                                4015.000 -229.223    2    12     0   .015    94.000      .000  -228.223      .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
                                7773.000 -225.465    2              .015                          .000     .000      .000     0
 ELEMENT NO   5 IS A TRANSITION         *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                                7788.000 -225.450   10              .015                          .000     .000
 ELEMENT NO   6 IS A  WALL  EXIT                        *
                    U/S DATA   STATION    INVERT  SECT
                                7788.000 -225.450   11
 ELEMENT NO   7 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                                7848.000 -225.300   11              .015                          .000     .000      .000     0
 ELEMENT NO   8 IS A  WALL  ENTRANCE                    *
                    U/S DATA   STATION    INVERT  SECT             FP
                                7848.000 -225.300   10              .015
 ELEMENT NO   9 IS A TRANSITION         *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                                7863.000 -224.900    2              .015                          .000     .000
 ELEMENT NO  10 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               10184.000 -222.579    2              .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
                               10214.000 -222.247    3    13     0   .015   829.000      .000  -222.247      .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
                               11750.000 -220.711    3              .015                          .000     .000      .000     0
 ELEMENT NO  13 IS A JUNCTION           *         *     *     *                  *                  *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                               11780.000 -220.380    4    13     0   .015   767.000      .000  -220.380      .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  14 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               14043.000 -218.117    4              .015                          .000     .000      .000     0
 ELEMENT NO  15 IS A TRANSITION         *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               14058.000 -218.080   20              .015                          .000     .000
 ELEMENT NO  16 IS A  WALL  EXIT                        *
                    U/S DATA   STATION    INVERT  SECT
                               14058.000 -218.080   21
 ELEMENT NO  17 IS A REACH              *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               14318.000 -217.430   21              .015                          .000     .000      .000     0
 ELEMENT NO  18 IS A  WALL  ENTRANCE                    *
                    U/S DATA   STATION    INVERT  SECT             FP
                               14318.000 -217.430   20              .015
 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
                               14333.000 -217.392    4    14     0   .015   469.000      .000  -216.392      .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 20 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	16600.000	-215.204	4	.015	.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
	16630.000	-215.200	5	14	0	.015	469.000	.000	-214.200	.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

W S P G W

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
	19691.000	-212.300	5	.015	.000	.000	.000	0

ELEMENT NO 23 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	19706.000	-212.163	30	.015	.000	.000

ELEMENT NO 24 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	19706.000	-212.163	31

ELEMENT NO 25 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	19746.000	-212.063	31	.015	.000	.000	.000	0

ELEMENT NO 26 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	19746.000	-212.063	30	.015

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
	19761.000	-212.026	6	15	0	.015	569.000	.000	-211.026	.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
	23821.260	-207.960	6	.015	.000	.000	.000	0

ELEMENT NO 29 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	23821.260	-207.960	6	.000

CVWD
MDP
P02

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1010.680	-232.043	6.893	-225.150	3766.00	9.05	1.27	-223.88	.00	5.30	70.68	10.000	50.000	1.50	0 .0
2389.334	.0009				.0009	2.13	6.89	.66	6.70	.015	.00	1.50		TRAP
3400.014	-229.800	6.695	-223.105	3766.00	9.37	1.36	-221.74	.00	5.30	70.09	10.000	50.000	1.50	0 .0
599.986	.0009				.0009	.56	6.70	.69	6.70	.015	.00	1.50		TRAP
4000.000	-229.237	6.695	-222.542	3766.00	9.37	1.36	-221.18	.00	5.30	70.09	10.000	50.000	1.50	0 .0
JUNCT STR	.0009				.0009	.01	6.70	.69		.015	.00	1.50		TRAP
4015.000	-229.223	6.709	-222.514	3672.00	9.43	1.38	-221.13	.00	5.34	68.13	10.000	48.000	1.50	0 .0
1965.469	.0010				.0010	1.92	6.71	.69	6.62	.015	.00	1.50		TRAP
5980.469	-227.258	6.624	-220.634	3672.00	9.57	1.42	-219.21	.00	5.34	67.87	10.000	48.000	1.50	0 .0
1792.531	.0010				.0010	1.79	6.62	.71	6.62	.015	.00	1.50		TRAP
7773.000	-225.465	6.624	-218.841	3672.00	9.57	1.42	-217.42	.00	5.34	67.87	10.000	48.000	1.50	0 .0
TRANS STR	.0010				.0010	.01	6.62	.71		.015	.00	1.50		TRAP
7788.000	-225.450	6.634	-218.816	3672.00	9.54	1.41	-217.40	.00	4.99	58.01	10.000	58.010	.00	0 .0
WALL EXIT														
7788.000	-225.450	6.634	-218.816	3672.00	9.88	1.52	-217.30	.00	5.11	58.01	7.000	58.010	.00	3 .7
60.000	.0025				.0019	.12	6.63	.69	6.04	.015	.00	.00		BOX

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

CVWD
MDP
P02

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

7848.000	-225.300	6.575	-218.725	3672.00	9.97	1.54	-217.18	.00	5.11	58.01	7.000	58.010	.00	3 .7
WALL ENTRANCE														

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

7848.000	-225.300	6.920	-218.380	3672.00	9.15	1.30	-217.08	.00	4.99	58.01	10.000	58.010	.00	0 .0
TRANS STR	.0267				.0010	.01	6.92	.61			.015	.00	.00	RECTANG
7863.000	-224.900	6.420	-218.480	3672.00	9.92	1.53	-216.95	.00	5.34	67.26	10.000	48.000	1.50	0 .0
1691.807	.0010				.0011	1.79	6.42	.75	6.62	.015	.00	1.50	TRAP	
9554.807	-223.208	6.624	-216.585	3672.00	9.57	1.42	-215.16	.00	5.34	67.87	10.000	48.000	1.50	0 .0
629.193	.0010				.0010	.63	6.62	.71	6.62	.015	.00	1.50	TRAP	
10184.000	-222.579	6.624	-215.955	3672.00	9.57	1.42	-214.53	.00	5.34	67.87	10.000	48.000	1.50	0 .0
JUNCT STR	.0111				.0009	.03	6.62	.71			.015	.00	1.50	TRAP
10214.000	-222.247	6.896	-215.351	2843.00	8.19	1.04	-214.31	.00	5.05	60.69	10.000	40.000	1.50	0 .0
758.845	.0010				.0008	.59	6.90	.60	6.30	.015	.00	1.50	TRAP	
10972.840	-221.488	6.628	-214.860	2843.00	8.59	1.15	-213.71	.00	5.05	59.89	10.000	40.000	1.50	0 .0
777.155	.0010				.0009	.68	6.63	.64	6.30	.015	.00	1.50	TRAP	
11750.000	-220.711	6.461	-214.250	2843.00	8.86	1.22	-213.03	.00	5.05	59.38	10.000	40.000	1.50	0 .0
JUNCT STR	.0110				.0008	.02	6.46	.67			.015	.00	1.50	TRAP

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 5-28-2014 Time: 3:25:30

CVWD
MDP
P02

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
11780.000	-220.380	6.710	-213.670	2076.00	7.36	.84	-212.83	.00	4.70	52.13	10.000	32.000	1.50	0 .0
544.107	.0010				.0007	.37	6.71	.56	5.92	.015	.00	1.50	TRAP	
12324.110	-219.836	6.456	-213.380	2076.00	7.71	.92	-212.46	.00	4.70	51.37	10.000	32.000	1.50	0 .0
725.969	.0010				.0008	.57	6.46	.59	5.92	.015	.00	1.50	TRAP	
13050.080	-219.110	6.210	-212.900	2076.00	8.09	1.02	-211.88	.00	4.70	50.63	10.000	32.000	1.50	0 .0
992.924	.0010				.0009	.88	6.21	.63	5.92	.015	.00	1.50	TRAP	

14043.000	-218.117	6.024	-212.093	2076.00	8.40	1.10	-211.00	.00	4.70	50.07	10.000	32.000	1.50	0 .0
TRANS STR	.0025				.0007	.01	6.02	.67			.015	.00	1.50	TRAP
14058.000	-218.080	6.598	-211.482	2076.00	6.29	.61	-210.87	.00	3.77	50.01	10.000	50.010	.00	0 .0
WALL	EXIT													
14058.000	-218.080	6.599	-211.481	2076.00	6.55	.67	-210.81	.00	3.87	50.01	7.000	50.010	.00	3 .7
161.843	.0025				.0010	.15	6.60	.46	4.61	.015	.00	.00	BOX	

WARNING - Flow depth near top of box conduit

14219.840	-217.675	6.292	-211.383	2076.00	6.87	.73	-210.65	.00	3.87	50.01	7.000	50.010	.00	3 .7
98.157	.0025				.0011	.11	6.29	.49	4.61	.015	.00	.00	BOX	
14318.000	-217.430	6.113	-211.317	2076.00	7.07	.78	-210.54	.00	3.87	50.01	7.000	50.010	.00	3 .7
WALL	ENTRANCE													

CVWD
MDP
P02

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
14318.000	-217.430	6.270	-211.160	2076.00	6.62	.68	-210.48	.00	3.77	50.01	10.000	50.010	.00	0 .0
JUNCT STR	.0025				.0005	.01	6.27	.47			.015	.00	.00	RECTANG

WARNING - Junction Analysis - Change in Channel Type

14333.000	-217.392	6.342	-211.049	1607.00	6.10	.58	-210.47	.00	4.01	51.03	10.000	32.000	1.50	0 .0
398.567	.0010				.0005	.20	6.34	.47	5.17	.015	.00	1.50	TRAP	
14731.570	-217.007	6.101	-210.907	1607.00	6.40	.64	-210.27	.00	4.01	50.30	10.000	32.000	1.50	0 .0
439.556	.0010				.0006	.25	6.10	.50	5.17	.015	.00	1.50	TRAP	
15171.120	-216.583	5.867	-210.716	1607.00	6.71	.70	-210.02	.00	4.01	49.60	10.000	32.000	1.50	0 .0
517.346	.0010				.0007	.34	5.87	.54	5.17	.015	.00	1.50	TRAP	
15688.470	-216.084	5.641	-210.443	1607.00	7.04	.77	-209.67	.00	4.01	48.92	10.000	32.000	1.50	0 .0
696.344	.0010				.0008	.53	5.64	.57	5.17	.015	.00	1.50	TRAP	
16384.810	-215.412	5.422	-209.990	1607.00	7.38	.85	-209.14	.00	4.01	48.27	10.000	32.000	1.50	0 .0

215.188	.0010					.0008	.18	5.42	.61	5.17	.015	.00	1.50	TRAP				
16600.000	-215.204	5.374	-209.830	1607.00	7.46	.87	-208.96	.00	4.01	48.12	10.000	32.000	1.50	0	.0			
JUNCT STR	.0001							5.37	.62		.015	.00	1.50	TRAP				
16630.000	-215.200	4.634	-210.566	1138.00	10.70	1.78	-208.79	.00	4.63	29.90	10.000	16.000	1.50	0	.0			
7.918	.0009					.0023	.02	4.63	1.00	5.97	.015	.00	1.50	TRAP				

CVWD
MDP
P02

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
16637.920	-215.192	4.806	-210.387	1138.00	10.20	1.62	-208.77	.00	4.63	30.42	10.000	16.000	1.50	0 .0
29.344	.0009					.0020	.06	4.81	.94	5.97	.015	.00	1.50	TRAP
16667.260	-215.165	4.983	-210.181	1138.00	9.73	1.47	-208.71	.00	4.63	30.95	10.000	16.000	1.50	0 .0
62.313	.0009					.0017	.11	4.98	.88	5.97	.015	.00	1.50	TRAP
16729.570	-215.106	5.166	-209.939	1138.00	9.28	1.34	-208.60	.00	4.63	31.50	10.000	16.000	1.50	0 .0
116.648	.0009					.0015	.18	5.17	.83	5.97	.015	.00	1.50	TRAP
16846.220	-214.995	5.355	-209.640	1138.00	8.84	1.21	-208.43	.00	4.63	32.06	10.000	16.000	1.50	0 .0
217.445	.0009					.0013	.29	5.35	.78	5.97	.015	.00	1.50	TRAP
17063.670	-214.789	5.549	-209.240	1138.00	8.43	1.10	-208.14	.00	4.63	32.65	10.000	16.000	1.50	0 .0
453.434	.0009					.0012	.53	5.55	.73	5.97	.015	.00	1.50	TRAP
17517.100	-214.360	5.749	-208.611	1138.00	8.04	1.00	-207.61	.00	4.63	33.25	10.000	16.000	1.50	0 .0
1528.891	.0009					.0010	1.56	5.75	.69	5.97	.015	.00	1.50	TRAP
19045.990	-212.911	5.955	-206.956	1138.00	7.67	.91	-206.04	.00	4.63	33.86	10.000	16.000	1.50	0 .0
645.008	.0009					.0010	.61	5.95	.65	5.97	.015	.00	1.50	TRAP
19691.000	-212.300	5.961	-206.339	1138.00	7.65	.91	-205.43	.00	4.63	33.88	10.000	16.000	1.50	0 .0
TRANS STR	.0091					.0010	.01	5.96	.64		.015	.00	1.50	TRAP
19706.000	-212.163	5.804	-206.359	1138.00	7.95	.98	-205.38	.00	4.04	24.67	10.000	24.670	.00	0 .0
WALL EXIT														

