DRAINAGE REPORT
FOR
COTTONWOOD MALL
AND
SAD-223 PART 2

APRIL, 1992

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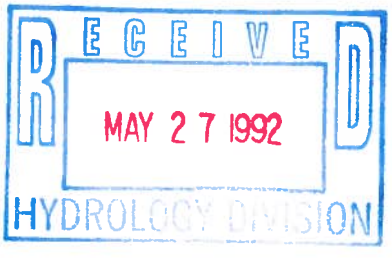

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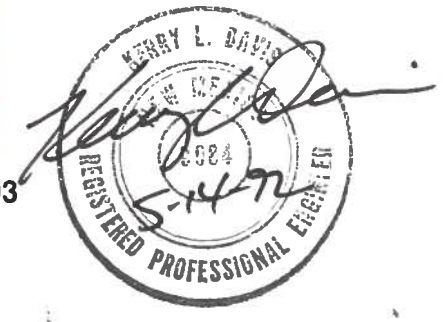

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APPENDICES

MASTER DRAINAGE PLAN FOR THE COTTONWOOD MALL

PURPOSE

The purpose of this report is to identify the drainage and management plan for site development plan approval for a regional shopping center site comprising approximately 90 acres, referred to as Cottonwood Mall, owned and to be developed by the Albuquerque Mall Company Limited Partnership, managed by Melvin Simon and Associates, Inc. In addition, this report provides the design computations and backup analysis required for work order approval for Part 2 of SAD-223, which includes all of the on-site water, sanitary sewer, and storm drainage facilities required for development of the mall site. The Master Drainage Report for SAD-223, prepared by Easterling and Associates, which has been submitted and approved, identifies the drainage management concepts which will govern this site. The Drainage Ordinance, Development Process Manual (DPM), North Coors Drainage Management Plan, and the Seven Bar Ranch Sector Development Plan have been utilized to prepare this report.

SITE LOCATION AND DESCRIPTION

The project site is generally located on a low plateau above the west bank of the Rio Grande, immediately north of the Calabacillas Arroyo. The site is located on the west side of North Coors Boulevard between Irving Boulevard and Alameda Boulevard, bordered on the north by the Seven Bar Loop Road, on the south and west by the Coors Bypass Road, and on the east by Corrales Road (old North Coors Road). Please refer to the project location map on Plate 1. The site is zoned SU-1 for Regional Shopping Center.

EXISTING CONDITIONS

The mall site is to be constructed at the southern portion of the old Alameda Airport. Existing buildings and asphalt parking areas that are still in place will be removed of prior to the earthwork operations.

To the south of the project is the V.T. Autopark across the Coors Bypass Road just west of Corrales Road. Infrastructure improvements for W.O. 3040, constructed as a requirement for the Autopark, included the southwestern 24' of the Coors Bypass Road along the project frontage, sanitary sewer and water lines required for the development, and the storm drain system that collects and discharges runoff to the Calabacillas Arroyo. The storm drain system constructed in the Coors Bypass Road collects runoff from the V.T. Autopark and a portion of the property west of the Autopark (formerly owned by ABQ Development), the Coors Bypass Road, and a portion of the southwesterly extension of Eagle Ranch Road.

Immediately northeast of the site is the Questa del Rio Property of A.J. Black, located on the west side of the Corrales Road south of Seven Bar Loop Road. The western and southern boundaries of this property are shared with the mall site. An existing arroyo which begins on the mall site and continues east across the Black's property conveys collected undeveloped runoff from the mall site east to Corrales Road. A single 60" culvert then conveys the flow under Corrales road into a detention pond for ultimate discharge into the existing Middle Rio Grande Conservancy District's Corrales Main Canal.

HYDROLOGIC ANALYSIS

The hydrologic computations identified within the proposed revision to the Development Process Manual, dated August, 1991 (DPM Update) are used to compute developed runoff rates and volumes. The computerized watershed model "HYMO" was used to compute the flow rates generated by the 100-year and 10-year storm, and to route the flows through storm sewers and ponds.

All flowrates for the individual basins were first calculated using the rational method as a check against the HYMO output. Stage/storage/discharge relationships were developed for each pond and outlet using the orifice and weir equations as applicable. The program was then used to route the hydrographs for each basin through the ponds and storm sewers that comprise the storm drainage facilities within the development.

All the calculations and comparisons of the peak flow rates and other miscellaneous hydrologic computations are listed in Appendix 1. Appendix 2 contains the output obtained from the HYMO analysis.

The basin boundaries, peak discharges, and conceptual proposed contours are shown on plate 1 of the enclosed plans. Also identified are the proposed storm sewers with diameters, and proposed ponding area with volumes. The proposed storm sewer diameters, lengths, slopes, manhole sizes and lateral information are shown on the preliminary plan and profile sheets developed for submittal to the DRC of SAD-223, Part 2.

DRAINAGE MANAGEMENT PLAN

The mall site was divided into three major basins (A, B. and C) which will ultimately drain to the Calabacillas Arroyo, and a fourth basin (Basin D) which will ultimately drain to the Corrales Main Canal as shown on the drainage plan (Plate 1). The approved drainage report for the V.T. Autopark development established the maximum flowrate of developed runoff that can be discharged into the existing storm sewer system within the Coors Bypass from the mall site to be 169 cfs. The remaining developed runoff from Basin D will be discharged into the southside of the Seven Bar Loop Road for collection and discharge across the Corrales Road into the Corrales Main Canal. This flow is governed by the North Coors Drainage Management Plan.

The three major basins (A, B, and C) are comprised of a series of contributing basins. Each contributing basin is provided a means of collecting the flow (junction boxes, inlets, or ponds), and a storm sewer lateral to convey the flow.

Basin A and Basin B were designed to collect and distribute approximately two-thirds of the developed flow generated from the shopping mall to the existing storm sewer. Basin C was designed to collect the flows generated in the outlots (Tracts C-1 through C-4) adjacent to the Corrales Road and route it to the existing storm system.

Basin A routes flows from the southwest corner of the site east along the south half of the site through a detention pond at the extreme south end of the site. Immediately downstream of the pond, runoff from Basin A combines with flow from Basin B at MH #12. The peak flowrate developed in the Basin A as identified in the HYMO output and released from the pond is 65.0

cfs. Basin B routes flows from the northwest corner of the site, along with offsite runoff collected from a portion of the Seven Bar Loop Road right-of-way, east along the north half of the site, then south to the manhole #12. The peak flow generated in Basin B at the intersecting manhole is 104.9 cfs. Basin C collects the runoff that develops in the outlots (Tracts C-1 through C-4) adjacent to the Corrales Road. The water is then conveyed north and west where it will join the flow from Basin B. The peak flowrate to be discharged into the existing storm sewer system in the Coors Bypass Road as identified in the HYMO output is 169.6 cfs.

