

AMENDED
DRAINAGE MANAGEMENT PLAN
SCHWARTZMAN INDUSTRIAL CENTER

TRACT C-3-A
SCHWARTZMAN INDUSTRIAL CENTER
Bernalillo County, New Mexico

for

Reid and Associates
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November 14, 2008

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**AMENDED
DRAINAGE MANAGEMENT PLAN
SCHWARTZMAN INDUSTRIAL CENTER**

I, Scott Eddings being first duly sworn, upon my oath state that I am a registered professional engineer, qualified in Civil engineering, and that the accompanying report was prepared by me or under my supervision and is true and correct to the best of my knowledge and belief.

Registered Professional Engineer

**AMENDED
DRAINAGE MANAGEMENT PLAN
SCHWARTZMAN INDUSTRIAL CENTER**

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AMENDED DRAINAGE MANAGEMENT PLAN

SCHWARTZMAN INDUSTRIAL CENTER

PURPOSE

This Amendment to the Schwartzman Industrial Center Drainage Master Plan dated July 1, 2002 addresses the storm water flows from Lot C-3-A Schwartzman Industrial Center and the lot to the east Tract 2A3A1 MRGCD Map 50. This Amendment is required as the previous drainage master plan excluded the drainage associated with tract 2A3A1.

PROJECT LOCATION AND DESCRIPTION

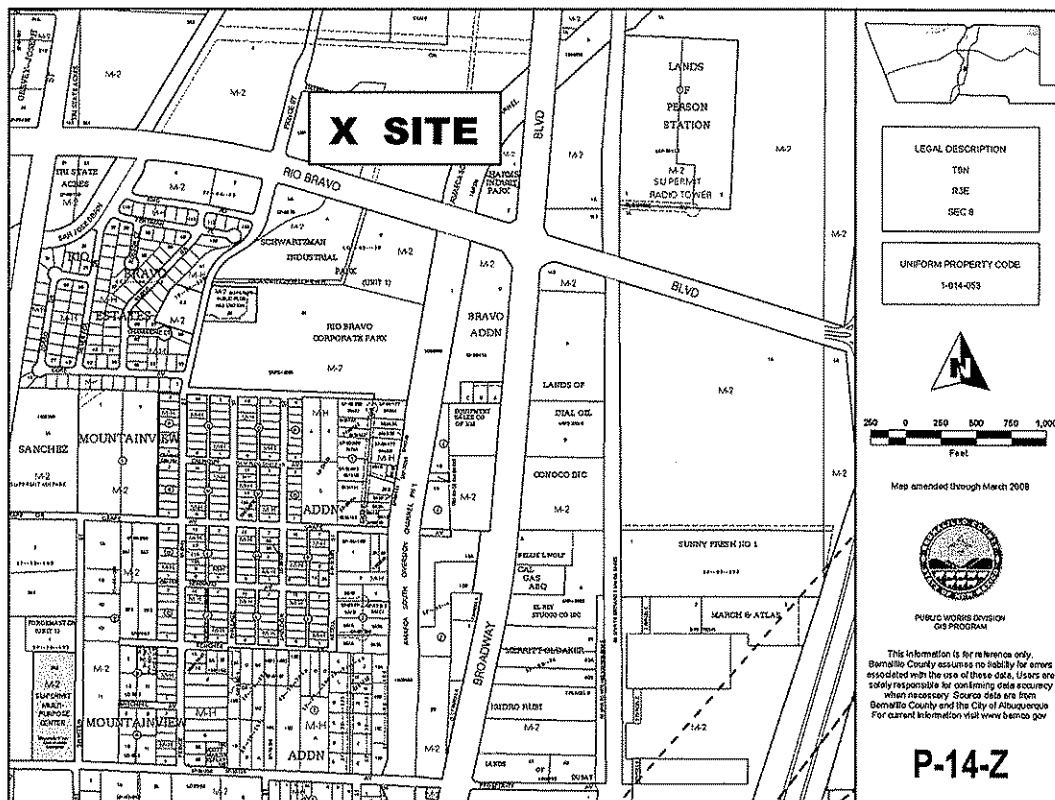


Exhibit 1 – Vicinity Map

The project is located at the northeast corner of Prince Street and Rio Bravo Boulevard within Bernalillo County; see **Exhibit 1**. The site is currently undeveloped and in its natural condition. The development is bound to the West by Prince Street, to the South by Rio Bravo, to the East by tract 2A3A1, and to the North undeveloped vacant lands.

ZONING AND PLATTING STATUS

The zoning is M-1 and this project does not require any platting.

FLOOD HAZARD ZONES

Per FEMA's Flood Insurance Rate Map (FIRM) 35001C0344E, dated November 18, 2003, the project site is not located within a FEMA 100-year Flood Hazard Zone. See **Appendix A-1**.