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
19706.000	-212.163	5.804	-206.359	1138.00	8.17	1.04	-205.32	.00	4.12	24.67	7.000	24.670	.00	1 .7
40.000	.0025				.0016	.06	5.80	.61	4.93	.015	.00	.00		BOX
19746.000	-212.063	5.750	-206.313	1138.00	8.25	1.06	-205.26	.00	4.12	24.67	7.000	24.670	.00	1 .7
WALL	ENTRANCE													
19746.000	-212.063	5.918	-206.145	1138.00	7.79	.94	-205.20	.00	4.04	24.67	10.000	24.670	.00	0 .0
JUNCT STR	.0025				.0007	.01	5.92	.56		.015	.00	.00		RECTANG
			WARNING - Junction Analysis - Change in Channel Type											
19761.000	-212.026	6.449	-205.577	569.00	4.99	.39	-205.19	.00	4.15	27.35	10.000	8.000	1.50	0 .0
303.777	.0010				.0005	.15	6.45	.43	5.32	.015	.00	1.50		TRAP
20064.780	-211.722	6.253	-205.469	569.00	5.24	.43	-205.04	.00	4.15	26.76	10.000	8.000	1.50	0 .0
328.619	.0010				.0005	.18	6.25	.46	5.32	.015	.00	1.50		TRAP
20393.400	-211.393	6.062	-205.331	569.00	5.49	.47	-204.86	.00	4.15	26.19	10.000	8.000	1.50	0 .0
370.051	.0010				.0006	.23	6.06	.49	5.32	.015	.00	1.50		TRAP
20763.450	-211.022	5.876	-205.147	569.00	5.76	.52	-204.63	.00	4.15	25.63	10.000	8.000	1.50	0 .0
446.605	.0010				.0007	.32	5.88	.52	5.32	.015	.00	1.50		TRAP
21210.050	-210.575	5.694	-204.881	569.00	6.04	.57	-204.31	.00	4.15	25.08	10.000	8.000	1.50	0 .0
621.445	.0010				.0008	.50	5.69	.55	5.32	.015	.00	1.50		TRAP

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

P02

21831.500	-209.953	5.518	-204.435	569.00	6.34	.62	-203.81	.00	4.15	24.55	10.000	8.000	1.50	0	.0
1339.479	.0010				.0009	1.23	5.52	.58	5.32	.015	.00	1.50	TRAP		
23170.980	-208.611	5.346	-203.266	569.00	6.65	.69	-202.58	.00	4.15	24.04	10.000	8.000	1.50	0	.0
650.285	.0010				.0010	.64	5.35	.62	5.32	.015	.00	1.50	TRAP		
23821.260	-207.960	5.328	-202.632	569.00	6.68	.69	-201.94	.00	4.15	23.99	10.000	8.000	1.50	0	.0

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T1 CVWD                                                                                                  0
T2 MDP
T3 P02-01
SO   1051.800-222.241  1      .015                -215.351
R    2151.000-219.000  1      .015
TS   2166.000-218.557 10      .015
WX   2166.000-218.557 11
R    2336.000-218.064 11      .015
WE   2336.000-218.064 10      .500
TS   2351.000-217.620  1      .015
R    3550.000-215.000  1      .015
JX   3580.000-212.940  1 16   .015  246.000         -211.940         45.0
R    6180.000-202.000  1      .015
TS   6195.000-201.937 20      .015
WX   6195.000-201.937 21
R    6235.000-201.769 21      .015
WE   6235.000-201.769 20      .500
TS   6250.000-201.000  1      .015
R    6350.000-200.900  1      .015
SH   6350.000-200.900  1
CD   1  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   2  1   0    .000  10.000   12.000 1.500 1.500   .00
CD   3  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   4  1   0    .000  10.000   32.000 1.500 1.500   .00
CD   5  1   0    .000  10.000   16.000 1.500 1.500   .00
CD   6  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   14.000  .000  .000   .00
CD  11  3   0    .000   7.000   14.000  .000  .000   .00
CD  12  4   1    .000   5.000    0.000  .000  .000   .00
CD  13  4   1    .000   3.000    0.000  .000  .000   .00
CD  14  4   1    .000   5.000     .000  .000  .000   .00
CD  15  4   1    .000   8.000     .000  .000  .000   .00
CD  16  4   1    .000   5.000     .000  .000  .000   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   12.000  .000  .000   .00
CD  21  3   0    .000   6.000   12.000  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   24.670  .000  .000   .00
CD  31  3   1    .670   7.000   24.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
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Q 773.000 .0

FILE: P02-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 6- 9-2014 Time: 3:54: 0

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	10.000	6.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	12.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	16.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	14.000			.00										
CD	11	3	0	.000	7.000	14.000	.000	.000	.00										
CD	12	4	1		5.000														
CD	13	4	1		3.000														
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	4	1		5.000														
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	12.000			.00										
CD	21	3	0	.000	6.000	12.000	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.000	.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 -
P02-01

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
	1051.800	-222.241	1	-215.351

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
	2151.000	-219.000	1	.015	.000	.000	.000	0

ELEMENT NO 3 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE

```
                              2166.000 -218.557   10              .015                          .000     .000
 ELEMENT NO   4 IS A  WALL  EXIT                        *
                    U/S DATA   STATION    INVERT  SECT
                              2166.000 -218.557   11
 ELEMENT NO   5 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              2336.000 -218.064   11              .015                          .000     .000      .000     0
 ELEMENT NO   6 IS A  WALL  ENTRANCE                    *
                    U/S DATA   STATION    INVERT  SECT             FP
                              2336.000 -218.064   10              .500
 ELEMENT NO   7 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                              2351.000 -217.620    1              .015                          .000     .000
 ELEMENT NO   8 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              3550.000 -215.000    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
                              3580.000 -212.940    1    16     0   .015   246.000      .000  -211.940      .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
                              6180.000 -202.000    1              .015                          .000     .000      .000     0
 ELEMENT NO  11 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                              6195.000 -201.937   20              .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
                              6195.000 -201.937   21
 ELEMENT NO  13 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              6235.000 -201.769   21              .015                          .000     .000      .000     0
 ELEMENT NO  14 IS A  WALL  ENTRANCE                    *
                    U/S DATA   STATION    INVERT  SECT             FP
                              6235.000 -201.769   20              .500
 ELEMENT NO  15 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                              6250.000 -201.000    1              .015                          .000     .000
 ELEMENT NO  16 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              6350.000 -200.900    1              .015                          .000     .000      .000     0
 ELEMENT NO  17 IS A SYSTEM HEADWORKS                   *                     *
                    U/S DATA   STATION    INVERT  SECT                                   W S ELEV
                              6350.000 -200.900    1                                        .000
```

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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
1051.800	-222.241	6.890	-215.351	1019.00	9.05	1.27	-214.08	.00	6.09	26.67	10.000	6.000	1.50	0 .0
52.415	.0029					.0016	.08	6.89	.78	5.88	.015	.00	1.50	TRAP
1104.215	-222.086	6.691	-215.395	1019.00	9.50	1.40	-213.99	.00	6.09	26.07	10.000	6.000	1.50	0 .0
46.887	.0029					.0018	.08	6.69	.82	5.88	.015	.00	1.50	TRAP
1151.102	-221.948	6.498	-215.451	1019.00	9.96	1.54	-213.91	.00	6.09	25.49	10.000	6.000	1.50	0 .0
38.768	.0029					.0020	.08	6.50	.88	5.88	.015	.00	1.50	TRAP
1189.871	-221.834	6.309	-215.525	1019.00	10.45	1.69	-213.83	.00	6.09	24.93	10.000	6.000	1.50	0 .0
1.525	.0029					.0022	.00	6.31	.93	5.88	.015	.00	1.50	TRAP
1191.396	-221.829	6.302	-215.528	1019.00	10.46	1.70	-213.83	.00	6.09	24.90	10.000	6.000	1.50	0 .0
HYDRAULIC JUMP														
1191.396	-221.829	5.881	-215.949	1019.00	11.69	2.12	-213.83	.00	6.09	23.64	10.000	6.000	1.50	0 .0
440.346	.0029					.0029	1.30	5.88	1.07	5.88	.015	.00	1.50	TRAP
1631.742	-220.531	5.881	-214.650	1019.00	11.69	2.12	-212.53	.00	6.09	23.64	10.000	6.000	1.50	0 .0
182.225	.0029					.0031	.57	5.88	1.07	5.88	.015	.00	1.50	TRAP
1813.967	-219.994	5.743	-214.250	1019.00	12.14	2.29	-211.96	.00	6.09	23.23	10.000	6.000	1.50	0 .0
109.799	.0029					.0035	.38	5.74	1.13	5.88	.015	.00	1.50	TRAP
1923.766	-219.670	5.573	-214.097	1019.00	12.73	2.52	-211.58	.00	6.09	22.72	10.000	6.000	1.50	0 .0
85.026	.0029					.0040	.34	5.57	1.20	5.88	.015	.00	1.50	TRAP

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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

2008.792	-219.419	5.408	-214.012	1019.00	13.35	2.77	-211.24	.00	6.09	22.22	10.000	6.000	1.50	0	.0		
74.316	.0029					.0045	.33	5.41	1.27	5.88	.015	.00	1.50	TRAP			
2083.108	-219.200	5.246	-213.954	1019.00	14.00	3.05	-210.91	.00	6.09	21.74	10.000	6.000	1.50	0	.0		
67.892	.0029					.0051	.35	5.25	1.35	5.88	.015	.00	1.50	TRAP			
2151.000	-219.000	5.089	-213.911	1019.00	14.69	3.35	-210.56	.00	6.09	21.27	10.000	6.000	1.50	0	.0		
TRANS STR	.0295					.0047	.07	5.09	1.43		.015	.00	1.50	TRAP			
2166.000	-218.557	5.480	-213.077	1019.00	13.28	2.74	-210.34	.00	5.48	14.00	10.000	14.000	.00	0	.0		
WALL	EXIT																
2166.000	-218.557	5.480	-213.077	1019.00	13.28	2.74	-210.34	.00	5.48	14.00	7.000	14.000	.00	0	.0		
21.058	.0029					.0035	.07	5.48	1.00	6.18	.015	.00	.00	BOX			
2187.058	-218.496	5.747	-212.748	1019.00	12.66	2.49	-210.26	.00	5.48	14.00	7.000	14.000	.00	0	.0		
130.507	.0029					.0031	.40	5.75	.93	6.18	.015	.00	.00	BOX			
2317.564	-218.117	6.028	-212.089	1019.00	12.07	2.26	-209.83	.00	5.48	14.00	7.000	14.000	.00	0	.0		
18.436	.0029					.0031	.06	6.03	.87	6.18	.015	.00	.00	BOX			
WALL	ENTRANCE																
2336.000	-218.064	6.043	-212.021	1019.00	12.04	2.25	-209.77	.00	5.48	14.00	10.000	14.000	.00	0	.0		
TRANS STR	.0296					.0028	.04	6.04	.86		.015	.00	.00	RECTANG			

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 6- 9-2014 Time: 3:54:11

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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
2351.000	-217.620	6.114	-211.506	1019.00	10.99	1.87	-209.63	.00	6.09	24.34	10.000	6.000	1.50	0 .0
83.729	.0022					.0023	.20	6.11	.99	6.31	.015	.00	1.50	TRAP
2434.729	-217.437	6.298	-211.139	1019.00	10.48	1.70	-209.44	.00	6.09	24.89	10.000	6.000	1.50	0 .0
250.839	.0022					.0022	.55	6.30	.93	6.31	.015	.00	1.50	TRAP
2685.567	-216.889	6.305	-210.584	1019.00	10.45	1.70	-208.89	.00	6.09	24.92	10.000	6.000	1.50	0 .0
503.652	.0022					.0022	1.10	6.31	.93	6.31	.015	.00	1.50	TRAP
3189.219	-215.788	6.305	-209.483	1019.00	10.45	1.70	-207.79	.00	6.09	24.92	10.000	6.000	1.50	0 .0
HYDRAULIC JUMP														