Basin D is located at the northeast corner of the site. The flows generated in this basin will be collected in a small detention pond for discharge into the south half of the proposed Seven Bar Loop Road. Flows are then conveyed east to a series of storm sewer inlets which will collect the discharge conveyed by Seven Bar Loop Road. Collected runoff will be conveyed by a storm sewer to be constructed within Part 4 of SAD-223 south to the existing 60" culvert, where it will be conveyed under Corrales Road into a detention pond. The pond will ultimately into the Corrales Main Canal. The North Coors Drainage Management Plan identified 106 cfs to be discharged from the mall site in the developed condition to the existing arroyo (see the calculations given in Appendix 3). Due to the delay in the construction of improvements to the Corrales Main Canal, the total discharge to that facility allowed by the North Coors Drainage Management Plan is not utilized. The peak flowrate that was calculated for the 100-year, 6-hour storm which will be discharged from Basin D (developed) into the existing arroyo was 11.1 cfs. Of the 11.1 cfs, 7.7 cfs will be collected in a small detention pond at the northeast corner of the site and a total of 7.5 cfs will be released into the southern portion of the Seven Bar Loop Road.

Two offsite drainage basins will discharge onto the Cottonwood Mall site. These comprise flows from the south half of the Seven Bar Loop Road from the intersection with the Cottonwood Drive to the intersection with the Coors Bypass Road, and from the west half of the Coors Bypass Road from the intersection with the Seven Bar Loop Road to Mall Entrance number 2. Flows that develop in properties on the west and south side of the Coors Bypass Road that are not directly discharged into the Calabacillas Arroyo are conveyed either north or south in the Bypass Road. The drainage management plan for offsite basins is identified within the Master Drainage Report for SAD-223, prepared by Easterling and Associates.

The runoff collected on the roof areas will be released by a series of gutters and pipes into the storm sewer system. The openings that will be provided to allow the runoff collected on the roof into the gutter system will be sized so that no ponding will occur on the roof areas.

It was determined through several iterations that detention ponding will be necessary in order to meet the discharge requirements at the outlet to the existing storm sewer and the Seven Bar Loop Road. Size, shape, and depth of each pond will vary depending on the location and outlet conditions. The interior slopes of the ponds will be landscaped with sod and will be designed a to a maximum of a 3:1 (horizonal:vertical) slope. The bottom surface of the pond will be sodded or lined with gravel in order to collect sediment and provide for erosion control. Standpipe structures with perforated outlet pipes will be utilized to control the discharge from the detention ponds.

Extensive landscaping will be provided on the mall site at locations not utilized for parking or buildings. Landscaped areas will include any combination of grass, trees, shrubs, or bushes. The landscaping used will provide for erosion protection of side slopes and ponds, beautification

of the site, and provide a aesthetic buffer between the site and surrounding developments. The treatment provided for the individual landscaped areas are identified within the construction plans for Part 2 of SAD-223.

PHASING AND EROSION CONTROL

The construction of the majorit of the mall site will be completed in one phase. The parking lot expansion areas associated with major department store expansions and construction of the single future department store on the north side of the building, along with development of the surrounding Reserve Parcels will be constructed as need dictates. All of the infrastructure improvements required for the entire site will be completed during the initial construction. Roof drain laterals will be provided from the storm sewer system to within 5' of the building areas for the connection by the building contractors.

Soil erosion and dust control are recognized as significant problems for this development. As identified in the Seven Bar Ranch Sector Development Plan, this area will be subject to the Albuquerque/Bernalillo County Air Quality Control Board regulations and ordinances regarding soil erosion and dust control during development and construction. This includes obtaining a "Top Soil Disturbance Permit" which shall outline specific dust control plans and measures for this project. It is the responsibility of the contractor to obtain the necessary permit before mass grading operations start.

The entire site will be mass graded prior to the installation of the infrastructure. Extensive erosion control and wind protection will be necessary during the mass grading operations. These measures may include interim contour berms, snow fences, and site watering. The contour berms should follow the boundary of the site to keep flows collected during grading operations on the site and to stop sediment from damaging adjacent properties. Snow fences should be placed generally in the north/south directions along the eastern boundary of the site prior to grading operations in order to contain wind borne materials onsite. Water should be applied during all phases of the earthwork and especially at the end of the working day in order to form a crust surface. Those portions of the site that are not anticipated to be developed within one year shall be treated with hay mulch crimped into north/south furrows to provide for long term dust control.

CONCLUSIONS

The Cottonwood Mall is to be constructed between the Coos Bypass Road ad the Seven Bar Loop Road on the west side of the Corrales Road. The offsite infrastructure improvements include the construction of the north portion of the Coors Bypass Road, the southern half of the Seven Bar Loop Road, and channelization improvements to the Corrales Road.

The site has been designed to convey developed flows to the existing storm sewer system in the Coors Bypass Road, or to Seven Bar Loop Road, where it will be conveyed across Corrales Road through a detention pond into the Corrales Main Canal. The constraints on discharging developed runoff to the existing downstream facilities identified either within the drainage report prepared for the V.T. Autopark site or the North Coors Drainage Management Plan. Concepts for drainage management within the entire area have been outlined within the Master Drainage Report for SAD-223, prepared by Easterling and Associates.

Based on the hydrologic analysis contained herein, and previous research ad analysis, detention ponding will be necessary to control the discharge to the previously approved flowrates. The detention ponds will be landscaped and standpipe structures will be utilized for discharge. Roof flows will be collected by a series of gutters and pipes for discharge into the storm sewer. The maximum peak flowrate generated onsite by this project when fully developed has been computed to be 169.6 cfs, which is roughly equivalent to the 169 cfs allowed by the V.T. Autopark Drainage Management Plan.

The construction of the majority of the mall is to be completed in one phase and the required infrastructure will be installed with the initial construction. The entire project is to be graded in one complete operation, which will require dust and erosion control measures to be performed by the contractor. These measures shall include interim control berms, water protection, snow fences, and crimped hay mulch with native seeding. It will be the contractors responsibility to obtain the necessary permits and provide the control measures during construction.