JURISDICTIONS OF PUBLIC AGENCIES

Local

The project is located entirely within Bernalillo County and is therefore within their jurisdiction and must comply with the County's development requirements.

RELATED REPORTS

Drainage Master Plan for Schwartzman Industrial Center, dated July 1, 2002 was prepared by Isaacson and Arfman, PA.

BASIN MAP

The basin map is included on **page 5**.

METHODOLOGY

This drainage study is based on the procedures outlined in the City of Albuquerque Development Process Manual Section 22.2, (CoA DPM), latest revision, or the AHYMO version of the ARS HYMO Computer Program." This drainage study follows the procedures outlined in both the CoA DPM Section 22.2 and the AHYMO Computer Program. Summary and Output files are included in **Appendix B and C**.

PRECIPITATION

The 100-yr 24-hr design storm was used for this analysis. For these storms, the AHYMO Computer Program requires the 1, 6 and 24-hour precipitation values. These values are shown on **Table 1**.

Table 1
Precipitation Values

Return Period (yrs)	24 hr Rainfall (in)	6 hr Rainfall (in)	1 hr Rainfall (in)
100	2.69	2.32	2.01

LAND TREATMENTS

The land treatments used in the AHYMO Computer model are as described by Table A-4 of the CoA DPM Section 22.2, 1993 revision, and are summarized in **Table 2**.

Table 2
Land Treatment Classifications

Treatment	Land Condition
A	Soil uncompacted by human activity with 0 to 10 percent slopes. Native

	grasses, weeds and shrubs in typical densities with minimal disturbance to grading, groundcover and infiltration capacity. Croplands. Unlined Arroyos.
B	Irrigated lawns, parks and golf courses with 0 to 10 percent slopes. Soil uncompacted by human activity with slopes greater than 10 percent and less than 20 percent.
C	Soil compacted by human activity. Unpaved parking, roads and trail. Most vacant lots. Gravel or rock on plastic (desert landscaping)
D	Impervious areas, pavement and roofs.

Table A-5 of the CoA DPM Section 22.2, 1993 revision summarizes the Percent of Treatment D with a corresponding land use. The Land Treatments are broken down as follows:

Developed Basin 310 - %A=0, %B=5, %C=10, and %D=85
Tract 2A3A1 - %A=0, %B=10, %C=15, and %D=75

PRE-DEVELOPMENT CONDITIONS

The site is currently undeveloped and in it's natural vegetative condition. The property was formerly used as farmland and as such is very flat. Tract 2A3A1 MRGCD Map 50 was previously developed and overland flow from this development drains onto Lot C-3-A Schwartman Industrial Center.

ULTIMATE DEVELOPED CONDITIONS

The Drainage Master Plan developed several ponds and **Basin 310** discharges into **Pond B**. As part of this report, Tract 2A3A1 shall also discharge into **Pond B**. Drainage from both tract 2A3A1 and C-3-A shall be conveyed to the pond is a natural swale. Developed flows are presented below:

Table 3
Developed Runoff

Parcel	Developed Flow (cfs)
C-3-A	10.8
2A3A1	9.7

NATURAL CHANNEL CONVEYANCE

Natural channel capacities were analyzed with Haestad Methods, Inc. FlowMaster software. Results are included in **Appendix D**. A trapezoidal natural channel with a 3-foot bottom width, 3 to 1 sideslopes, 1-foot deep, with a 1 percent slope is adequate.