3189.219	-215.788	5.876	-209.912	1019.00	11.71	2.13	-207.78	.00	6.09	23.63	10.000	6.000	1.50	0	.0
20.718	.0022					.0031	.06	5.88	1.07	6.31	.015	.00	1.50	TRAP	
3209.937	-215.743	5.792	-209.951	1019.00	11.98	2.23	-207.72	.00	6.09	23.38	10.000	6.000	1.50	0	.0
43.831	.0022					.0034	.15	5.79	1.11	6.31	.015	.00	1.50	TRAP	
3253.768	-215.647	5.621	-210.027	1019.00	12.56	2.45	-207.58	.00	6.09	22.86	10.000	6.000	1.50	0	.0
47.795	.0022					.0038	.18	5.62	1.18	6.31	.015	.00	1.50	TRAP	
3301.563	-215.543	5.454	-210.089	1019.00	13.18	2.70	-207.39	.00	6.09	22.36	10.000	6.000	1.50	0	.0
49.552	.0022					.0043	.22	5.45	1.25	6.31	.015	.00	1.50	TRAP	
3351.114	-215.435	5.291	-210.144	1019.00	13.82	2.97	-207.18	.00	6.09	21.87	10.000	6.000	1.50	0	.0
50.163	.0022					.0049	.25	5.29	1.33	6.31	.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
3401.278	-215.325	5.132	-210.193	1019.00	14.49	3.26	-206.93	.00	6.09	21.40	10.000	6.000	1.50	0	.0
50.116	.0022					.0056	.28	5.13	1.41	6.31	.015	.00	1.50	TRAP	
3451.393	-215.215	4.978	-210.238	1019.00	15.20	3.59	-206.65	.00	6.09	20.93	10.000	6.000	1.50	0	.0
49.661	.0022					.0064	.32	4.98	1.50	6.31	.015	.00	1.50	TRAP	
3501.055	-215.107	4.827	-210.280	1019.00	15.94	3.95	-206.33	.00	6.09	20.48	10.000	6.000	1.50	0	.0
48.945	.0022					.0073	.35	4.83	1.59	6.31	.015	.00	1.50	TRAP	
3550.000	-215.000	4.680	-210.320	1019.00	16.72	4.34	-205.98	.00	6.09	20.04	10.000	6.000	1.50	0	.0
JUNCT STR	.0687					.0060	.18	4.68	1.69		.015	.00	1.50	TRAP	
3580.000	-212.940	4.741	-208.199	773.00	12.43	2.40	-205.80	.00	5.31	20.22	10.000	6.000	1.50	0	.0
1985.823	.0042					.0042	8.36	4.74	1.25	4.74	.015	.00	1.50	TRAP	
5565.823	-204.584	4.741	-199.843	773.00	12.43	2.40	-197.44	.00	5.31	20.22	10.000	6.000	1.50	0	.0
318.700	.0042					.0043	1.39	4.74	1.25	4.74	.015	.00	1.50	TRAP	
5884.523	-203.243	4.667	-198.576	773.00	12.74	2.52	-196.06	.00	5.31	20.00	10.000	6.000	1.50	0	.0
184.876	.0042					.0048	.89	4.67	1.29	4.74	.015	.00	1.50	TRAP	
6069.399	-202.465	4.525	-197.941	773.00	13.36	2.77	-195.17	.00	5.31	19.57	10.000	6.000	1.50	0	.0

110.601	.0042				.0055	.60	4.52	1.37	4.74	.015	.00	1.50	TRAP	
6180.000	-202.000	4.386	-197.615	773.00	14.01	3.05	-194.57	.00	5.31	19.16	10.000	6.000	1.50	0 .0
TRANS STR	.0042				.0051	.08	4.39	1.46		.015	.00	1.50	TRAP	

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 6- 9-2014 Time: 3:54:11

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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
6195.000	-201.937	5.050	-196.887	773.00	12.76	2.53	-194.36	.00	5.05	12.00	10.000	12.000	.00	0 .0
WALL	EXIT													
6195.000	-201.937	5.050	-196.887	773.00	12.76	2.53	-194.36	.00	5.05	12.00	6.000	12.000	.00	0 .0
13.435	.0042				.0042	.06	5.05	1.00	5.10	.015	.00	.00	BOX	
6208.435	-201.881	5.102	-196.778	773.00	12.62	2.47	-194.30	.00	5.05	12.00	6.000	12.000	.00	0 .0
26.565	.0042				.0042	.11	5.10	.98	5.10	.015	.00	.00	BOX	
WALL	ENTRANCE													
6235.000	-201.769	5.103	-196.666	773.00	12.62	2.47	-194.19	.00	5.05	12.00	10.000	12.000	.00	0 .0
TRANS STR	.0513				.0028	.04	5.10	.98		.015	.00	.00	RECTANG	
6250.000	-201.000	6.117	-194.883	773.00	8.33	1.08	-193.81	.00	5.31	24.35	10.000	6.000	1.50	0 .0
100.000	.0010				.0014	.14	6.12	.75	6.65	.015	.00	1.50	TRAP	
6350.000	-200.900	6.204	-194.696	773.00	8.14	1.03	-193.67	.00	5.31	24.61	10.000	6.000	1.50	0 .0

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FILE: Q01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 6- 5-2014 Time:10:50:25

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	1	0	.000	10.000	55.000	1.500	1.500	.00										
CD	2	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	9.000	.000	.000	.00										
CD	6	4	1		7.000														
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	14.670			.00										
CD	11	3	1	.670	7.000	14.670	.000	.000	.00										
CD	12	4	1		7.000														
CD	13	4	1		3.000														
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	4	1		7.000														
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	14.670			.00										
CD	21	3	1	.670	7.000	14.670	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.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 -
Q01

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
		1250.000	-231.750	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
		1350.000	-231.700	1	.015	.000	.000	.000	0

ELEMENT NO 3 IS A TRANSITION * * *

	U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE

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                                2000.000 -231.375    2              .015                          .000     .000
ELEMENT NO   4 IS A REACH                *         *     *
                    U/S DATA    STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                                4373.000 -226.866    2              .015                          .000     .000      .000     0
ELEMENT NO   5 IS A TRANSITION           *         *     *
                    U/S DATA    STATION    INVERT  SECT              N                          RADIUS   ANGLE
                                4388.000 -226.829   10              .015                          .000     .000
ELEMENT NO   6 IS A  WALL  EXIT                        *
                    U/S DATA    STATION    INVERT  SECT
                                4388.000 -226.829   11
ELEMENT NO   7 IS A REACH                *         *     *
                    U/S DATA    STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                                4568.000 -226.379   11              .015                          .000     .000      .000     0
ELEMENT NO   8 IS A  WALL  ENTRANCE                    *
                    U/S DATA    STATION    INVERT  SECT             FP
                                4568.000 -226.379   10              .500
ELEMENT NO   9 IS A TRANSITION           *         *     *
                    U/S DATA    STATION    INVERT  SECT              N                          RADIUS   ANGLE
                                4583.000 -226.341    2              .015                          .000     .000
ELEMENT NO  10 IS A REACH                *         *     *
                    U/S DATA    STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                                4683.000 -226.243    2              .015                          .000     .000      .000     0
ELEMENT NO  11 IS A SYSTEM HEADWORKS                   *                     *
                    U/S DATA    STATION    INVERT  SECT                                   W S ELEV
                                4683.000 -226.243    2                                        .000
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MDP
Q01

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
1250.000	-231.750	1.807	-229.943	777.00	7.45	.86	-229.08	.00	1.81	60.42	10.000	55.000	1.50	0 .0
2.693	.0005					.0026	.01	1.81	1.00	3.02	.015	.00	1.50	TRAP
1252.693	-231.749	1.891	-229.858	777.00	7.11	.78	-229.07	.00	1.81	60.67	10.000	55.000	1.50	0 .0
9.521	.0005					.0022	.02	1.89	.93	3.02	.015	.00	1.50	TRAP
1262.214	-231.744	1.979	-229.765	777.00	6.77	.71	-229.05	.00	1.81	60.94	10.000	55.000	1.50	0 .0
18.929	.0005					.0019	.04	1.98	.87	3.02	.015	.00	1.50	TRAP
1281.143	-231.734	2.070	-229.664	777.00	6.46	.65	-229.02	.00	1.81	61.21	10.000	55.000	1.50	0 .0
7.790	.0005					.0017	.01	2.07	.81	3.02	.015	.00	1.50	TRAP
1288.933	-231.731	2.090	-229.640	777.00	6.39	.63	-229.01	.00	1.81	61.27	10.000	55.000	1.50	0 .0
HYDRAULIC JUMP														
1288.933	-231.731	1.540	-230.191	777.00	8.80	1.20	-228.99	.00	1.81	59.62	10.000	55.000	1.50	0 .0
10.585	.0005					.0051	.05	1.54	1.28	3.02	.015	.00	1.50	TRAP
1299.518	-231.725	1.477	-230.248	777.00	9.20	1.31	-228.94	.00	1.81	59.43	10.000	55.000	1.50	0 .0
11.923	.0005					.0060	.07	1.48	1.36	3.02	.015	.00	1.50	TRAP
1311.441	-231.719	1.411	-230.309	777.00	9.64	1.44	-228.86	.00	1.81	59.23	10.000	55.000	1.50	0 .0
12.577	.0005					.0069	.09	1.41	1.46	3.02	.015	.00	1.50	TRAP
1324.019	-231.713	1.347	-230.366	777.00	10.12	1.59	-228.78	.00	1.81	59.04	10.000	55.000	1.50	0 .0
12.930	.0005					.0081	.10	1.35	1.56	3.02	.015	.00	1.50	TRAP

CVWD
MDP
Q01

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

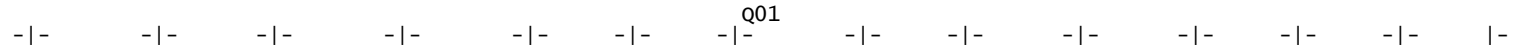
1336.948	-231.707	1.286	-230.420	777.00	10.61	1.75	-228.67	.00	1.81	58.86	10.000	55.000	1.50	0	.0
13.052	.0005					.0094	.12	1.29	1.68	3.02	.015	.00	1.50	TRAP	
1350.000	-231.700	1.229	-230.471	777.00	11.13	1.92	-228.55	.00	1.81	58.69	10.000	55.000	1.50	0	.0
TRANS STR	.0005					.0064	4.16	1.23	1.80		.015	.00	1.50	TRAP	
2000.000	-231.375	5.321	-226.054	777.00	10.44	1.69	-224.36	.00	5.32	21.96	10.000	6.000	1.50	0	.0
16.868	.0019					.0025	.04	5.32	1.00	5.74	.015	.00	1.50	TRAP	
2016.868	-231.343	5.485	-225.858	777.00	9.96	1.54	-224.32	.00	5.32	22.45	10.000	6.000	1.50	0	.0
103.315	.0019					.0022	.22	5.48	.94	5.74	.015	.00	1.50	TRAP	
2120.184	-231.147	5.652	-225.494	777.00	9.49	1.40	-224.09	.00	5.32	22.96	10.000	6.000	1.50	0	.0
333.331	.0019					.0020	.65	5.65	.89	5.74	.015	.00	1.50	TRAP	
2453.515	-230.513	5.741	-224.773	777.00	9.26	1.33	-223.44	.00	5.32	23.22	10.000	6.000	1.50	0	.0
1919.485	.0019					.0019	3.64	5.74	.86	5.74	.015	.00	1.50	TRAP	
4373.000	-226.866	5.741	-221.125	777.00	9.26	1.33	-219.79	.00	5.32	23.22	10.000	6.000	1.50	0	.0
TRANS STR	.0025					.0019	.03	5.74	.86		.015	.00	1.50	TRAP	
4388.000	-226.829	5.751	-221.078	777.00	9.21	1.32	-219.76	.00	4.43	14.67	10.000	14.670	.00	0	.0
WALL	EXIT														
4388.000	-226.829	5.752	-221.077	777.00	9.65	1.45	-219.63	.00	4.57	14.67	7.000	14.670	.00	1	.7
180.000	.0025					.0030	.55	5.75	.73	6.48	.015	.00	.00	BOX	