ORIFICE CONTROLLED DISCHARGES (PONDS)

6" ORIFICE, 9"DEEP POND

ALL INPUT VALUES IN FT. EXCEPT PIPE DIAM IN INCHES
ENTER INCREMENTAL ELEV. AND TOP OF DAM ELEV.
1.00 0.75
ENTER PIPE ELEV. AND PIPE DIAM.
-3.00 6

ELEVATION (FT)	DISCHARGE (CFS)
-2.00000	0.94504
-1.00000	1.33648
0.00000	1.63685
DISCHARGE AT TOP	1.83005

6" ORIFICE, 9"DEEP POND

ALL INPUT VALUES IN FT. EXCEPT PIPE DIAM IN INCHES
ENTER INCREMENTAL ELEV. AND TOP OF DAM ELEV.
1.00 0.75
ENTER PIPE ELEV. AND PIPE DIAM.
-3.00 9

ELEVATION (FT)	DISCHARGE (CFS)
-2.00000	2.12633
-1.00000	3.00709
0.00000	3.68291
DISCHARGE AT TOP	4.11762

12" ORIFICE, 9"DEEP POND

ALL INPUT VALUES IN FT. EXCEPT PIPE DIAM IN INCHES
ENTER INCREMENTAL ELEV. AND TOP OF DAM ELEV.
1.00 0.75
ENTER PIPE ELEV. AND PIPE DIAM.
-3.00 12

ELEVATION (FT)	DISCHARGE (CFS)
-2.00000	3.78014
-1.00000	5.34593
0.00000	6.54740
DISCHARGE AT TOP	7.32022

15" ORIFICE, 9"DEEP POND

ALL INPUT VALUES IN FT. EXCEPT PIPE DIAM IN INCHES
ENTER INCREMENTAL ELEV. AND TOP OF DAM ELEV.
1.00 0.75
ENTER PIPE ELEV. AND PIPE DIAM.
-3.00 15

ELEVATION (FT)	DISCHARGE (CFS)
-2.00000	5.90648
-1.00000	8.35302
0.00000	10.23032
DISCHARGE AT TOP	11.43784

ORIFICE CONTROLLED DISCHARGES (PONDS)

21" ORIFICE, 9"DEEP POND

ALL INPUT VALUES IN FT. EXCEPT PIPE DIAM IN INCHES
ENTER INCREMENTAL ELEV. AND TOP OF DAM ELEV.
1.00 0.75
ENTER PIPE ELEV. AND PIPE DIAM.
-3.00 21

ELEVATION (FT)	DISCHARGE (CFS)
-2.00000	11.57669
-1.00000	16.37191
0.00000	20.05141
DISCHARGE AT TOP	22.41816

6" ORIFICE, 5' DEEP POND

ALL INPUT VALUES IN FT. EXCEPT PIPE DIAM IN INCHES
ENTER INCREMENTAL ELEV. AND TOP OF DAM ELEV.
1.00 5.00
ENTER PIPE ELEV. AND PIPE DIAM.
0.00 6

ELEVATION (FT)	DISCHARGE (CFS)
1.00000	0.94504
2.00000	1.33648
3.00000	1.63685
4.00000	1.89007
DISCHARGE AT TOP	2.11316

9" ORIFICE, 5' DEEP POND

ALL INPUT VALUES IN FT. EXCEPT PIPE DIAM IN INCHES
ENTER INCREMENTAL ELEV. AND TOP OF DAM ELEV.
1.00 5.00
ENTER PIPE ELEV. AND PIPE DIAM.
0.00 9

ELEVATION (FT)	DISCHARGE (CFS)
1.00000	2.12633
2.00000	3.00709
3.00000	3.68291
4.00000	4.25266
DISCHARGE AT TOP	4.75462

ORIFICE CONTROLLED DISCHARGES (PONDS)

9" ORIFICE, 2' DEEP POND

ALL INPUT VALUES IN FT. EXCEPT PIPE DIAM IN INCHES
ENTER INCREMENTAL ELEV. AND TOP OF DAM ELEV.
0.25 2.00
ENTER PIPE ELEV. AND PIPE DIAM.
-2.75 9

ELEVATION (FT)	DISCHARGE (CFS)
-2.50000	1.06317
-2.25000	1.50354
-2.00000	1.84146
-1.75000	2.12633
-1.50000	2.37731
-1.25000	2.60421
-1.00000	2.81287
-0.75000	3.00709
-0.50000	3.18950
-0.25000	3.36202
0.00000	3.52612
0.25000	3.68291
0.50000	3.83330
0.75000	3.97800
1.00000	4.11762
1.25000	4.25266
1.50000	4.38354
1.75000	4.51063
DISCHARGE AT TOP	4.63423

15" ORIFICE, 2' DEEP POND

ALL INPUT VALUES IN FT. EXCEPT PIPE DIAM IN INCHES
ENTER INCREMENTAL ELEV. AND TOP OF DAM ELEV.
1.00 2.00
ENTER PIPE ELEV. AND PIPE DIAM.
-3.00 15

ELEVATION (FT)	DISCHARGE (CFS)
-2.00000	5.90648
-1.00000	8.35302
0.00000	10.23032
1.00000	11.81295
DISCHARGE AT TOP	13.20728

ORIFICE CONTROLLED DISCHARGES (PONDS)

27" ORIFICE, 8' DEEP POND

ALL INPUT VALUES IN FT. EXCEPT PIPE DIAM IN INCHES
ENTER INCREMENTAL ELEV. AND TOP OF DAM ELEV.
1.00 8.00
ENTER PIPE ELEV. AND PIPE DIAM.
-4.00 27

ELEVATION (FT)	DISCHARGE (CFS)
-3.00000	19.13698
-2.00000	27.06378
-1.00000	33.14622
0.00000	38.27396
1.00000	42.79159
2.00000	46.87583
3.00000	50.63169
4.00000	54.12755
5.00000	57.41094
6.00000	60.51644
7.00000	63.47018
DISCHARGE AT TOP	66.29244