CONCLUSIONS

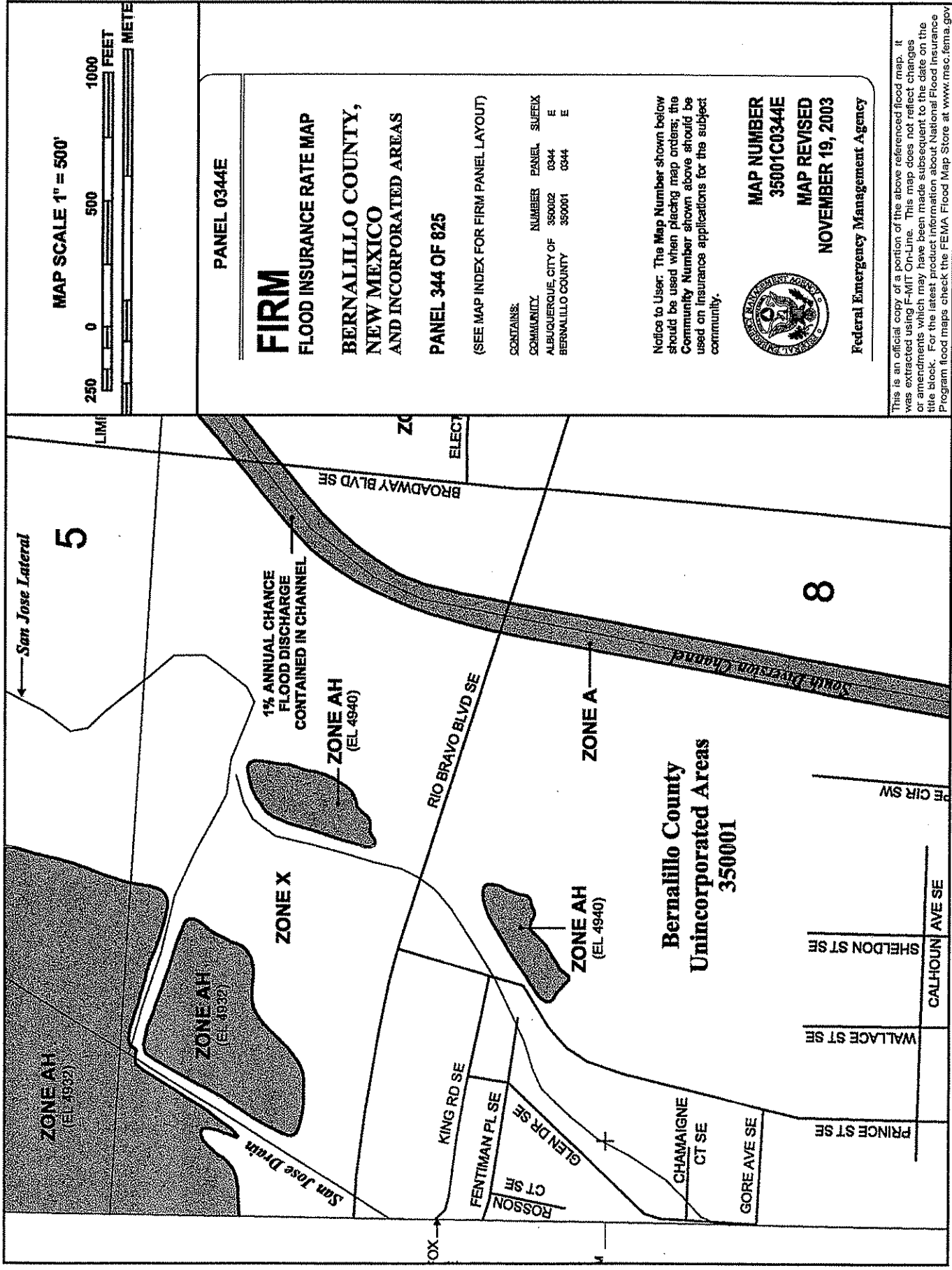
This project manages and releases storm water in accordance with the approved Drainage Master Plan. Therefore the project is in compliance with the Design Process Manual. This standard was used in developing this report.

Table 4
Original DMP Vs. Amended DMP

Report	Pond B (Inlet)	Pond B (Outlet)	Pond B Highwater Elevation	Pond Rim
DMP	262.33	5.88	27.94	29
Amended DMP	272.06	6.04	28.04	29

Pond B has capacity to accept the additional storm water with notable consequences.

LDC



PANEL 0344E

FIRM
FLOOD INSURANCE RATE MAP
BERNALILLO COUNTY,
NEW MEXICO
AND INCORPORATED AREAS
PANEL 344 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
ALBUQUERQUE, CITY OF 350002 0344 E
BERNALILLO COUNTY 350001 0344 E

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

MAP NUMBER
35001C0344E
MAP REVISED
NOVEMBER 19, 2003



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.nsc.fema.gov

SCHWARTZMAN INDUSTRIAL CENTER DRAINAGE MASTER PLAN (ORIGINAL HYDROLOGY) 100-Year 24-Hour Duration Storm AHYMO Summary File

(s16.67h8.5v0T&l8D_

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -

- VERSION: 1997.02c

RUN DATE (MON/DAY/YR) =11/14/2008

INPUT FILE = H:\proj\17075801\DRN_ST-1\AHYMO\SCHWAR-2.DAT

USER NO.= AHYMO-I-9702a01000150-SH

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID	TO ID	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1	NOTATION
START										TIME=	.00
LOCATION											
*S											
*S	SCHARTZMAN INDUSTRIAL CENTER										
*S	DRAINAGE MASTER PLAN AMENDMENT										
*S											
*S	FN:Schwartz_DMP.DAT - HYMO PER OCTOBER 2006 DPM REVISIONS										
*S											
*S											
*S											
RAINFALL TYPE= 1										RAIN6=	2.320
*S											
*S*****											
*S COMPUTE BASIN 310											
*S SEE DMP (BASIN IS NORTH OF RIO BRAVO)											
COMPUTE NM HYD	310.00	-	50	.09288	98.87	2.750	.55508	1.533	1.663 PER IMP=		.00
*S*****											
*S COMPUTE BASIN 310											
*S SEE DMP (BASIN IS NORTH OF RIO BRAVO)											
COMPUTE NM HYD	310.DEV	-	**	.09288	262.33	9.518	1.92140	1.500	4.413 PER IMP=		85.00
*S-----											
*S-----											
*S-----POND ROUTING-----											
*S-----											
*S-----											
*S ROUTE THROUGH POND.B											
ROUTE RESERVOIR	POND.B	**	51	.09288	5.88	5.841	1.17910	2.600	.099 AC-FT=		8.570
FINISH											
(s0p10h4099T&l6D_											