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 6- 5-2014 Time:10:50:34

CVWD
MDP
Q01

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
4568.000	-226.379	5.992	-220.387	777.00	9.26	1.33	-219.05	.00	4.57	14.67	7.000	14.670	.00	1 .7
WALL	ENTRANCE													
4568.000	-226.379	6.359	-220.020	777.00	8.33	1.08	-218.94	.00	4.43	14.67	10.000	14.670	.00	0 .0
TRANS STR	.0025					.0012	.02	6.36	.58		.015	.00	.00	RECTANG
4583.000	-226.341	6.645	-219.696	777.00	7.32	.83	-218.86	.00	5.32	25.94	10.000	6.000	1.50	0 .0
100.000	.0010					.0010	.10	6.65	.64	6.69	.015	.00	1.50	TRAP
4683.000	-226.243	6.650	-219.593	777.00	7.31	.83	-218.76	.00	5.32	25.95	10.000	6.000	1.50	0 .0


Q01

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                                                                                R01
T1 CVWD                                                                                  0
T2 MDP
T3 R01
SO   1034.220-209.350  1      .015                -203.900
R    1500.000-206.480  1      .015                                  .000
R    2233.000-201.420  1      .015
JX   2263.000-200.000  2 12   .015  637.000         -199.000         45.0
R    3700.000-190.709  2      .015
JX   3715.000-190.112  2 13   .015   74.000         -189.112         45.0
R    5047.000-182.000  2      .015
TS   5062.000-181.819 10      .015
WX   5062.000-181.819 11      .015
R    5102.000-181.335 11      .015
WE   5102.000-181.335 10      .500
JX   5117.000-180.900  3 13   .015   64.000         -181.900         45.0
R    7694.000-150.000  3      .015
TS   7709.000-149.819 20      .015
WX   7709.000-149.819 21      .015
R    7749.000-149.335 21      .015
WE   7749.000-149.335 20      .015
TS   7764.000-149.153  3      .015
R    7918.000-147.286  3      .015
SH   7918.000-147.286  3
CD   1  1   0    .000   8.700   10.000 1.500 1.500   .00
CD   2  1   0    .000   8.700    8.000 1.500 1.500   .00
CD   3  1   0    .000  10.000    6.000 1.500 1.500   .00
CD   4  1   0    .000  10.000   32.000 1.500 1.500   .00
CD   5  1   0    .000  10.000   16.000 1.500 1.500   .00
CD   6  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   14.670  .000  .000   .00
CD  11  3   1    .670   7.000   14.670  .000  .000   .00
CD  12  4   1    .000   7.000    0.000  .000  .000   .00
CD  13  4   1    .000   3.000    0.000  .000  .000   .00
CD  14  4   1    .000   5.000     .000  .000  .000   .00
CD  15  4   1    .000   8.000     .000  .000  .000   .00
CD  16  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   14.670  .000  .000   .00
CD  21  3   1    .670   7.000   14.670  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   24.670  .000  .000   .00
CD  31  3   1    .670   7.000   24.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
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CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q           969.000   .0
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FILE: R01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 6- 3-2014 Time: 4:43:55

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	8.700	10.000	1.500	1.500	.00										
CD	2	1	0	.000	8.700	8.000	1.500	1.500	.00										
CD	3	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	4	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	16.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	14.670			.00										
CD	11	3	1	.670	7.000	14.670	.000	.000	.00										
CD	12	4	1		7.000														
CD	13	4	1		3.000														
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	14.670			.00										
CD	21	3	1	.670	7.000	14.670	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.000	.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 -
R01

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
	1034.220	-209.350	1	-203.900

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 -206.480    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
                               2233.000 -201.420    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
                               2263.000 -200.000    2    12     0   .015   637.000      .000  -199.000      .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
                               3700.000 -190.709    2              .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
                               3715.000 -190.112    2    13     0   .015    74.000      .000  -189.112      .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
                               5047.000 -182.000    2              .015                           .000     .000      .000     0
 ELEMENT NO   8 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               5062.000 -181.819   10              .015                           .000     .000
 ELEMENT NO   9 IS A  WALL  EXIT                       *
                    U/S DATA   STATION    INVERT  SECT
                               5062.000 -181.819   11
                                                   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
                               5102.000 -181.335   11              .015                           .000     .000      .000     0
 ELEMENT NO  11 IS A  WALL  ENTRANCE                   *
                    U/S DATA   STATION    INVERT  SECT             FP
                               5102.000 -181.335   10              .500
 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
                               5117.000 -180.900    3    13     0   .015    64.000      .000  -181.900      .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
                               7694.000 -150.000    3              .015                           .000     .000      .000     0
 ELEMENT NO  14 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               7709.000 -149.819   20              .015                           .000     .000
 ELEMENT NO  15 IS A  WALL  EXIT                       *
                    U/S DATA   STATION    INVERT  SECT
                               7709.000 -149.819   21
 ELEMENT NO  16 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               7749.000 -149.335   21              .015                           .000     .000      .000     0
 ELEMENT NO  17 IS A  WALL  ENTRANCE                   *
                    U/S DATA   STATION    INVERT  SECT             FP
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                                                                R01
                          7749.000 -149.335   20                .015
ELEMENT NO  18 IS A TRANSITION        *         *     *
                   U/S DATA   STATION    INVERT  SECT                N                          RADIUS   ANGLE
                          7764.000 -149.153    3                .015                           .000     .000
ELEMENT NO  19 IS A REACH             *         *     *
                   U/S DATA   STATION    INVERT  SECT                N                          RADIUS    ANGLE     ANG PT  MAN H
                          7918.000 -147.286    3                .015                           .000     .000      .000     0
ELEMENT NO  20 IS A SYSTEM HEADWORKS                  *                        *
                   U/S DATA   STATION    INVERT  SECT                                     W S ELEV
                          7918.000 -147.286    3                                            .000
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CVWD
MDP
R01

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
1034.220	-209.350	5.463	-203.887	1744.00	17.55	4.78	-199.11	.00	6.98	26.39	8.700	10.000	1.50	0 .0
465.780	.0062					.0065	3.02	5.46	1.59	5.49	.015	.00	1.50	TRAP
1500.000	-206.480	5.369	-201.111	1744.00	17.99	5.03	-196.08	.00	6.98	26.11	8.700	10.000	1.50	0 .0
303.231	.0069					.0066	1.99	5.37	1.65	5.33	.015	.00	1.50	TRAP
1803.231	-204.387	5.431	-198.956	1744.00	17.70	4.86	-194.09	.00	6.98	26.29	8.700	10.000	1.50	0 .0
296.059	.0069					.0060	1.78	5.43	1.61	5.33	.015	.00	1.50	TRAP
2099.290	-202.343	5.612	-196.731	1744.00	16.87	4.42	-192.31	.00	6.98	26.84	8.700	10.000	1.50	0 .0
133.710	.0069					.0053	.71	5.61	1.51	5.33	.015	.00	1.50	TRAP
2233.000	-201.420	5.798	-195.622	1744.00	16.09	4.02	-191.60	.00	6.98	27.39	8.700	10.000	1.50	0 .0
JUNCT STR	.0473					.0057	.17	5.80	1.43		.015	.00	1.50	TRAP
2263.000	-200.000	4.654	-195.346	1107.00	15.88	3.91	-191.43	.00	5.89	21.96	8.700	8.000	1.50	0 .0
916.824	.0065					.0065	5.93	4.65	1.57	4.65	.015	.00	1.50	TRAP
3179.824	-194.072	4.654	-189.418	1107.00	15.88	3.91	-185.50	.00	5.89	21.96	8.700	8.000	1.50	0 .0
520.176	.0065					.0062	3.22	4.65	1.57	4.65	.015	.00	1.50	TRAP
3700.000	-190.709	4.761	-185.948	1107.00	15.35	3.66	-182.29	.00	5.89	22.28	8.700	8.000	1.50	0 .0
JUNCT STR	.0398					.0060	.09	4.76	1.50		.015	.00	1.50	TRAP
3715.000	-190.112	4.563	-185.549	1033.00	15.25	3.61	-181.94	.00	5.69	21.69	8.700	8.000	1.50	0 .0
466.044	.0061					.0061	2.84	4.56	1.52	4.56	.015	.00	1.50	TRAP

CVWD
MDP
R01

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
4181.044	-187.274	4.563	-182.711	1033.00	15.25	3.61	-179.10	.00	5.69	21.69	8.700	8.000	1.50	0 .0
486.521	.0061					.0059	2.86	4.56	1.52	4.56	.015	.00	1.50	TRAP
4667.565	-184.311	4.649	-179.662	1033.00	14.84	3.42	-176.24	.00	5.69	21.95	8.700	8.000	1.50	0 .0
202.214	.0061					.0053	1.07	4.65	1.47	4.56	.015	.00	1.50	TRAP
4869.779	-183.079	4.802	-178.277	1033.00	14.15	3.11	-175.17	.00	5.69	22.41	8.700	8.000	1.50	0 .0
87.908	.0061					.0047	.41	4.80	1.38	4.56	.015	.00	1.50	TRAP
4957.687	-182.544	4.960	-177.584	1033.00	13.49	2.83	-174.76	.00	5.69	22.88	8.700	8.000	1.50	0 .0
47.856	.0061					.0041	.20	4.96	1.30	4.56	.015	.00	1.50	TRAP
5005.543	-182.252	5.122	-177.131	1033.00	12.86	2.57	-174.56	.00	5.69	23.36	8.700	8.000	1.50	0 .0
27.149	.0061					.0036	.10	5.12	1.22	4.56	.015	.00	1.50	TRAP
5032.693	-182.087	5.288	-176.800	1033.00	12.26	2.34	-174.46	.00	5.69	23.86	8.700	8.000	1.50	0 .0
14.307	.0061					.0032	.05	5.29	1.15	4.56	.015	.00	1.50	TRAP
5047.000	-182.000	5.458	-176.542	1033.00	11.69	2.12	-174.42	.00	5.69	24.37	8.700	8.000	1.50	0 .0
TRANS STR	.0121					.0063	.09	5.46	1.08		.015	.00	1.50	TRAP
5062.000	-181.819	3.894	-177.925	1033.00	18.08	5.08	-172.85	.00	5.36	14.67	10.000	14.670	.00	0 .0
WALL EXIT														
5062.000	-181.819	4.128	-177.691	1033.00	17.88	4.96	-172.73	.00	5.53	14.67	7.000	14.670	.00	1 .7
40.000	.0121					.0141	.57	4.13	1.59	4.35	.015	.00	.00	BOX

CVWD
MDP
R01

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
5102.000	-181.335	4.071	-177.264	1033.00	18.12	5.10	-172.16	.00	5.53	14.67	7.000	14.670	.00	1 .7
WALL ENTRANCE														
5102.000	-181.335	3.534	-177.801	1033.00	19.93	6.16	-171.64	.00	5.36	14.67	10.000	14.670	.00	0 .0

JUNCT STR	.0290					.0123	.19	3.53	1.87		.015	.00	.00	RECTANG	
				WARNING - Junction Analysis - Change in Channel Type											
5117.000	-180.900	4.102	-176.798	969.00	19.44	5.87	-170.93	.00	5.94	18.31	10.000	6.000	1.50	0	.0
1069.095	.0120					.0120	12.82	4.10	2.08	4.10	.015	.00	1.50	TRAP	
6186.095	-168.081	4.102	-163.978	969.00	19.44	5.87	-158.11	.00	5.94	18.31	10.000	6.000	1.50	0	.0
561.875	.0120					.0120	6.72	4.10	2.08	4.10	.015	.00	1.50	TRAP	
6747.970	-161.344	4.108	-157.235	969.00	19.39	5.84	-151.40	.00	5.94	18.32	10.000	6.000	1.50	0	.0
505.325	.0120					.0112	5.66	4.11	2.07	4.10	.015	.00	1.50	TRAP	
7253.295	-155.284	4.240	-151.044	969.00	18.49	5.31	-145.74	.00	5.94	18.72	10.000	6.000	1.50	0	.0
162.146	.0120					.0098	1.60	4.24	1.95	4.10	.015	.00	1.50	TRAP	
7415.441	-153.340	4.375	-148.965	969.00	17.63	4.83	-144.14	.00	5.94	19.13	10.000	6.000	1.50	0	.0
90.053	.0120					.0087	.78	4.38	1.83	4.10	.015	.00	1.50	TRAP	
7505.494	-152.260	4.514	-147.746	969.00	16.81	4.39	-143.36	.00	5.94	19.54	10.000	6.000	1.50	0	.0
58.608	.0120					.0076	.45	4.51	1.72	4.10	.015	.00	1.50	TRAP	