SUMMARY OF HYDRAULIC CALCULATIONS

COTTONWOOD MALL TO CALABACILLAS ARROYO

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length	Hf	Hb	Hj	Hmh	Ht	Total Losses	HGL(dn)	HGL(up)	Low Point	HV	EGL(dn)	EGL(up)
21+86.02	ARROYO									0.00	0.00	0.00	0.00	0.00		5033.82		0.67	5034.49	5034.49
		84	252.1	38.48	6.55	6388	0.0016	44.00	0.07					0.07						
22+30.02	BEND									0.09	0.00	0.00	0.00	0.09	5033.89	5033.99		0.66	5034.55	5034.65
		84	250.0	38.48	6.50	6388	0.0015	40.00	0.06					0.06						
22+70.02	BEND									0.09	0.00	0.00	0.00	0.09	5034.05	5034.15		0.65	5034.71	5034.80
		84	248.6	38.48	6.46	6388	0.0015	24.36	0.04					0.04						
22+94.38	INLET 23-1									0.00	0.05	0.00	0.00	0.05	5034.19	5034.27		0.61	5034.84	5034.88
		84	241.7	38.48	6.28	6388	0.0014	275.00	0.39					0.39						
25+69.38	INLET 23									0.00	0.04	0.00	0.00	0.04	5034.67	5035.02		0.3	5035.28	5035.32
		84	170.5	38.48	4.43	6388	0.0007	25.76	0.02					0.02						
25+83.67	BEND									0.04	0.00	0.00	0.00	0.04	5035.03	5035.07		0.3	5035.34	5035.38
		84	170.5	38.48	4.43	6388	0.0007	26.61	0.02					0.02						
26+07.83	INLET E5									0.00	0.01	0.00	0.00	0.01	5035.09	5035.11		0.3	5035.40	5035.41
		84	169.1	38.48	4.39	6388	0.0007	56.64	0.04					0.04						
26+64.47	INLET E4									0.00	0.01	0.00	0.00	0.01	5035.15	5035.17		0.29	5035.45	5035.46
		84	166.2	38.48	4.32	6388	0.0007	52.94	0.04					0.04						
27+10.11	BEND									0.03	0.00	0.00	0.00	0.03	5035.20	5035.24		0.29	5035.49	5035.53
		84	166.2	38.48	4.32	6388	0.0007	132.72	0.09					0.09						
28+42.83	INLET E3									0.00	0.01	0.00	0.00	0.01	5035.33	5035.34		0.29	5035.62	5035.63
		84	165.3	38.48	4.30	6388	0.0007	37.65	0.03					0.03						
28+80.48	INLET E2									0.00	0.01	0.00	0.00	0.01	5035.36	5035.38		0.28	5035.65	5035.66
		84	164.1	38.48	4.26	6388	0.0007	67.61	0.04					0.04						
29+48.09	INLET E1									0.00	0.01	0.00	0.00	0.01	5035.42	5035.43		0.28	5035.70	5035.71
		84	163.5	38.48	4.25	6388	0.0007	220.34	0.14					0.14						
2+76.20	MH 12									0.09	0.29	0.02	0.01	0.41	5035.57	5035.69	5043.10	0.57	5035.85	5036.26
		60	118.9	19.63	6.06	2604	0.0021	262.79	0.55					0.55						
5+38.99	MH 11									0.07	0.05	0.03	0.00	0.15	5036.24	5036.44	5047.72	0.52	5036.81	5036.96
		60	113.3	19.63	5.77	2604	0.0019	313.36	0.59					0.59						
8+52.35	MH 10									0.00	0.08	0.02	0.00	0.11	5037.03	5037.22	5046.17	0.44	5037.55	5037.66
		60	104.7	19.63	5.33	2604	0.0016	450.00	0.73					0.73						
13+02.35	MH 9									0.05	0.09	0.02	0.00	0.15	5037.94	5038.17	5053.88	0.37	5038.39	5038.54
		54	77.2	15.90	4.85	1966	0.0015	396.66	0.61					0.61						
16+99.01	MH 8									0.00	0.09	0.02	0.00	0.11	5038.79	5038.98	5048.90	0.28	5039.15	5039.26
		54	67.4	15.90	4.24	1966	0.0012	125.00	0.15					0.15						
18+25.17	INLET B15									0.00	0.01	0.00	0.00	0.01	5039.13	5039.17		0.25	5039.41	5039.42
		54	64.3	15.90	4.04	1966	0.0011	193.50	0.21					0.21						
20+17.51	MH 7									0.03	0.18	0.02	0.00	0.23	5039.37	5039.45	5044.00	0.41	5039.63	5039.86
		42	49.2	9.62	5.11	1006	0.0024	242.25	0.58					0.58						
22+59.76	MH 6									0.06	0.09	0.02	0.00	0.17	5040.03	5040.29	5049.81	0.31	5040.44	5040.60
		42	43.2	9.62	4.49	1006	0.0018	450.00	0.83					0.83						
27+09.76	MH 5									0.00	0.19	0.02	0.00	0.20	5041.12	5041.31	5054.91	0.33	5041.43	5041.64
		36	32.5	7.07	4.60	667	0.0024	231.65	0.55					0.55						
29+41.41	MH 4									0.03	0.18	0.01	0.00	0.23	5041.86	5042.26	5046.56	0.15	5042.19	5042.41
		36	22.2	7.07	3.14	667	0.0011	426.48	0.47					0.47						
33+67.89	MH 4C									0.03	0.14	0.01	0.00	0.19	5042.73	5042.78	5046.14	0.29	5042.89	5043.07
		30	21.3	4.91	4.34	410	0.0027	134.68	0.36					0.36						
35+02.57	MH 4B									0.00	0.77	0.03	0.05	0.85	5043.14	5043.22	5044.20	1.06	5043.44	5044.28
		18	14.6	1.77	8.26	105	0.0193	54.42	1.05					1.05						
MH4C TO MH4A BRANCH																				
1+00.00	MH 4C									0.00	0.00	0.01	0.00	0.01	5042.73	5042.80	5046.14	0.09	5042.89	5042.89
		12	1.9	0.79	2.42	36	0.0028	239.72	0.68					0.68						
3+39.72	MH 4A									0.01	0.00	0.00	0.00	0.02	5043.48	5043.50	5046.98	0.09	5043.58	5043.59
		12	1.9	0.79	2.42	36	0.0028	77.33	0.22					0.22						