SCHWARTZMAN INDUSTRIAL CENTER DRAINAGE MASTER PLAN AMENDMENT (ORIGINAL HYDROLOGY) 100-Year 24-Hour Duration Storm AHYMO Output File

_(s16.67h8.5v0T_618D

```

AHYMO PROGRAM (AHYMO 97) - - Version: 1997.02c
RUN DATE (MON/DAY/YR) = 11/14/2008
START TIME (HR:MIN:SEC) = 13:03:03 USER NO. = AHYMO-I-9702a01000150-SH
INPUT FILE = H:\proj\17075801\DRN_ST-1\AHYMO\SCHWAR-2.DAT

START TIME=0.0 CODE 0 LINES -6
LOCATION BERNALILLO COUNTY
Bernalillo County soil infiltration values (LAND FACTORS) used for computations.
Land Treatment Initial Abstr.(in) Unif. Infiltr.(in/hour)
A 0.65 1.67
B 0.50 1.25
C 0.35 0.83
D 0.10 0.04

*S
*S SCHWARTZMAN INDUSTRIAL CENTER
*S DRAINAGE MASTER PLAN AMENDMENT
*S
*S FN:Schwartz_DMP.DAT - HYMO PER OCTOBER 2006 DPM REVISIONS
*S
*S
*S
RAINFALL TYPE=1 RAIN QUARTER=0.0 RAIN ONE=2.01
RAIN SIX=2.32 RAIN DAY=2.69 DT=.033333

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT = .033333 HOURS END TIME = 5.999940 HOURS
.0000 .0013 .0027 .0041 .0055 .0070 .0085
.0100 .0116 .0132 .0149 .0166 .0183 .0201
.0220 .0239 .0258 .0279 .0299 .0321 .0344
.0367 .0391 .0416 .0442 .0470 .0498 .0529
.0560 .0594 .0629 .0685 .0744 .0808 .0944
.1250 .1720 .2395 .3316 .4526 .6070 .7992
1.0337 1.2506 1.3414 1.4181 1.4863 1.5483 1.6054
1.6584 1.7080 1.7545 1.7982 1.8394 1.8784 1.9152
1.9502 1.9833 2.0147 2.0446 2.0729 2.0791 2.0849
2.0904 2.0956 2.1006 2.1054 2.1099 2.1143 2.1186
2.1226 2.1266 2.1304 2.1341 2.1377 2.1411 2.1445
2.1478 2.1510 2.1541 2.1572 2.1602 2.1631 2.1659
2.1687 2.1714 2.1741 2.1767 2.1793 2.1818 2.1843
2.1867 2.1891 2.1915 2.1938 2.1960 2.1983 2.2005
2.2026 2.2048 2.2069 2.2089 2.2110 2.2130 2.2150
2.2169 2.2189 2.2208 2.2226 2.2245 2.2263 2.2281
2.2299 2.2317 2.2335 2.2352 2.2369 2.2386 2.2403
2.2419 2.2435 2.2452 2.2468 2.2483 2.2499 2.2515
2.2530 2.2545 2.2560 2.2575 2.2590 2.2605 2.2619
2.2634 2.2648 2.2662 2.2676 2.2690 2.2704 2.2718
2.2731 2.2745 2.2758 2.2771 2.2784 2.2797 2.2810
2.2823 2.2836 2.2849 2.2861 2.2874 2.2886 2.2898
2.2910 2.2922 2.2934 2.2946 2.2958 2.2970 2.2982
2.2993 2.3005 2.3016 2.3028 2.3039 2.3050 2.3061
2.3072 2.3083 2.3094 2.3105 2.3116 2.3127 2.3137
2.3148 2.3158 2.3169 2.3179 2.3190 2.3200

*S
*S COMPUTE BASIN 310
*S SEE DMP (BASIN IS NORTH OF RIO BRAVO)
COMPUTE NM HYD ID=50 HYD=310.00 AREA=0.0928804 SQ MI
% A=90 % B=5 % C=5 % D=0 TP=-0.133 HR
MASS RAINFALL=-1

K = .152327HR TP = .133000HR K/TP RATIO = 1.145315 SHAPE CONSTANT, N = 3.092369
UNIT PEAK = 202.01 CFS UNIT VOLUME = .9998 B = 289.27 P60 = 2.0100
AREA = .092880 SQ MI IA = .62750 INCHES INF = 1.60700 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=50 CODE=1

HYDROGRAPH FROM AREA 310.00

RUNOFF VOLUME = .55508 INCHES = 2.7497 ACRE-FEET
PEAK DISCHARGE RATE = 98.87 CFS AT 1.533 HOURS BASIN AREA = .0929 SQ. MI.

*S-----
*S COMPUTE BASIN 310
*S SEE DMP (BASIN IS NORTH OF RIO BRAVO)
COMPUTE NM HYD ID=100 HYD=310.DEV AREA=0.0928804 SQ MI
% A=0 % B=5 % C=10 % D=85 TP=-0.133 HR
MASS RAINFALL=-1

K = .072844HR TP = .133000HR K/TP RATIO = .547703 SHAPE CONSTANT, N = 7.061563
UNIT PEAK = 311.14 CFS UNIT VOLUME = .9993 B = 524.16 P60 = 2.0100
AREA = .078948 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .114297HR TP = .133000HR K/TP RATIO = .859375 SHAPE CONSTANT, N = 4.138142
UNIT PEAK = 38.159 CFS UNIT VOLUME = .9999 B = 364.28 P60 = 2.0100
AREA = .013932 SQ MI IA = .40000 INCHES INF = .97000 INCHES PER HOUR