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 6- 3-2014 Time: 4:43:57

CVWD
MDP
R01

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
7564.102	-151.558	4.656	-146.901	969.00	16.03	3.99	-142.91	.00	5.94	19.97	10.000	6.000	1.50	0	.0
40.889	.0120					.0067	.27	4.66	1.62	4.10	.015	.00	1.50	TRAP	
7604.991	-151.067	4.802	-146.265	969.00	15.28	3.63	-142.64	.00	5.94	20.41	10.000	6.000	1.50	0	.0
29.450	.0120					.0059	.17	4.80	1.53	4.10	.015	.00	1.50	TRAP	
7634.441	-150.714	4.952	-145.762	969.00	14.57	3.30	-142.47	.00	5.94	20.86	10.000	6.000	1.50	0	.0
21.407	.0120					.0052	.11	4.95	1.44	4.10	.015	.00	1.50	TRAP	
7655.848	-150.457	5.106	-145.351	969.00	13.89	3.00	-142.35	.00	5.94	21.32	10.000	6.000	1.50	0	.0
15.406	.0120					.0046	.07	5.11	1.35	4.10	.015	.00	1.50	TRAP	
7671.254	-150.273	5.264	-145.008	969.00	13.25	2.72	-142.28	.00	5.94	21.79	10.000	6.000	1.50	0	.0

10.731	.0120					.0040	.04	5.26	1.27	4.10	.015	.00	1.50	TRAP		
7681.985	-150.144	5.426	-144.718	969.00	12.63	2.48	-142.24	.00	5.94	22.28	10.000	6.000	1.50	0	.0	
6.963	.0120					.0035	.02	5.43	1.20	4.10	.015	.00	1.50	TRAP		
7688.948	-150.061	5.593	-144.468	969.00	12.04	2.25	-142.22	.00	5.94	22.78	10.000	6.000	1.50	0	.0	
3.845	.0120					.0031	.01	5.59	1.13	4.10	.015	.00	1.50	TRAP		
7692.793	-150.014	5.763	-144.251	969.00	11.48	2.05	-142.20	.00	5.94	23.29	10.000	6.000	1.50	0	.0	
1.207	.0120					.0027	.00	5.76	1.06	4.10	.015	.00	1.50	TRAP		
7694.000	-150.000	5.939	-144.061	969.00	10.94	1.86	-142.20	.00	5.94	23.82	10.000	6.000	1.50	0	.0	
TRANS STR	.0121							5.94	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
7709.000	-149.819	4.072	-145.747	969.00	16.22	4.09	-141.66	.00	5.14	14.67	10.000	14.670	.00	0 .0
WALL	EXIT													
7709.000	-149.819	4.338	-145.481	969.00	15.96	3.95	-141.53	.00	5.30	14.67	7.000	14.670	.00	1 .7
40.000	.0121					.0105	.42	4.34	1.38	4.14	.015	.00	.00	BOX
7749.000	-149.335	4.421	-144.914	969.00	15.65	3.81	-141.11	.00	5.30	14.67	7.000	14.670	.00	1 .7
WALL	ENTRANCE													
7749.000	-149.335	3.707	-145.628	969.00	17.82	4.93	-140.70	.00	5.14	14.67	10.000	14.670	.00	0 .0
TRANS STR	.0121					.0087	.13	3.71	1.63		.015	.00	.00	RECTANG
7764.000	-149.153	4.583	-144.570	969.00	16.42	4.19	-140.38	.00	5.94	19.75	10.000	6.000	1.50	0 .0
26.765	.0121					.0074	.20	4.58	1.67	4.09	.015	.00	1.50	TRAP
7790.765	-148.829	4.656	-144.172	969.00	16.03	3.99	-140.18	.00	5.94	19.97	10.000	6.000	1.50	0 .0
39.889	.0121					.0067	.27	4.66	1.62	4.09	.015	.00	1.50	TRAP
7830.654	-148.345	4.802	-143.542	969.00	15.28	3.63	-139.92	.00	5.94	20.41	10.000	6.000	1.50	0 .0

28.823	.0121				.0059	.17	4.80	1.53	4.09	.015	.00	1.50	TRAP	
7859.477	-147.995	4.952	-143.043	969.00	14.57	3.30	-139.75	.00	5.94	20.86	10.000	6.000	1.50	0 .0
20.998	.0121				.0052	.11	4.95	1.44	4.09	.015	.00	1.50	TRAP	
7880.474	-147.741	5.106	-142.635	969.00	13.89	3.00	-139.64	.00	5.94	21.32	10.000	6.000	1.50	0 .0
15.136	.0121				.0046	.07	5.11	1.35	4.09	.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
7895.610	-147.557	5.264	-142.293	969.00	13.25	2.72	-139.57	.00	5.94	21.79	10.000	6.000	1.50	0 .0
10.556	.0121				.0040	.04	5.26	1.27	4.09	.015	.00	1.50	TRAP	
7906.166	-147.429	5.426	-142.003	969.00	12.63	2.48	-139.53	.00	5.94	22.28	10.000	6.000	1.50	0 .0
6.856	.0121				.0035	.02	5.43	1.20	4.09	.015	.00	1.50	TRAP	
7913.022	-147.346	5.593	-141.754	969.00	12.04	2.25	-139.50	.00	5.94	22.78	10.000	6.000	1.50	0 .0
3.789	.0121				.0031	.01	5.59	1.13	4.09	.015	.00	1.50	TRAP	
7916.811	-147.300	5.763	-141.537	969.00	11.48	2.05	-139.49	.00	5.94	23.29	10.000	6.000	1.50	0 .0
1.189	.0121				.0027	.00	5.76	1.06	4.09	.015	.00	1.50	TRAP	
7918.000	-147.286	5.939	-141.347	969.00	10.94	1.86	-139.49	.00	5.94	23.82	10.000	6.000	1.50	0 .0

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T1 CVWD                                                                                  0
T2 MDP
T3 R01-01
SO   1025.700-198.567  1      .015                -195.348
R    3730.000-168.601  1      .015
TS   3745.000-168.444  2      .015
WX   3745.000-168.444  3
R    5357.000-149.100  3      .013
WE   5357.000-149.100  2      .500                                    .000
TS   5372.000-148.985  4      .015
SH   5372.000-148.985  4
CD   1  1   0    .000   7.500    6.000 1.500 1.500   .00
CD   2  2   0    .000  10.000    8.000  .000  .000   .00
CD   3  4   1    .000   7.000     .000  .000  .000   .00
CD   4  1   0    .000  10.000   10.000 1.500 1.500   .00
CD   5  1   0    .000  10.000   16.000 1.500 1.500   .00
CD   6  1   0    .000  10.000    8.000 1.500 1.500   .00
CD   7  1   0    .000  10.000   35.000 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   18.000 1.500 1.500   .00
CD  10  2   0    .000  10.000   58.010  .000  .000   .00
CD  11  3   3    .670   7.000   58.010  .000  .000   .00
CD  12  4   1    .000   4.000    0.000  .000  .000   .00
CD  13  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  14  4   1    .000   5.000     .000  .000  .000   .00
CD  15  4   1    .000   8.000     .000  .000  .000   .00
CD  16  1   0    .000  10.000    8.000 1.500 1.500   .00
CD  17  1   0    .000  10.000   28.000 1.500 1.500   .00
CD  18  1   0    .000  10.000   24.000 1.500 1.500   .00
CD  19  1   0    .000  10.000   48.000 1.500 1.500   .00
CD  20  2   0    .000  10.000   50.010  .000  .000   .00
CD  21  3   3    .670   7.000   50.010  .000  .000   .00
CD  25  1   0    .000  10.000   40.000 1.500 1.500   .00
CD  26  1   0    .000  10.000   32.000 1.500 1.500   .00
CD  27  1   0    .000  10.000   19.000 1.500 1.500   .00
CD  28  1   0    .000  10.000  105.000 1.500 1.500   .00
CD  29  1   0    .000  10.000   14.000 1.500 1.500   .00
CD  30  2   0    .000  10.000   24.670  .000  .000   .00
CD  31  3   1    .670   7.000   24.670  .000  .000   .00
CD  35  1   0    .000  10.000    6.000 1.500 1.500   .00
CD  40  2   0    .000  10.000   18.670  .000  .000   .00
CD  41  3   1    .670   7.000   18.670  .000  .000   .00
CD  50  2   0    .000  10.000   43.340  .000  .000   .00
CD  51  3   2    .670   7.000   43.340  .000  .000   .00
CD  60  2   0    .000  10.000   43.340  .000  .000   .00
CD  61  3   2    .670   7.000   43.340  .000  .000   .00
CD  70  2   0    .000  10.000   37.340  .000  .000   .00
CD  71  3   2    .670   7.000   37.340  .000  .000   .00
Q          557.000   .0
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FILE: R01-01.WSW W S P G W - EDIT LISTING - Version 14.06 Date: 5-30-2014 Time:11:54:35

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	7.500	6.000	1.500	1.500	.00										
CD	2	2	0	.000	10.000	8.000			.00										
CD	3	4	1		7.000														
CD	4	1	0	.000	10.000	10.000	1.500	1.500	.00										
CD	5	1	0	.000	10.000	16.000	1.500	1.500	.00										
CD	6	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	7	1	0	.000	10.000	35.000	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	18.000	1.500	1.500	.00										
CD	10	2	0	.000	10.000	58.010			.00										
CD	11	3	3	.670	7.000	58.010	.000	.000	.00										
CD	12	4	1		4.000														
CD	13	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	14	4	1		5.000														
CD	15	4	1		8.000														
CD	16	1	0	.000	10.000	8.000	1.500	1.500	.00										
CD	17	1	0	.000	10.000	28.000	1.500	1.500	.00										
CD	18	1	0	.000	10.000	24.000	1.500	1.500	.00										
CD	19	1	0	.000	10.000	48.000	1.500	1.500	.00										
CD	20	2	0	.000	10.000	50.010			.00										
CD	21	3	3	.670	7.000	50.010	.000	.000	.00										
CD	25	1	0	.000	10.000	40.000	1.500	1.500	.00										
CD	26	1	0	.000	10.000	32.000	1.500	1.500	.00										
CD	27	1	0	.000	10.000	19.000	1.500	1.500	.00										
CD	28	1	0	.000	10.000	105.000	1.500	1.500	.00										
CD	29	1	0	.000	10.000	14.000	1.500	1.500	.00										
CD	30	2	0	.000	10.000	24.670			.00										
CD	31	3	1	.670	7.000	24.670	.000	.000	.00										
CD	35	1	0	.000	10.000	6.000	1.500	1.500	.00										
CD	40	2	0	.000	10.000	18.670			.00										
CD	41	3	1	.670	7.000	18.670	.000	.000	.00										
CD	50	2	0	.000	10.000	43.340			.00										
CD	51	3	2	.670	7.000	43.340	.000	.000	.00										
CD	60	2	0	.000	10.000	43.340			.00										
CD	61	3	2	.670	7.000	43.340	.000	.000	.00										
CD	70	2	0	.000	10.000	37.340			.00										
CD	71	3	2	.670	7.000	37.340	.000	.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 -
R01-01

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
	1025.700	-198.567	1	-195.348

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
	3730.000	-168.601	1	.015	.000	.000	.000	0

ELEMENT NO 3 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE

```
                              3745.000 -168.444    2              .015                          .000     .000
ELEMENT NO   4 IS A  WALL  EXIT                        *
                    U/S DATA   STATION    INVERT  SECT
                              3745.000 -168.444    3
ELEMENT NO   5 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                              5357.000 -149.100    3              .013                          .000     .000      .000     0
ELEMENT NO   6 IS A  WALL  ENTRANCE                    *
                    U/S DATA   STATION    INVERT  SECT              FP
                              5357.000 -149.100    2              .500
ELEMENT NO   7 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS   ANGLE
                              5372.000 -148.985    4              .015                          .000     .000
ELEMENT NO   8 IS A SYSTEM HEADWORKS                   *                      *
                    U/S DATA   STATION    INVERT  SECT                                   W S ELEV
                              5372.000 -148.985    4                                        .000
```