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length	Hf	Hb	Hj	Hmh	Ht	Total Losses	HGL(dn)	HGL(up)	Low Point	HV	EGL(dn)	EGL(up)
MH5 TO MH5A BRANCH																				
1+00.00	MH 5									0.09	0.33	0.02	0.01	0.46	5041.12	5041.25	5054.91	0.65	5041.43	5041.89
		18	11.4	1.77	6.45	105	0.0118	364.60	4.29					4.29						
4+64.60	MH 5B									0.17	0.91	0.04	0.01	1.14	5045.54	5046.20	5061.89	1.13	5046.19	5047.33
		12	6.7	0.79	8.53	36	0.0354	122.04	4.32					4.32						
5+86.64	MH 5A									0.09	0.83	0.03	0.00	0.95	5050.51	5052.27	5063.00	0.33	5051.64	5052.60
		12	3.6	0.79	4.58	36	0.0102	20.00	0.20					0.20						
4+64.60	MH 5B									0.05	0.00	0.01	0.08	0.14	5045.54	5046.30	5061.89	0.03	5046.19	5046.33
		12	1.0	0.79	1.27	36	0.0008	84.04	0.07					0.07						
5+48.64	MH 5C									0.02	0.00	0.01	0.00	0.03	5046.37	5046.40	5062.65	0.03	5046.40	5046.42
		12	1.0	0.79	1.27	36	0.0008	90.00	0.07					0.07						
MH4 TO MH4D																				
2+73.50	MH 4									0.06	0.00	0.02	0.00	0.08	5041.86	5041.99	5046.56	0.27	5042.19	5042.26
		12	3.3	0.79	4.20	36	0.0086	143.37	1.23					1.23						
4+16.87	MH 4D									0.04	0.00	0.01	0.00	0.04	5043.22	5043.44	5045.34	0.1	5043.49	5043.54
GRATE B3		12	2.0	0.79	2.55	36	0.0032	98.46	0.31					0.31						
GRATE B27		12	0.3	0.79	0.38	36	0.0001	95.00	0.01					0.01						
MH4 TO MH3																				
2+73.50	MH 4									0.04	0.00	0.01	0.00	0.06	5041.86	5042.06	5046.56	0.18	5042.19	5042.25
		24	10.8	3.14	3.44	226	0.0023	87.00	0.20					0.20						
1+86.50	MH 3B									0.02	0.08	0.01	0.00	0.11	5042.26	5042.47	5046.10	0.08	5042.45	5042.55
		24	7.0	3.14	2.23	226	0.0010	86.50	0.08					0.08						
1+00.00	MH 3									0.00	0.04	0.00	0.00	0.04	5042.56	5042.64	5046.00	0.04	5042.63	5042.68
		24	5.0	3.14	1.59	226	0.0005	90.00	0.04					0.04						
MH7 TO MH7A																				
1+00.00	MH 7									0.05	0.03	0.01	0.00	0.09	5039.37	5039.44	5044.00	0.28	5039.63	5039.72
		21	10.2	2.41	4.24	158	0.0041	212.93	0.88					0.88						
3+12.93	MH 7A									0.00	0.28	0.01	0.03	0.32	5040.32	5040.38	5044.00	0.53	5040.60	5040.92
INFLOW B20B		12	4.6	0.79	5.86	36	0.0167	80.00	1.33					1.33						
GRATE B24		12	1.0	0.79	1.27	36	0.0008	80.00	0.06					0.06						
GRATE B23		12	1.0	0.79	1.27	36	0.0008	70.00	0.06					0.06						
GRATE B13		15	4.6	1.23	3.75	65	0.0051	188.10	0.95					0.95						
MH8 TO GRATE B16																				
1+00.00	MH 8									0.14	0.75	0.03	0.11	1.03	5038.79	5039.07	5048.90	1.12	5039.15	5040.18
GRATE B16		15	10.4	1.23	8.47	65	0.0259	198.06	5.13					5.13						
BASIN C																				
1+00.00	MH 9									0.04	0.00	0.01	0.02	0.07	5037.94	5038.34	5053.88	0.12	5038.39	5038.46
		36	19.9	7.07	2.82	667	0.0009	74.71	0.07					0.07						
1+74.71	MH 9B									0.02	0.00	0.01	0.00	0.03	5038.40	5038.43	5052.02	0.12	5038.53	5038.55
		36	19.9	7.07	2.82	667	0.0009	277.34	0.25					0.25						
4+52.05	MH 9A									0.00	0.05	0.01	0.01	0.07	5038.68	5038.56	5040.00	0.3	5038.80	5038.87
		24	13.9	3.14	4.42	226	0.0038	50.26	0.19					0.19						

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length	Hf	Hb	Hj	Hmh	Ht	Total Losses	HGL(dn)	HGL(up)	Low Point	HV	EGL(dn)	EGL(up)
BASINS B-9 & B-10																				
22+59.76	MH 6									0.05	0.00	0.01	0.01	0.07	5040.03	5040.33	5049.81	0.19	5040.44	5040.51
		18	6.1	1.77	3.45	105	0.0034	274.02	0.92					0.92						
3+74.02	MH 6A									0.06	0.16	0.02	0.02	0.25	5041.25	5041.16	5044.20	0.53	5041.44	5041.69
MH6A TO GRATE		12	4.6	0.79	5.86	36	0.0167	56.26	0.94					0.94						
MH6A TO GRATE POND		15	1.9	1.23	1.55	65	0.0009	174.04	0.15					0.15						
SD A-8																				
1+00.00	MH 9									0.12	0.39	0.03	0.01	0.56	5037.94	5038.11	5053.88	0.84	5038.39	5038.95
		15	9.0	1.23	7.33	65	0.0194	226.12	4.39					4.39						
3+26.12	MH 21B									0.11	0.36	0.03	0.00	0.50	5042.50	5043.35	5061.59	0.49	5043.34	5043.84
		15	6.9	1.23	5.62	65	0.0114	213.64	2.44					2.44						
5+39.76	MH 21A									0.04	0.00	0.01	0.06	0.10	5045.79	5046.36	5062.30	0.03	5046.28	5046.38
		12	1.0	0.79	1.27	36	0.0008	100.00	0.08					0.08						
BASIN A																				
1+00.00	MH 12									0.12	1.59	0.05	0.00	1.76	5035.83	5036.00	5043.10	1.88	5036.12	5037.88
		33	48.3	5.94	8.13	529	0.0083	41.20	0.34					0.34						
1+41.20	MH 12A									0.14	0.00	0.04	0.00	0.19	5036.34	5037.71	5043.10	0.7	5038.22	5038.41
		54	107.0	15.90	6.73	1966	0.0030	382.39	1.13					1.13						
5+23.59	MH 21									0.07	0.20	0.04	0.00	0.32	5038.84	5038.96	5044.66	0.91	5039.54	5039.86
		48	96.0	12.57	7.64	1436	0.0045	306.31	1.37					1.37						
8+29.90	MH 20									0.00	0.03	0.05	0.00	0.07	5040.32	5040.40	5043.89	0.90	5041.23	5041.30
		48	95.5	12.57	7.60	1436	0.0044	133.22	0.59					0.59						
9+63.12	MH 19									0.00	0.07	0.04	0.00	0.11	5040.99	5041.15	5044.29	0.85	5041.89	5042.00
		48	92.9	12.57	7.39	1436	0.0042	124.50	0.52					0.52						
10+87.62	MH 18									0.16	0.25	0.05	0.00	0.47	5041.67	5041.90	5044.50	1.09	5042.52	5042.99
		42	80.5	9.62	8.37	1006	0.0064	62.00	0.40					0.40						
11+49.62	INLET A8									0.00	0.16	0.00	0.00	0.16	5042.30	5042.62		0.93	5043.38	5043.55
		42	74.3	9.62	7.72	1006	0.0055	171.83	0.94					0.94						
13+21.45	MH 17									0.10	0.03	0.05	0.00	0.17	5043.56	5043.75	5047.79	0.91	5044.49	5044.66
		42	73.8	9.62	7.67	1006	0.0054	215.95	1.16					1.16						
15+37.40	MH 16									0.04	1.48	0.05	0.00	1.58	5044.91	5046.17	5053.94	1.23	5045.82	5047.40
		27	35.4	3.98	8.90	310	0.0131	450.00	5.88					5.88						
19+87.40	MH 15									0.07	0.89	0.04	0.04	1.04	5052.05	5053.90	5059.00	0.42	5053.28	5054.33
		18	9.2	1.77	5.21	105	0.0077	450.00	3.45					3.45						
24+37.40	MH 14									0.05	0.00	0.02	0.00	0.07	5057.36	5057.42	5062.00	0.42	5057.78	5057.85
		18	9.2	1.77	5.21	105	0.0077	207.64	1.59					1.59						
26+45.04	MH 13									0.12	1.00	0.04	0.06	1.22	5059.02	5059.24	5061.00	1.42	5059.44	5060.65
		12	7.5	0.79	9.55	36	0.0443	40.00	1.77					1.77						
MH21 TO MH21D																				
1+00.00	MH 21									0.10	0.00	0.03	0.01	0.14	5038.84	5039.32	5044.66	0.37	5039.54	5039.68
		18	8.6	1.77	4.87	105	0.0067	83.90	0.56					0.56						
1+83.90	INLET A12									0.00	0.14	0.00	0.00	0.14	5039.88	5040.27		0.11	5040.25	5040.38
		18	4.7	1.77	2.66	105	0.0020	227.93	0.46					0.46						
4+12.93	MH 21D									0.00	0.45	0.01	0.03	0.50	5040.73	5040.78	5042.51	0.56	5040.84	5041.33
		12	4.7	0.79	5.98	36	0.0174	231.40	4.03					4.03						