```

411/14/08 3:13 PM

H:\proj\17075801\Drn_AHYMO\ahymoout-DMP.doc

SCHWARTZMAN INDUSTRIAL CENTER DRAINAGE MASTER PLAN AMENDMENT (ORIGINAL HYDROLOGY) 100-Year 24-Hour Duration Storm AHYMO Output File

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=100 CODE=1

HYDROGRAPH FROM AREA 310.DEV

RUNOFF VOLUME = 1.92140 INCHES = 9.5178 ACRE-FEET
PEAK DISCHARGE RATE = 262.33 CFS AT 1.500 HOURS BASIN AREA = .0929 SQ. MI.

*S-----
*S-----
*S-----POND ROUTING-----
*S-----
*S-----
*S ROUTE THROUGH POND.B
ROUTE RESERVOIR ID=51 HYD=POND.B INFLOW=100 CODE=5

OUTFLOW	STORAGE	ELEV
0.0		0.0000 25
0.7		2.8070 26
4.0		5.7232 27
6.0		8.7504 28
7.0		11.8907 29

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	25.00	.000	.00
.17	.00	25.00	.000	.00
.33	.00	25.00	.000	.00
.50	.00	25.00	.000	.00
.67	.00	25.00	.000	.00
.83	.00	25.00	.000	.00
1.00	.00	25.00	.000	.00
1.17	.16	25.00	.000	.00
1.33	73.51	25.12	.339	.08
1.50	262.33	25.96	2.697	.67
1.67	133.47	26.90	5.420	3.66
1.83	86.01	27.36	6.814	4.72
2.00	62.04	27.67	7.753	5.34
2.17	27.90	27.86	8.327	5.72
2.33	12.92	27.92	8.502	5.84
2.50	7.90	27.94	8.561	5.87
2.67	5.16	27.94	8.568	5.88
2.83	3.60	27.93	8.547	5.87
3.00	2.66	27.92	8.509	5.84
3.17	2.08	27.90	8.461	5.81
3.33	1.72	27.89	8.407	5.77
3.50	1.50	27.87	8.350	5.74
3.67	1.34	27.85	8.291	5.70
3.83	1.26	27.83	8.230	5.66
4.00	1.19	27.81	8.169	5.62
4.17	1.15	27.79	8.108	5.58
4.33	1.13	27.77	8.048	5.54
4.50	1.14	27.75	7.987	5.50
4.67	1.16	27.73	7.928	5.46
4.83	1.16	27.71	7.869	5.42
5.00	1.21	27.69	7.811	5.38
5.17	1.23	27.67	7.754	5.34
5.33	1.29	27.65	7.698	5.30
5.50	1.34	27.63	7.643	5.27
5.67	1.37	27.62	7.589	5.23
5.83	1.45	27.60	7.537	5.20
6.00	1.51	27.58	7.486	5.16
6.17	.60	27.56	7.432	5.13
6.33	.17	27.54	7.365	5.09
6.50	.08	27.52	7.297	5.04
6.67	.04	27.50	7.229	4.99
6.83	.02	27.47	7.161	4.95
7.00	.01	27.45	7.093	4.91
7.17	.00	27.43	7.026	4.86
7.33	.00	27.41	6.959	4.82
7.50	.00	27.39	6.893	4.77
7.67	.00	27.36	6.828	4.73
7.83	.00	27.34	6.763	4.69
8.00	.00	27.32	6.699	4.64
8.17	.00	27.30	6.635	4.60
8.33	.00	27.28	6.572	4.56
8.50	.00	27.26	6.509	4.52
8.67	.00	27.24	6.448	4.48
8.83	.00	27.22	6.386	4.44
9.00	.00	27.20	6.325	4.40
9.17	.00	27.18	6.265	4.36