CVWD
MDP
R01-01

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
1025.700	-198.567	3.173	-195.394	557.00	16.32	4.13	-191.26	.00	4.49	15.52	7.500	6.000	1.50	0 .0
1648.065	.0111					.0111	18.26	3.17	1.94	3.17	.015	.00	1.50	TRAP
2673.766	-180.305	3.173	-177.132	557.00	16.32	4.13	-173.00	.00	4.49	15.52	7.500	6.000	1.50	0 .0
401.275	.0111					.0113	4.52	3.17	1.94	3.17	.015	.00	1.50	TRAP
3075.041	-175.859	3.145	-172.713	557.00	16.52	4.24	-168.47	.00	4.49	15.44	7.500	6.000	1.50	0 .0
272.340	.0111					.0123	3.34	3.15	1.97	3.17	.015	.00	1.50	TRAP
3347.381	-172.841	3.043	-169.798	557.00	17.33	4.66	-165.14	.00	4.49	15.13	7.500	6.000	1.50	0 .0
127.050	.0111					.0140	1.77	3.04	2.10	3.17	.015	.00	1.50	TRAP
3474.430	-171.433	2.943	-168.490	557.00	18.17	5.13	-163.36	.00	4.49	14.83	7.500	6.000	1.50	0 .0
86.112	.0111					.0159	1.37	2.94	2.23	3.17	.015	.00	1.50	TRAP
3560.542	-170.479	2.846	-167.633	557.00	19.06	5.64	-161.99	.00	4.49	14.54	7.500	6.000	1.50	0 .0
66.661	.0111					.0181	1.21	2.85	2.37	3.17	.015	.00	1.50	TRAP
3627.203	-169.740	2.751	-166.989	557.00	19.99	6.21	-160.78	.00	4.49	14.25	7.500	6.000	1.50	0 .0
55.205	.0111					.0207	1.14	2.75	2.52	3.17	.015	.00	1.50	TRAP
3682.408	-169.128	2.659	-166.469	557.00	20.97	6.83	-159.64	.00	4.49	13.98	7.500	6.000	1.50	0 .0
47.592	.0111					.0235	1.12	2.66	2.68	3.17	.015	.00	1.50	TRAP
3730.000	-168.601	2.570	-166.031	557.00	21.99	7.51	-158.52	.00	4.49	13.71	7.500	6.000	1.50	0 .0
TRANS STR	.0105					.0231	.35	2.57	2.85		.015	.00	1.50	TRAP

CVWD
MDP
R01-01

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
3745.000	-168.444	3.268	-165.176	557.00	21.30	7.05	-158.13	.00	5.32	8.00	10.000	8.000	.00	0 .0
WALL EXIT														
3745.000	-168.444	4.719	-163.725	557.00	20.18	6.33	-157.40	.00	6.10	6.56	7.000	.000	.00	1 .0
496.601	.0120				.0120	5.96	4.72	1.73	4.72	.013	.00	.00	PIPE	
4241.601	-162.485	4.719	-157.766	557.00	20.18	6.33	-151.44	.00	6.10	6.56	7.000	.000	.00	1 .0
572.474	.0120				.0118	6.74	4.72	1.73	4.72	.013	.00	.00	PIPE	
4814.075	-155.615	4.787	-150.828	557.00	19.86	6.12	-144.71	.00	6.10	6.51	7.000	.000	.00	1 .0
314.188	.0120				.0109	3.43	4.79	1.69	4.72	.013	.00	.00	PIPE	
5128.263	-151.845	5.001	-146.844	557.00	18.93	5.57	-141.28	.00	6.10	6.32	7.000	.000	.00	1 .0
122.264	.0120				.0098	1.19	5.00	1.55	4.72	.013	.00	.00	PIPE	
5250.527	-150.378	5.232	-145.146	557.00	18.05	5.06	-140.09	.00	6.10	6.08	7.000	.000	.00	1 .0
63.441	.0120				.0088	.56	5.23	1.41	4.72	.013	.00	.00	PIPE	
5313.968	-149.616	5.486	-144.130	557.00	17.21	4.60	-139.53	.00	6.10	5.76	7.000	.000	.00	1 .0
32.552	.0120				.0079	.26	5.49	1.28	4.72	.013	.00	.00	PIPE	
5346.520	-149.226	5.771	-143.455	557.00	16.41	4.18	-139.27	.00	6.10	5.33	7.000	.000	.00	1 .0
10.480	.0120				.0072	.08	5.77	1.15	4.72	.013	.00	.00	PIPE	
5357.000	-149.100	6.102	-142.998	557.00	15.65	3.80	-139.20	.00	6.10	4.68	7.000	.000	.00	1 .0
WALL ENTRANCE														

CVWD
MDP
R01-01

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	
5357.000	-149.100	12.141	-136.959	557.00	5.73	.51	-136.45	.00	5.32	8.00	10.000	8.000	.00	0 .0
TRANS STR	.0077				.0004	.01	12.14	.29		.015	.00	.00	RECTANG	
5372.000	-148.985	12.554	-136.431	557.00	1.54	.04	-136.39	.00	3.77	47.66	10.000	10.000	1.50	0 .0

Appendix I
CVSC HEC-RAS
Alternative 5
Summary Output (March 2014)

Coachella Valley Stormwater Channel Alternative 5: Water Surface Elevations			
Line	Upstream/ Downstream	Coachella Valley Stormwater Channel Station	HEC-RAS WS Elev., (ft)
L01	U/S	569+13.19	-142.9
	Confluence	559+48	-142.2
	D/S	550+77.03	-141.5
M01	U/S	530+41.26	-146.4
	Confluence	501+39	-151.7
	D/S	500+67.15	-151.8
N01	U/S	407+69.16	-168.1
	Confluence	394+47	-170.3
	D/S	391+87.78	-170.8
O01	U/S	339+75.91	-180.0
	Confluence	330+30	-181.5
	D/S	321+51.73	-182.9

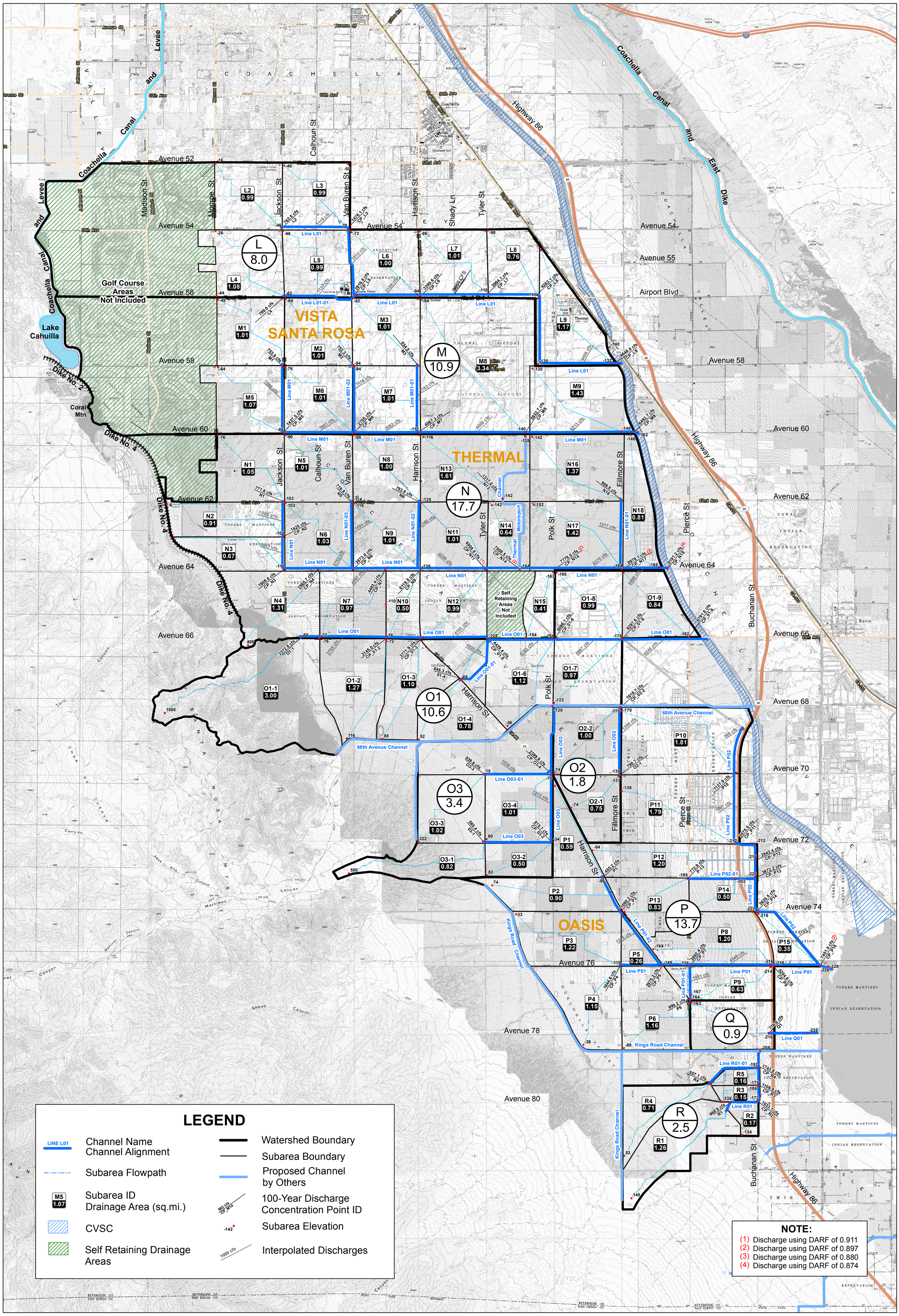
-142.2 - WATER SURFACE VALUES ARE LINEARLY INTERPOLATED FROM CVSC HEC-RAS PROVIDED BY TETRA TECH (03/10/2014)