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length	Hf	Hb	Hj	Hmh	Ht	Total Losses	HGL(dn)	HGL(up)	Low Point	HV	EGL(dn)	EGL(up)
MH 18 TO MH 18A																				
1+00.00	MH 18									0.00	0.00	0.02	0.08	0.09	5041.67	5042.52	5044.50	0.09	5042.52	5042.61
		30	12.1	4.91	2.46	410	0.0009	131.68	0.11					0.11						
2+31.68	MH 18C									0.00	0.06	0.01	0.01	0.08	5042.63	5042.65	5044.86	0.16	5042.73	5042.81
		24	10.0	3.14	3.18	226	0.0020	172.76	0.34					0.34						
4+04.43	MH 18B									0.02	0.01	0.01	0.00	0.04	5042.99	5043.06	5045.00	0.12	5043.15	5043.18
		24	8.7	3.14	2.77	226	0.0015	174.85	0.26					0.26						
5+79.08	MH 18A									0.05	0.56	0.02	0.05	0.67	5043.32	5043.43	5045.59	0.68	5043.44	5044.11
		12	5.2	0.79	6.62	36	0.0213	70.00	1.49					1.49						
MH15 TO MH15A																				
1+00.00	MH 15									0.27	0.25	0.02	0.00	0.54	5052.05	5052.34	5059.00	1.48	5053.28	5053.82
		21	23.5	2.41	9.77	158	0.0220	117.22	2.58					2.58						
2+17.22	INLET A2									0.10	1.67	0.04	0.07	1.88	5054.92	5057.87	5058.25	0.41	5056.40	5058.28
		18	9.1	1.77	5.15	105	0.0075	327.40	2.46					2.46						
5+44.62	MH 15A									0.05	0.71	0.01	0.02	0.79	5060.33	5061.41	5062.50	0.11	5060.74	5061.52
		12	2.1	0.79	2.67	36	0.0035	200.00	0.69					0.69						
BP1E GRATE		18	2.7	1.77	1.53	105	0.0007	178.92	0.12					0.12						

Remarks: 100YR EVENT, 100YR ELEV IN CBC
Manning's 'n': 0.0130
STATIONS REFER TO PNP SHEETS

STORM DRAIN DATA - 100 YEAR, 24 HOUR STORM
COTTONWOOD MALL TO CALABACILLAS ARROYO

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length
21+86.02	ARROYO							
		84	249.1	38.48	6.47	6388	0.0015	44.00
22+30.02	BEND							
		84	248.4	38.48	6.45	6388	0.0015	40.00
22+70.02	BEND							
		84	248.6	38.48	6.46	6388	0.0015	24.36
22+94.38	INLET 23-1							
		84	242.9	38.48	6.31	6388	0.0014	275.00
25+69.38	INLET 23							
		84	169.6	38.48	4.41	6388	0.0007	25.76
25+83.67	BEND							
		84	169.6	38.48	4.41	6388	0.0007	26.61
26+07.83	INLET E5							
		84	167.8	38.48	4.36	6388	0.0007	56.64
26+64.47	INLET E4							
		84	165.9	38.48	4.31	6388	0.0007	52.94
27+10.11	BEND							
		84	165.9	38.48	4.31	6388	0.0007	132.72
28+42.83	INLET E3							
		84	166.4	38.48	4.32	6388	0.0007	37.65
28+80.48	INLET E2							
		84	165.1	38.48	4.29	6388	0.0007	67.61
29+48.09	INLET E1							
		84	164.3	38.48	4.27	6388	0.0007	220.34
2+76.20	MH 12							
		60	104.9	19.63	5.34	2604	0.0016	262.79
5+38.99	MH 11							
		60	103.7	19.63	5.28	2604	0.0016	313.36
8+52.35	MH 10							
		60	95.2	19.63	4.85	2604	0.0013	450.00
13+02.35	MH 9							
		54	77.8	15.90	4.89	1966	0.0016	396.66
16+99.01	MH 8							
		54	69.3	15.90	4.36	1966	0.0012	125.00
18+25.17	INLET B15							
		54	66.4	15.90	4.17	1966	0.0011	193.50
20+17.51	MH 7							
		42	52.2	9.62	5.43	1006	0.0027	242.25
22+59.76	MH 6							
		42	46.7	9.62	4.85	1006	0.0022	450.00
27+09.76	MH 5							
		36	37.3	7.07	5.28	667	0.0031	231.65
29+41.41	MH 4							
		36	25.7	7.07	3.64	667	0.0015	426.48
33+67.89	MH 4C							
		30	23.7	4.91	4.83	410	0.0033	134.68
35+02.57	MH 4B							
		21	19.1	2.41	7.94	158	0.0145	54.42