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
---------------	-----------------	----------------	-------------------	------------------

SCHWARTZMAN INDUSTRIAL CENTER DRAINAGE MASTER PLAN AMENDMENT (ORIGINAL HYDROLOGY) 100-Year 24-Hour Duration Storm AHYMO Output File

9.33	.00	27.16	6.205	4.32
9.50	.00	27.14	6.146	4.28
9.67	.00	27.12	6.087	4.24
9.83	.00	27.10	6.029	4.20
10.00	.00	27.08	5.972	4.16
10.17	.00	27.06	5.914	4.13
10.33	.00	27.04	5.858	4.09
10.50	.00	27.03	5.802	4.05
10.67	.00	27.01	5.746	4.02
10.83	.00	26.99	5.691	3.96
11.00	.00	26.97	5.637	3.90
11.17	.00	26.95	5.584	3.84
11.33	.00	26.93	5.531	3.78
11.50	.00	26.92	5.480	3.72
11.67	.00	26.90	5.429	3.67
11.83	.00	26.88	5.379	3.61
12.00	.00	26.86	5.329	3.55
12.17	.00	26.85	5.281	3.50
12.33	.00	26.83	5.233	3.45
12.50	.00	26.82	5.186	3.39
12.67	.00	26.80	5.139	3.34
12.83	.00	26.78	5.094	3.29
13.00	.00	26.77	5.049	3.24
13.17	.00	26.75	5.005	3.19
13.33	.00	26.74	4.961	3.14
13.50	.00	26.72	4.918	3.09
13.67	.00	26.71	4.876	3.04
13.83	.00	26.70	4.834	2.99
14.00	.00	26.68	4.793	2.95
14.17	.00	26.67	4.753	2.90
14.33	.00	26.65	4.713	2.86
14.50	.00	26.64	4.674	2.81
14.67	.00	26.63	4.636	2.77
14.83	.00	26.61	4.598	2.73
15.00	.00	26.60	4.561	2.68
15.17	.00	26.59	4.524	2.64
15.33	.00	26.58	4.488	2.60
15.50	.00	26.56	4.452	2.56
15.67	.00	26.55	4.417	2.52
15.83	.00	26.54	4.383	2.48
16.00	.00	26.53	4.349	2.44
16.17	.00	26.52	4.316	2.41
16.33	.00	26.51	4.283	2.37
16.50	.00	26.49	4.250	2.33
16.67	.00	26.48	4.218	2.30
16.83	.00	26.47	4.187	2.26
17.00	.00	26.46	4.156	2.23
17.17	.00	26.45	4.126	2.19
17.33	.00	26.44	4.096	2.16
17.50	.00	26.43	4.066	2.12
17.67	.00	26.42	4.037	2.09
17.83	.00	26.41	4.009	2.06
18.00	.00	26.40	3.980	2.03
18.17	.00	26.39	3.953	2.00
18.33	.00	26.38	3.925	1.97
18.50	.00	26.37	3.899	1.94

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
18.67	.00	26.37	3.872	1.91
18.83	.00	26.36	3.846	1.88
19.00	.00	26.35	3.820	1.85
19.17	.00	26.34	3.795	1.82
19.33	.00	26.33	3.770	1.79
19.50	.00	26.32	3.746	1.76
19.67	.00	26.31	3.722	1.74
19.83	.00	26.31	3.698	1.71

PEAK DISCHARGE = 5.881 CFS - PEAK OCCURS AT HOUR 2.60
 MAXIMUM WATER SURFACE ELEVATION = 27.940
 MAXIMUM STORAGE = 8.5698 AC-FT INCREMENTAL TIME= .033333HRS