HEC-RAS Plan: ALT 5 River: CVSC Reach: Main Profile: 100-Yr

Reach	River Sta	Q Total	Min Ch 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/s)	(ft)	(sq ft)	(ft)	
Main	88965.21	39000.00	-77.52	-62.41	-65.54	-60.96	0.002507	9.67	9.41	4031.54	428.64	0.56
Main	87175.49	39000.00	-82.01	-66.71	-70.03	-65.32	0.002348	9.48	9.58	4112.21	429.21	0.54
Main	84511.14	39000.00	-88.62	-73.28	-76.46	-71.78	0.002497	9.83	9.64	3968.41	411.84	0.56
Main	81466.81	39000.00	-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	-101.30	-86.01	-89.15	-84.50	0.002544	9.88	9.59	3946.21	411.68	0.56
Main	77078.31	39000.00	-107.14	-92.41	-95.17	-90.84	0.002845	10.04	9.06	3885.81	429.13	0.59
Main	74060.29	39000.00	-114.81	-98.84	-102.93	-97.68	0.001788	8.64	10.20	4513.39	442.31	0.48
Main	73730.11	39000.00	-115.63	-99.37	-103.73	-98.26	0.001655	8.47	10.47	4607.14	439.99	0.46
Main	73618.48	Bridge										
Main	73481.52	39000.00	-116.14	-100.78	-104.23	-99.45	0.002211	9.24	9.64	4222.32	438.01	0.52
Main	73072.07	39000.00	-117.22	-101.58	-105.32	-100.34	0.002001	8.95	9.90	4358.07	440.36	0.50
Main	71960.63	39000.00	-119.46	-103.83	-107.57	-102.57	0.002024	9.00	9.89	4335.45	438.49	0.50
Main	71724.59	39000.00	-119.94	-104.31	-108.04	-103.05	0.002022	8.99	9.89	4336.79	438.51	0.50
Main	71331.89	39000.00	-120.73	-105.10	-108.83	-103.85	0.002023	8.99	9.89	4336.67	438.68	0.50
Main	68687.89	39000.00	-126.06	-110.41	-114.17	-109.17	0.001996	8.94	9.90	4361.46	440.36	0.50
Main	66112.2	39000.00	-131.25	-114.50	-119.38	-113.50	0.001393	8.00	10.93	4875.67	446.08	0.43
Main	63050.54	39000.00	-137.42	-121.81	-124.46	-119.79	0.003188	11.42	9.87	3415.69	345.93	0.64
Main	62327.93	39000.00	-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	-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	-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	-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	-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	-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	-143.41	-132.48	-133.57	-129.23	0.001440	14.47	9.30	2696.05	289.78	0.84
Main	58987.99	39000.00	-145.61	-133.04	-135.77	-130.70	0.000856	12.28	10.78	3177.08	294.72	0.66
Main	58360.36	39000.00	-146.87	-133.21	-137.02	-131.28	0.000630	11.14	11.75	3500.13	297.99	0.57
Main	58332.13	Bridge										
Main	58312.54	39000.00	-146.97	-134.12	-137.13	-131.89	0.000789	11.96	11.03	3259.56	295.56	0.63
Main	58296.59	39000.00	-147.00	-134.13	-137.19	-131.91	0.000785	11.94	11.05	3265.44	295.62	0.63
Main	58282.21	Bridge										
Main	58229.67	39000.00	-147.14	-135.23		-132.57	0.001044	13.07	10.19	2983.35	292.74	0.72
Main	58186.58	39000.00	-147.22	-135.26	-137.41	-132.63	0.001029	13.01	10.23	2997.08	292.88	0.72
Main	58118.19	Bridge										
Main	58072.58	39000.00	-147.45	-138.33	-137.64	-133.35	0.002851	17.91	7.66	2177.09	284.36	1.14
Main	57582.44	39000.00	-148.44	-137.52	-140.63	-136.13	0.000618	9.49	9.24	4110.95	444.75	0.55
Main	56947.59	39000.00	-149.46	-137.55	-142.14	-136.67	0.000345	7.54	10.13	5173.94	510.72	0.42
Main	56917.19	Inl Struct										
Main	56913.19	39000.00	-155.40	-141.51	-148.08	-140.89	0.000193	6.30	11.99	6194.86	516.68	0.32
Main	55077.03	39000.00	-158.67	-142.86	-147.01	-141.74	0.001733	8.49	10.18	4594.56	451.12	0.47
Main	53041.26	39000.00	-162.20	-146.38	-150.54	-145.26	0.001729	8.48	10.19	4597.92	451.14	0.47
Main	50067.15	39000.00	-167.37	-151.83	-155.71	-150.65	0.001894	8.72	9.93	4472.46	450.31	0.49
Main	48201.42	39000.00	-170.97	-155.15	-159.32	-154.03	0.001721	8.46	10.19	4607.30	451.99	0.47
Main	46371.1	39000.00	-174.17	-158.20	-162.52	-157.12	0.001645	8.35	10.33	4671.57	452.42	0.46
Main	45192.42	39000.00	-176.20	-160.07	-164.55	-159.02	0.001560	8.22	10.48	4746.73	452.91	0.45
Main	44850.94	39000.00	-176.90	-160.65	-165.16	-159.56	0.001590	8.36	10.59	4667.18	440.89	0.45
Main	44786.35	Bridge										
Main	44702.98	39000.00	-177.00	-161.27		-160.07	0.001876	8.79	10.10	4438.33	439.33	0.49
Main	43584.21	39000.00	-179.04	-163.21	-167.39	-162.10	0.001720	8.46	10.20	4608.63	452.00	0.47
Main	40769.16	39000.00	-183.88	-168.08	-172.23	-166.96	0.001733	8.48	10.17	4597.98	451.93	0.47
Main	39187.78	39000.00	-186.64	-170.78	-174.98	-169.68	0.001704	8.44	10.22	4621.82	452.09	0.47
Main	38458.03	39000.00	-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	-188.82	-172.97	-177.17	-171.86	0.001704	8.44	10.22	4621.64	452.09	0.47
Main	36228.63	39000.00	-191.55	-176.11	-179.90	-174.91	0.001951	8.79	9.84	4435.29	450.85	0.49
Main	33975.91	39000.00	-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	-199.02	-182.85	-187.43	-181.84	0.001496	8.06	10.51	4839.90	460.59	0.44
Main	29918.4	39000.00	-202.36	-186.14	-190.78	-185.15	0.001461	7.99	10.55	4883.26	462.70	0.43
Main	26768.6	39000.00	-207.08	-190.14	-195.52	-189.28	0.001161	7.43	11.23	5249.40	467.64	0.39
Main	26195.44	39000.00	-207.84	-190.78	-196.29	-189.94	0.001123	7.36	11.33	5301.30	467.73	0.39
Main	26183.79	Bridge										
Main	26133.01	39000.00	-207.92	-191.04	-196.36	-190.17	0.001185	7.48	11.17	5215.70	467.14	0.39
Main	26003.54	39000.00	-208.14	-191.19	-196.58	-190.33	0.001159	7.43	11.24	5250.03	467.24	0.39
Main	25993.77	Bridge										
Main	25939.63	39000.00	-208.14	-191.38	-196.58	-190.49	0.001227	7.56	11.06	5160.62	466.67	0.40
Main	25120.53	39000.00	-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	-212.03	-195.15	-200.46	-194.28	0.001195	7.51	11.17	5192.01	464.98	0.40
Main	20283.21	39000.00	-215.21	-198.01	-203.63	-197.18	0.001096	7.33	11.46	5322.06	464.26	0.38
Main	17688.2	39000.00	-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	-222.79	-202.82	-211.12	-202.26	0.000560	6.03	14.01	6467.28	461.62	0.28
Main	13355.07	39000.00	-221.81	-203.88	-209.48	-203.00	0.001318	7.51	10.88	5192.27	477.05	0.40
Main	10930.12	39000.00	-224.72	-209.95	-211.97	-208.24	0.003992	10.49	7.83	3717.59	474.67	0.66
Main	9954.95	39000.00	-224.00	-213.93	-215.36	-212.51	0.004624	9.54	6.02	4089.98	679.94	0.69
Main	9179.07	39000.00	-224.00	-216.82	-218.28	-215.93	0.003841	7.55	4.86	5166.26	1062.11	0.60

HEC-RAS Plan: ALT 5 River: CVSC Reach: Main Profile: 100-Yr (Continued)

Reach	River Sta	Q Total	Min Ch 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/s)	(ft)	(sq ft)	(ft)	
Main	7187.19	39000.00	-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	-225.92	-219.04	-222.18	-218.87	0.000700	3.34	5.13	11682.62	2279.50	0.26



LEGEND

- Channel Name / Channel Alignment
- Subarea Flowpath
- Subarea ID / Drainage Area (sq.mi.)
- CVSC
- Self Retaining Drainage Areas
- Watershed Boundary
- Subarea Boundary
- Proposed Channel by Others
- 100-Year Discharge / Concentration Point ID
- Subarea Elevation
- Interpolated Discharges

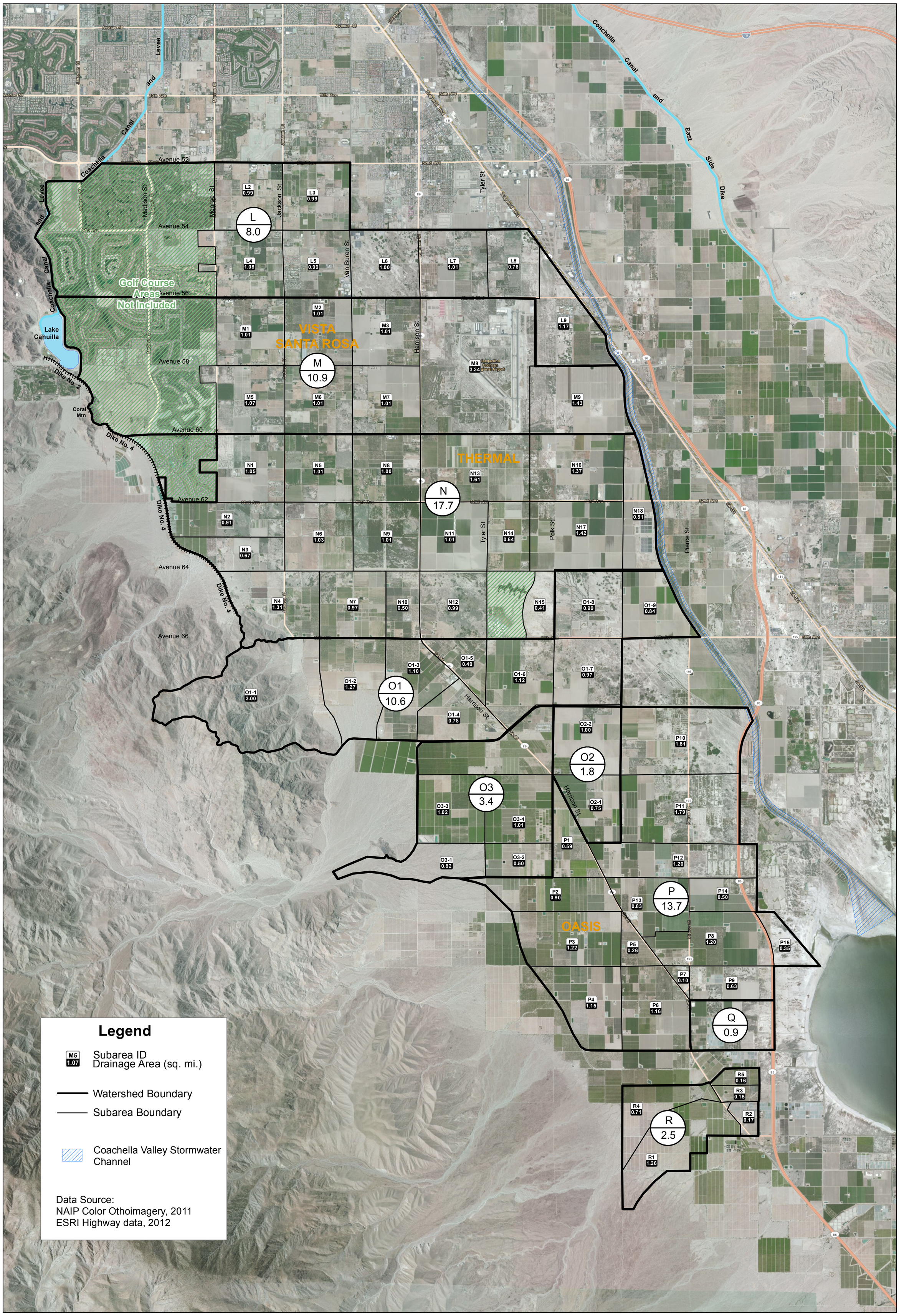
NOTE:
(1) Discharge using DARF of 0.911
(2) Discharge using DARF of 0.897
(3) Discharge using DARF of 0.880
(4) Discharge using DARF of 0.874

0 3,500 7,000 10,500 Feet

EXHIBIT 1
Watershed Map
Oasis/Valley Floor Region SMP

Prepared for:
Coachella Valley Water District

Prepared by:
Albert A. Webb Associates
In association with Tetra Tech
Olson Engineering, Since 1976