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length
MH4C TO MH4A BRANCH								
1+00.00	MH 4C							
		12	1.9	0.79	2.42	36	0.0028	239.72
3+39.72	MH 4A							
		12	1.9	0.79	2.42	36	0.0028	77.33
MH5 TO MH5A BRANCH								
1+00.00	MH 5							
		18	11.4	1.77	6.45	105	0.0118	364.60
4+64.60	MH 5B							
		12	6.7	0.79	8.53	36	0.0354	122.04
5+86.64	MH 5A							
		12	3.6	0.79	4.58	36	0.0102	20.00
4+64.60	MH 5B							
		12	1.0	0.79	1.27	36	0.0008	84.04
5+48.64	MH 5C							
		12	1.0	0.79	1.27	36	0.0008	90.00
MH4 TO MH4D								
2+73.50	MH 4							
		12	1.8	0.79	2.29	36	0.0026	143.37
4+16.87	MH 4D							
GRATE B3		12	1.8	0.79	2.29	36	0.0026	98.46
GRATE B27		12	0.3	0.79	0.38	36	0.0001	95.00
MH4 TO MH3								
2+73.50	MH 4							
		24	11.2	3.14	3.57	226	0.0025	87.00
1+86.50	MH 3B							
		24	7.0	3.14	2.23	226	0.0010	86.50
1+00.00	MH 3							
		24	5.0	3.14	1.59	226	0.0005	90.00

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length
MH7 TO MH7A								
1+00.00	MH 7							
		21	10.2	2.41	4.24	158	0.0041	212.93
3+12.93	MH 7A							
INFLOW B20B		12	4.6	0.79	5.86	36	0.0167	80.00
GRATE B24		12	1.0	0.79	1.27	36	0.0008	80.00
GRATE B23		12	1.0	0.79	1.27	36	0.0008	70.00
GRATE B13		15	5.7	1.23	4.64	65	0.0078	188.10
MH8 TO GRATE B16								
1+00.00	MH 8							
GRATE B16		15	10.4	1.23	8.47	65	0.0259	198.06
BASIN C								
1+00.00	MH 9							
		36	19.2	7.07	2.72	667	0.0008	74.71
1+74.71	MH 9B							
		36	19.2	7.07	2.72	667	0.0008	277.34
4+52.05	MH 9A							
		24	13.2	3.14	4.20	226	0.0034	50.26
BASINS B-9 & B-10								
1+00.00	MH 6							
		18	6.1	1.77	3.45	105	0.0034	274.02
3+74.02	MH 6A							
MH6A TO GRATE		12	4.6	0.79	5.86	36	0.0167	56.26
MH6A TO GRATE POND		15	1.9	1.23	1.55	65	0.0009	174.04

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length
BASIN A								
1+00.00	MH 12							
		33	65.0	5.94	10.94	529	0.0151	41.20
1+41.20	MH 12A							
		54	124.6	15.90	7.83	1966	0.0040	382.39
5+23.59	MH 21							
		48	99.5	12.57	7.92	1436	0.0048	306.31
8+29.90	MH 20							
		48	98.8	12.57	7.86	1436	0.0047	133.22
9+63.12	MH 19							
		48	95.4	12.57	7.59	1436	0.0044	124.50
10+87.62	MH 18							
		42	75.0	9.62	7.80	1006	0.0056	62.00
11+49.62	INLET A8							
		42	67.5	9.62	7.02	1006	0.0045	171.83
13+21.45	MH 17							
		42	66.3	9.62	6.89	1006	0.0043	215.95
15+37.40	MH 16							
		27	31.0	3.98	7.80	310	0.0100	450.00
19+87.40	MH 15							
		18	10.7	1.77	6.05	105	0.0104	450.00
24+37.40	MH 14							
		18	10.7	1.77	6.05	105	0.0104	207.64
26+45.04	MH 13							
		15	9.5	1.23	7.74	65	0.0216	40.00
MH21 TO MH21A								
1+00.00	MH 21							
		27	25.0	3.98	6.29	310	0.0065	85.00
1+83.90	INLET A12							
		27	18.7	3.98	4.70	310	0.0036	227.93
4+12.93	MH 21D							
		15	9.0	1.23	7.33	65	0.0194	231.40
6+44.33	MH 21C							
		15	9.0	1.23	7.33	65	0.0194	296.90
9+41.23	MH 21B							
		15	6.9	1.23	5.62	65	0.0114	213.64
11+54.87	MH 21A							
		12	1.0	0.79	1.27	36	0.0008	100.00

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length
MH 18 TO MH 18A								
1+00.00	MH 18							
		30	20.1	4.91	4.09	410	0.0024	131.68
2+31.68	MH 18C							
		24	15.3	3.14	4.87	226	0.0046	172.76
4+04.43	MH 18B							
		24	8.7	3.14	2.77	226	0.0015	174.85
5+79.08	MH 18A							
		12	5.2	0.79	6.62	36	0.0213	70.00
MH15 TO MH15A								
1+00.00	MH 15							
		21	18.8	2.41	7.82	158	0.0141	117.22
2+17.22	INLET A2							
		15	9.1	1.23	7.42	65	0.0198	327.40
5+44.62	MH 15A							
		12	4.0	0.79	5.09	36	0.0126	200.00
BP1E GRATE		18	2.7	1.77	1.53	105	0.0007	178.92