PRINT HYD

ID=51 CODE=5

HYDROGRAPH FROM AREA POND.B

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	4.000	5.6	8.000	4.6	12.000	3.6	16.000	2.4
.167	.0	4.167	5.6	8.167	4.6	12.167	3.5	16.167	2.4
.333	.0	4.333	5.5	8.333	4.6	12.333	3.4	16.333	2.4
.500	.0	4.500	5.5	8.500	4.5	12.500	3.4	16.500	2.3
.667	.0	4.667	5.5	8.667	4.5	12.667	3.3	16.667	2.3
.833	.0	4.833	5.4	8.833	4.4	12.833	3.3	16.833	2.3
1.000	.0	5.000	5.4	9.000	4.4	13.000	3.2	17.000	2.2
1.167	.0	5.167	5.3	9.167	4.4	13.167	3.2	17.166	2.2
1.333	.1	5.333	5.3	9.333	4.3	13.333	3.1	17.333	2.2
1.500	.7	5.500	5.3	9.500	4.3	13.500	3.1	17.500	2.1
1.667	3.7	5.667	5.2	9.667	4.2	13.667	3.0	17.666	2.1
1.833	4.7	5.833	5.2	9.833	4.2	13.833	3.0	17.833	2.1
2.000	5.3	6.000	5.2	10.000	4.2	14.000	2.9	18.000	2.0

**SCHWARTZMAN INDUSTRIAL CENTER
DRAINAGE MASTER PLAN AMENDMENT (ORIGINAL HYDROLOGY)
100-Year 24-Hour Duration Storm
AHYMO Output File**

2.167	5.7	6.167	5.1	10.167	4.1	14.167	2.9	18.166	2.0
2.333	5.8	6.333	5.1	10.333	4.1	14.333	2.9	18.333	2.0
2.500	5.9	6.500	5.0	10.500	4.1	14.500	2.8	18.500	1.9
2.667	5.9	6.667	5.0	10.667	4.0	14.667	2.8	18.666	1.9
2.833	5.9	6.833	4.9	10.833	4.0	14.833	2.7	18.833	1.9
3.000	5.8	7.000	4.9	11.000	3.9	15.000	2.7	19.000	1.8
3.167	5.8	7.167	4.9	11.167	3.8	15.167	2.6	19.166	1.8
3.333	5.8	7.333	4.8	11.333	3.8	15.333	2.6	19.333	1.8
3.500	5.7	7.500	4.8	11.500	3.7	15.500	2.6	19.500	1.8
3.667	5.7	7.667	4.7	11.667	3.7	15.667	2.5	19.666	1.7
3.833	5.7	7.833	4.7	11.833	3.6	15.833	2.5	19.833	1.7

RUNOFF VOLUME = 1.17910 INCHES = 5.8408 ACRE-FEET
PEAK DISCHARGE RATE = 5.88 CFS AT 2.600 HOURS BASIN AREA = .0929 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 13:03:03
_ (sOp10h4099T_&l6D_

SCHWARTZMAN INDUSTRIAL CENTER DRAINAGE MASTER PLAN (PLUS MERCANTILE) 100-Year 24-Hour Duration Storm AHYMO Summary File

(s16.67h8.5v0T&l8D

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -
INPUT FILE = H:\proj\17075801\DRN_ST-1\AHYMO\SCHWAR-1.DAT

- VERSION: 1997.02c

RUN DATE (MON/DAY/YR) = 11/14/2008
USER NO. = AHYMO-I-9702a01000150-SH

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID	TO ID	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1	NOTATION
START											TIME= .00
LOCATION											
*S											
*S	SCHARTZMAN INDUSTRIAL CENTER										
*S	DRAINAGE MASTER PLAN AMENDMENT										
*S											
*S	FN:Schwartz_DMP_MODIFIED.DAT - HYMO PER OCTOBER 2006 DPM REVISIONS										
*S											
*S											
*S	RAINFALL TYPE= 1										RAIN6= 2.320
*S											
*S	COMPUTE BASIN 310										
*S	SEE DMP (BASIN IS NORTH OF RIO BRAVO)										
COMPUTE NM HYD	310.00	-	50	.09288	98.87	2.750	.55508	1.533	1.663	PER IMP=	.00
*S											
*S	COMPUTE BASIN 310										
*S	SEE DMP (BASIN IS NORTH OF RIO BRAVO)										
COMPUTE NM HYD	310.DEV	-	**	.09288	262.33	9.518	1.92140	1.500	4.413	PER IMP=	85.00
*S	COMPUTE MERCANTILE SITE										
COMPUTE NM HYD	110.DEV	-	**	.00360	9.73	.347	1.80542	1.500	4.223	PER IMP=	75.00
*S	ADD MERCANTILE SITE TO BASIN 310										
ADD HYD	200.00	**&***	**	.09648	272.06	9.864	1.91706	1.500	4.406		
*S											
*S											
*S	POND ROUTING										
*S											
*S											
*S	ROUTE THROUGH POND.B										
ROUTE RESERVOIR	POND.B	**	51	.09648	6.04	6.096	1.18475	2.600	.098	AC-FT=	8.883
FINISH											

(s0p10h4099T&l6D

SCHWARTZMAN INDUSTRIAL CENTER DRAINAGE MASTER PLAN AMENDMENT (PLUS MERCANTILE) 100-Year 24-Hour Duration Storm AHYMO Output File