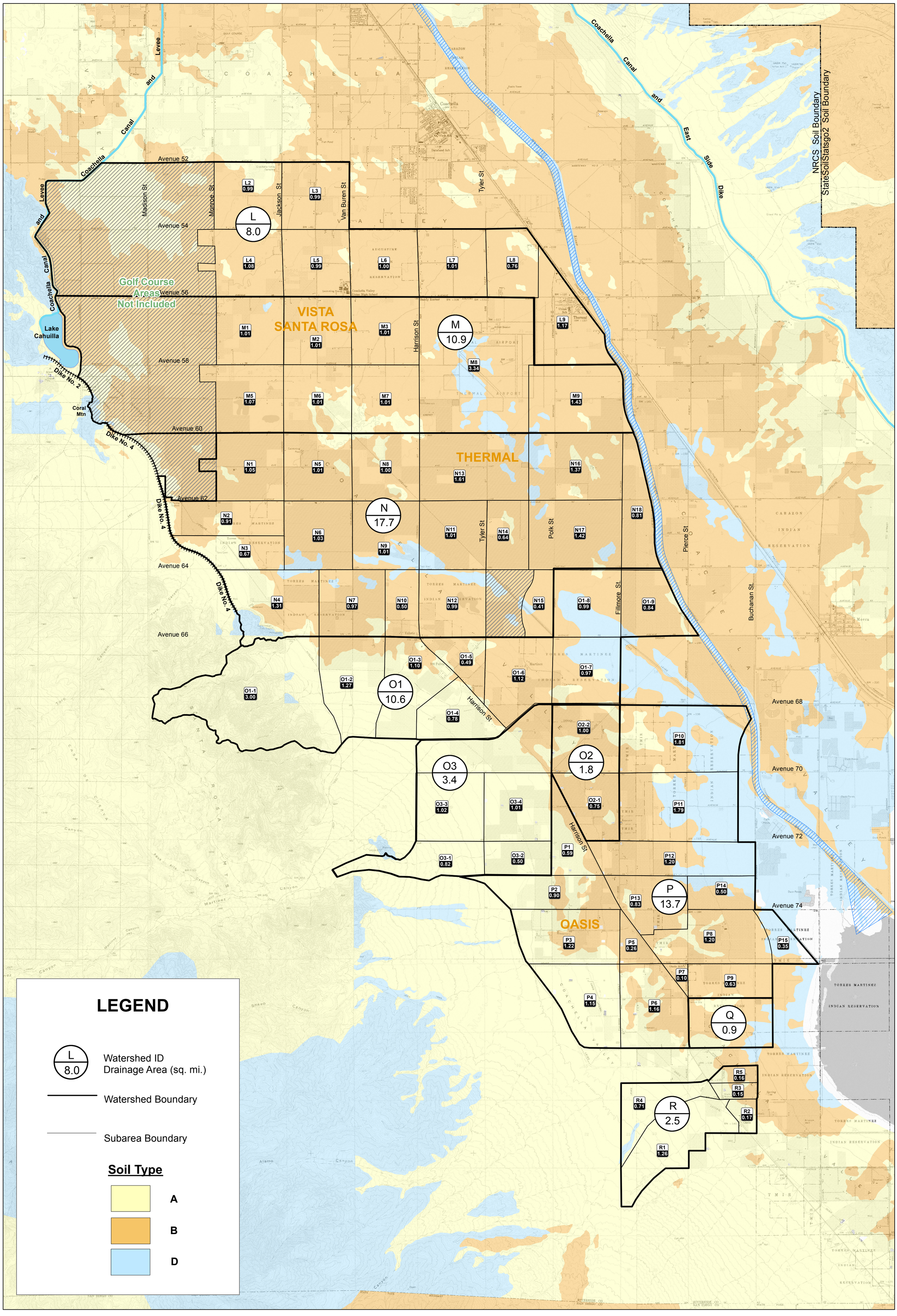
Path: G:\2012\12-0001\GIS\12-0001-Oasis aerial_map.mxd

EXHIBIT 2
Aerial Map
Oasis\Valley Floor Region SMP

Prepared for:
Coachella Valley Water District

Prepared by:
Albert A. Webb Associates
In association with
Tetra Tech
Olson Engineering

Avenue 52
Avenue 54
Avenue 56
Avenue 58
Avenue 60
Avenue 62
Avenue 64
Avenue 66
Avenue 68
Avenue 70
Avenue 72
Avenue 74
50th Ave
54th Ave
66th Ave
86th Ave
Coachella
Golf Course Areas Not Included
Lake Cahuilla
Coral Mtn
Dike No. 2
Dike No. 4
Coachella Canal and Levee
East Side Dike
Harrison St
Tyler St
Polk St
Pierce St
Buchanan St
Fillmore St.
Van Buren St
Jackson St
Madison St
Monroe St
Jefferson St
Mecca
Thermal
Oasis
VISTA SANTA ROSA
THERMAL
OASIS
L 8.0
M 10.9
N 17.7
O1 10.6
O2 1.8
O3 3.4
P 13.7
Q 0.9
R 2.5
L2 0.99
L3 0.99
L4 1.08
L5 0.99
L6 1.00
L7 1.01
L8 0.76
L9 1.17
M1 1.01
M2 1.01
M3 1.01
M5 1.07
M6 1.01
M7 1.01
M8 3.34
M9 1.43
N1 1.05
N2 0.91
N3 0.67
N4 1.31
N5 1.01
N6 1.03
N7 0.97
N8 1.00
N9 1.01
N10 0.50
N11 1.01
N12 0.99
N13 1.61
N14 0.64
N15 0.41
N16 1.37
N17 1.42
N18 0.81
O1-1 3.00
O1-2 1.27
O1-3 1.10
O1-4 0.78
O1-5 0.49
O1-6 1.12
O1-7 0.97
O1-8 0.99
O1-9 0.84
O2-1 0.75
O2-2 1.00
O3-1 0.82
O3-2 0.50
O3-3 1.02
O3-4 1.01
P1 0.59
P2 0.90
P3 1.22
P4 1.15
P5 0.26
P6 1.16
P7 0.10
P8 1.20
P9 0.63
P10 1.81
P11 1.79
P12 1.20
P13 0.83
P14 0.50
P15 0.35
R1 1.26
R2 0.17
R3 0.15
R4 0.71
R5 0.16
Self Retaining Areas Not Included
Santa Rosa Mts
Casa de Cuerva
Martinez Canyon
Torro Canyon
Sheep Canyon
Alamo Canyon
Rabbit Peak
Agua Alta Canyon
Indian Reservation
Torres Martinez
Cahuilla Valley
Duck Ponds
Whitewater River
Coachella Valley Union High School
Jacqueline Cochran Regional Airport
Coachella Valley Cemetery
Martinez Cemetery
Torres Martinez Cemeteries
Oasis Sch
Dateland Sch
Sandy Korner
Fish Pond
Swimming Pool
Golf Course
Radio Tower
Reservoir
Gravel Pit
Trailer Park
Well
Water Tank
Pump
Station
Levee
Canyon
Valley
Mountains
Desert
Creek
Wash
Ditch
Drain
Lake
Pond
Spring
Trail
Jeep Trail
Power Line
Pipeline
Railroad
Bridge
Tunnel
Fence
Boundary
Riverside Co
San Diego Co
State Park
Legend
Subarea ID
Drainage Area (sq. mi.)
Watershed Boundary
Subarea Boundary
Agricultural
Barren
Commercial
Open Brush
Residential
Self Contained
N
S
E
W
0
3,500
7,000
10,500
Feet
Path: G:\2012\12-0001\GIS\12-0001-Oasis landcover_map.mxd
EXHIBIT 3
Land Cover Map
Oasis\Valley Floor Region SMP
Prepared for:
Coachella Valley Water District
Prepared by:
Albert A. Webb Associates
In association with
Tetra Tech
Olson Engineering
Since 1976



LEGEND

L 8.0 — Watershed ID, Drainage Area (sq. mi.)

Watershed Boundary

Subarea Boundary

Soil Type

- A
- B
- D

N

W E

S

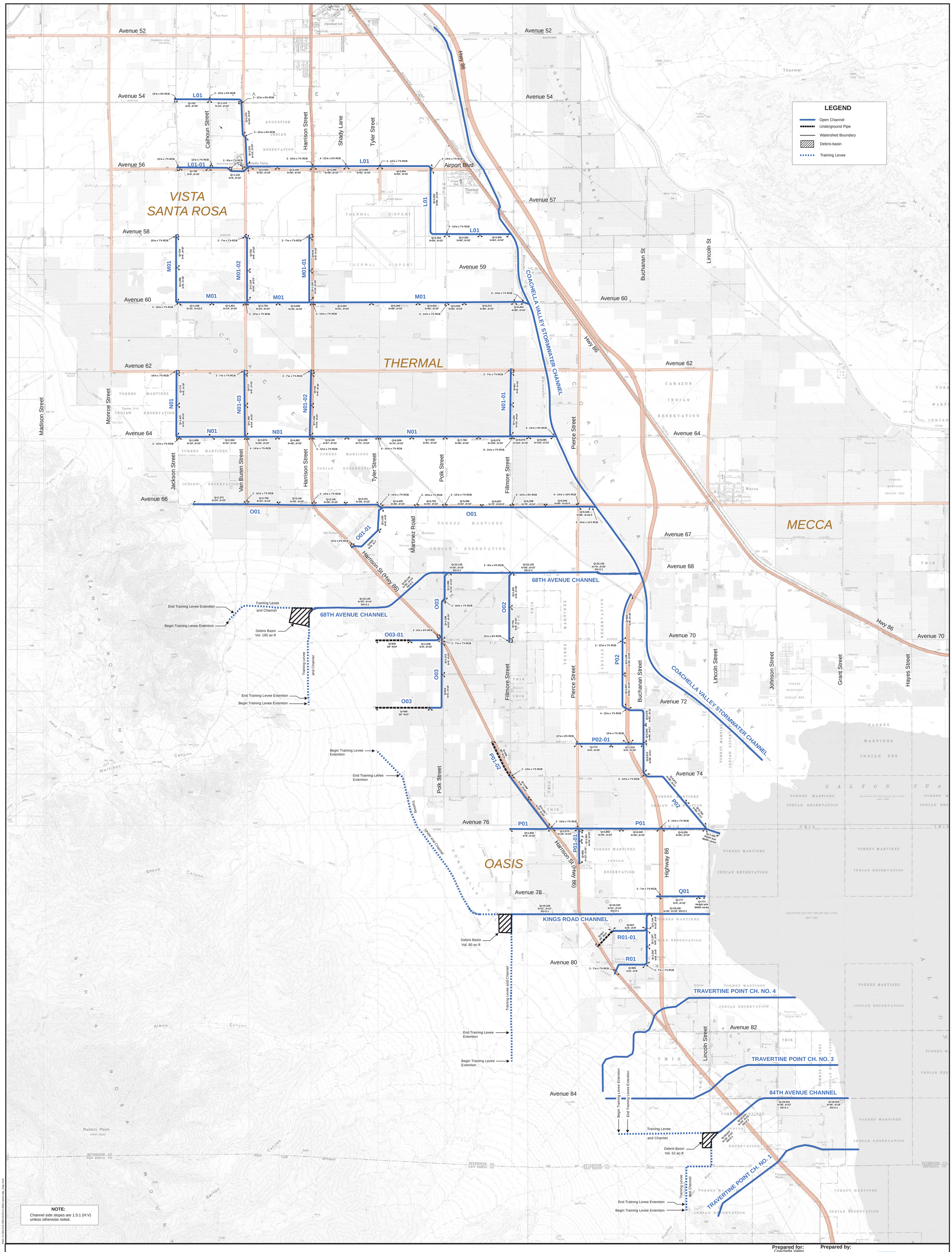
0 3,500 7,000 10,500 Feet

EXHIBIT 4
Hydrologic Soil Group Map
Oasis\Valley Floor Region SMP

Prepared for:
Coachella Valley Water District

Prepared by:
Albert A. Webb Associates
In association with
Tetra Tech
Olson Engineering Since 1976

Path: G:\2012\12-0001\GIS\12-0001-Oasis soil_map.mxd


LEGEND
Open Channel
Underground Pipe
Watershed Boundary
Debris-basin
Training Levee
VISTA SANTA ROSA
THERMAL
MECCA
OASIS
Avenue 52
Avenue 54
Avenue 56
Avenue 57
Avenue 58
Avenue 59
Avenue 60
Avenue 62
Avenue 64
Avenue 66
Avenue 67
Avenue 68
Avenue 70
Avenue 72
Avenue 74
Avenue 76
Avenue 78
Avenue 80
Avenue 82
Avenue 84
Hwy 86
Airport Blvd
Calhoun Street
Harrison Street
Shady Lane
Tyler Street
Madison Street
Monroe Street
Jackson Street
Van Buren Street
Polk Street
Fillmore Street
Pierce Street
Buchanan St
Lincoln St
Johnson Street
Grant Street
Hayes Street
Martinez Road
Harrison St (Hwy 86)
COACHELLA VALLEY STORMWATER CHANNEL
68TH AVENUE CHANNEL
KINGS ROAD CHANNEL
TRAVERTINE POINT CH. NO. 4
TRAVERTINE POINT CH. NO. 3
84TH AVENUE CHANNEL
TRAVERTINE POINT CH. NO. 1
L01
L01-01
M01
M01-02
M01-01
N01
N01-03
N01-02
N01-01
O01
O01-01
O03
O03-01
O02
P02
P02-01
P01
P01-02
P01-01
Q01
R01
R01-01
End Training Levee Extention
Begin Training Levee Extention
Debris Basin
Vol. 165 ac-ft
Vol. 80 ac-ft
Vol. 52 ac-ft
NOTE:
Channel side slopes are 1.5:1 (H:V) unless otherwise noted.
N
1:1800
0 900 1,800 3,600 5,400 Feet
Exhibit 5
SMP Facility Map
Oasis/Valley Floor Region
Prepared for:
Coachella Valley Water District
Prepared by:
ALBERT A. WEBB ASSOCIATES
In association with
TETRA TECH
OLSON ENGINEERING
SINCE 1976

ALBERT A. WEBB ASSOCIATES

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