Remarks: 100YR EVENT, 100YR ELEV
STATIONS REFER TO PNP SHEETS

STORM DRAIN DATA - 10 YEAR, 24 HOUR STORM
COTTONWOOD MALL TO CALABACILLAS ARROYO

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length
21+86.02	ARROYO							
		84	175.2	38.48	4.55	6388	0.0008	44.00
22+30.02	BEND							
		84	174.8	38.48	4.54	6388	0.0007	40.00
22+70.02	BEND							
		84	175.4	38.48	4.56	6388	0.0008	24.36
22+94.38	INLET 23-1							
		84	174.4	38.48	4.53	6388	0.0007	275.00
25+69.38	INLET 23							
		84	130.3	38.48	3.39	6388	0.0004	25.76
25+83.67	BEND							
		84	130.3	38.48	3.39	6388	0.0004	26.61
26+07.83	INLET E5							
		84	129.3	38.48	3.36	6388	0.0004	56.64
26+64.47	INLET E4							
		84	126.5	38.48	3.29	6388	0.0004	52.94
27+10.11	BEND							
		84	126.5	38.48	3.29	6388	0.0004	132.72
28+42.83	INLET E3							
		84	125.4	38.48	3.26	6388	0.0004	37.65
28+80.48	INLET E2							
		84	123.9	38.48	3.22	6388	0.0004	67.61
29+48.09	INLET E1							
		84	123.5	38.48	3.21	6388	0.0004	220.34
2+76.20	MH 12							
		60	71.9	19.63	3.66	2604	0.0008	262.79
5+38.99	MH 11							
		60	71.0	19.63	3.62	2604	0.0007	313.36
8+52.35	MH 10							
		60	66.1	19.63	3.37	2604	0.0006	450.00
13+02.35	MH 9							
		54	51.7	15.90	3.25	1966	0.0007	396.66
16+99.01	MH 8							
		54	46.0	15.90	2.89	1966	0.0005	125.00
18+25.17	INLET B15							
		54	44.3	15.90	2.79	1966	0.0005	193.50
20+17.51	MH 7							
		42	35.1	9.62	3.65	1006	0.0012	242.25
22+59.76	MH 6							
		42	31.3	9.62	3.25	1006	0.0010	450.00
27+09.76	MH 5							
		36	25.1	7.07	3.55	667	0.0014	231.65
29+41.41	MH 4							
		36	16.6	7.07	2.35	667	0.0006	426.48
33+67.89	MH 4C							
		30	15.3	4.91	3.12	410	0.0014	134.68
35+02.57	MH 4B							
		21	12.4	2.41	5.16	158	0.0061	54.42

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length
MH4C TO MH4A BRANCH								
1+00.00	MH 4C						-	
		12	1.3	0.79	1.66	36	0.0013	239.72
3+39.72	MH 4A							
		12	1.3	0.79	1.66	36	0.0013	77.33
MH5 TO MH5A BRANCH								
1+00.00	MH 5							
		18	7.5	1.77	4.24	105	0.0051	364.60
4+64.60	MH 5B							
		12	4.5	0.79	5.73	36	0.0160	122.04
5+86.64	MH 5A							
		12	2.4	0.79	3.06	36	0.0045	20.00
4+64.60	MH 5B							
		12	1.0	0.79	1.27	36	0.0008	84.04
5+48.64	MH 5C							
		12	1.0	0.79	1.27	36	0.0008	90.00
MH4 TO MH4D								
2+73.50	MH 4							
		12	1.1	0.79	1.40	36	0.0010	143.37
4+16.87	MH 4D							
GRATE B3		12	1.1	0.79	1.40	36	0.0010	98.46
GRATE B27		12	0.2	0.79	0.25	36	0.0000	95.00
MH4 TO MH3								
2+73.50	MH 4							
		24	8.4	3.14	2.67	226	0.0014	87.00
1+86.50	MH 3B							
		24	4.6	3.14	1.46	226	0.0004	86.50
1+00.00	MH 3							
		24	4.2	3.14	1.34	226	0.0003	90.00

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length
MH7 TO MH7A								
1+00.00	MH 7							
		21	6.8	2.41	2.83	158	0.0018	212.93
3+12.93	MH 7A							
INFLOW B20B		12	3.1	0.79	3.95	36	0.0076	80.00
GRATE B24		12	0.2	0.79	0.25	36	0.0000	80.00
GRATE B23		12	0.2	0.79	0.25	36	0.0000	70.00
GRATE B13		15	3.6	1.23	2.93	65	0.0031	188.10
MH8 TO GRATE B16								
1+00.00	MH 8							
GRATE B16		15	6.8	1.23	5.54	65	0.0111	198.06
BASIN C								
1+00.00	MH 9							
		36	14.3	7.07	2.02	667	0.0005	74.71
1+74.71	MH 9B							
		36	14.3	7.07	2.02	667	0.0005	277.34
4+52.05	MH 9A							
		24	12.0	3.14	3.82	226	0.0028	50.26
BASINS B-9 & B-10								
1+00.00	MH 6							
		18	4.3	1.77	2.43	105	0.0017	274.02
3+74.02	MH 6A							
MH6A TO GRATE		12	2.9	0.79	3.69	36	0.0066	56.26
MH6A TO GRATE POND		15	1.7	1.23	1.39	65	0.0007	174.04

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length
BASIN A								
1+00.00	MH 12							
		33	54.0	5.94	9.09	529	0.0104	41.20
1+41.20	MH 12A							
		54	78.4	15.90	4.93	1966	0.0016	382.39
5+23.59	MH 21							
		48	63.3	12.57	5.04	1436	0.0019	306.31
8+29.90	MH 20							
		48	63.2	12.57	5.03	1436	0.0019	133.22
9+63.12	MH 19							
		48	61.2	12.57	4.87	1436	0.0018	124.50
10+87.62	MH 18							
		42	48.0	9.62	4.99	1006	0.0023	62.00
11+49.62	INLET A8							
		42	43.2	9.62	4.49	1006	0.0018	171.83
13+21.45	MH 17							
		42	42.4	9.62	4.41	1006	0.0018	215.95
15+37.40	MH 16							
		27	19.9	3.98	5.00	310	0.0041	450.00
19+87.40	MH 15							
		18	6.9	1.77	3.90	105	0.0043	450.00
24+37.40	MH 14							
		18	6.9	1.77	3.90	105	0.0043	207.64
26+45.04	MH 13							
		15	6.0	1.23	4.89	65	0.0086	40.00
MH21 TO MH21A								
1+00.00	MH 21							
		27	16.1	3.98	4.05	310	0.0027	85.00
1+83.90	INLET A12							
		27	12.1	3.98	3.04	310	0.0015	227.93
4+12.93	MH 21D							
		15	6.0	1.23	4.89	65	0.0086	231.40
6+44.33	MH 21C							
		15	6.0	1.23	4.89	65	0.0086	296.90
9+41.23	MH 21B							
		15	4.6	1.23	3.75	65	0.0051	213.64
11+54.87	MH 21A							
		12	1.0	0.79	1.27	36	0.0008	100.00

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length
MH 18 TO MH 18A								
1+00.00	MH 18							
		30	13.2	4.91	2.69	410	0.0010	131.68
2+31.68	MH 18C							
		24	10.1	3.14	3.21	226	0.0020	172.76
4+04.43	MH 18B							
		24	5.8	3.14	1.85	226	0.0007	174.85
5+79.08	MH 18A							
		12	3.5	0.79	4.46	36	0.0097	70.00
MH15 TO MH15A								
1+00.00	MH 15							
		21	12.2	2.41	5.07	158	0.0059	117.22
2+17.22	INLET A2							
		15	6.0	1.23	4.89	65	0.0086	327.40
5+44.62	MH 15A							
		12	2.1	0.79	2.67	36	0.0035	200.00
BP1E GRATE		18	1.6	1.77	0.91	105	0.0002	178.92

Remarks: 10 YEAR EVENT, 10 YEAR ELEV
STATIONS REFER TO PNP SHEETS