(s16.67h8.5v0T&18D

AHYMO PROGRAM (AHYMO_97) - - Version: 1997.02c
 RUN DATE (MON/DAY/YR) = 11/14/2008
 START TIME (HR:MIN:SEC) = 14:18:52 USER NO. = AHYMO-I-9702a01000150-SH
 INPUT FILE = H:\proj\17075801\DRN_ST-1\AHYMO\SCHWAR-1.DAT

START TIME=0.0 CODE 0 LINES -6
 LOCATION BERNALILLO COUNTY
 Bernalillo County soil infiltration values (LAND FACTORS) used for computations.
 Land Treatment Initial Abstr.(in) Unif. Infil.(in/hour)
 A 0.65 1.67
 B 0.50 1.25
 C 0.35 0.83
 D 0.10 0.04

*S
 *S SCHARTZMAN INDUSTRIAL CENTER
 *S DRAINAGE MASTER PLAN AMENDMENT
 *S
 *S FN:Schwartz_DMP_MODIFIED.DAT - HYMO PER OCTOBER 2006 DPM REVISIONS
 *S
 *S
 *S
 RAINFALL TYPE=1 RAIN QUARTER=0.0 RAIN ONE=2.01
 RAIN SIX=2.32 RAIN DAY=2.69 DT=.033333

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
 DT = .033333 HOURS END TIME = 5.999940 HOURS

.0000	.0013	.0027	.0041	.0055	.0070	.0085
.0100	.0116	.0132	.0149	.0166	.0183	.0201
.0220	.0239	.0258	.0279	.0299	.0321	.0344
.0367	.0391	.0416	.0442	.0470	.0498	.0529
.0560	.0594	.0629	.0685	.0744	.0808	.0944
.1250	.1720	.2395	.3316	.4526	.6070	.7992
1.0337	1.2506	1.3414	1.4181	1.4863	1.5483	1.6054
1.6584	1.7080	1.7545	1.7982	1.8394	1.8784	1.9152
1.9502	1.9833	2.0147	2.0446	2.0729	2.0791	2.0849
2.0904	2.0956	2.1006	2.1054	2.1099	2.1143	2.1186
2.1226	2.1266	2.1304	2.1341	2.1377	2.1411	2.1445
2.1478	2.1510	2.1541	2.1572	2.1602	2.1631	2.1659
2.1687	2.1714	2.1741	2.1767	2.1793	2.1818	2.1843
2.1867	2.1891	2.1915	2.1938	2.1960	2.1983	2.2005
2.2026	2.2048	2.2069	2.2089	2.2110	2.2130	2.2150
2.2169	2.2189	2.2208	2.2226	2.2245	2.2263	2.2281
2.2299	2.2317	2.2335	2.2352	2.2369	2.2386	2.2403
2.2419	2.2435	2.2452	2.2468	2.2483	2.2499	2.2515
2.2530	2.2545	2.2560	2.2575	2.2590	2.2605	2.2619
2.2634	2.2648	2.2662	2.2676	2.2690	2.2704	2.2718
2.2731	2.2745	2.2758	2.2771	2.2784	2.2797	2.2810
2.2823	2.2836	2.2849	2.2861	2.2874	2.2886	2.2898
2.2910	2.2922	2.2934	2.2946	2.2958	2.2970	2.2982
2.2993	2.3005	2.3016	2.3028	2.3039	2.3050	2.3061
2.3072	2.3083	2.3094	2.3105	2.3116	2.3127	2.3137
2.3148	2.3158	2.3169	2.3179	2.3190	2.3200	

*S COMPUTE BASIN 310
 *S SEE DMP (BASIN IS NORTH OF RIO BRAVO)
 COMPUTE NM HYD ID=50 HYD=310.00 AREA=0.0928804 SQ MI
 %A=90 %B=5 %C=5 %D=0 TP=-0.133 HR
 MASS RAINFALL=-1

K = .152327HR TP = .133000HR K/TP RATIO = 1.145315 SHAPE CONSTANT, N = 3.092369
 UNIT PEAK = 202.01 CFS UNIT VOLUME = .9998 B = 289.27 P60 = 2.0100
 AREA = .092880 SQ MI IA = .62750 INCHES INF = 1.60700 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=50 CODE=1

HYDROGRAPH FROM AREA 310.00

RUNOFF VOLUME = .55508 INCHES = 2.7497 ACRE-FEET
 PEAK DISCHARGE RATE = 98.87 CFS AT 1.533 HOURS BASIN AREA = .0929 SQ. MI.

*S COMPUTE BASIN 310
 *S SEE DMP (BASIN IS NORTH OF RIO BRAVO)
 COMPUTE NM HYD ID=100 HYD=310.DEV AREA=0.0928804 SQ MI
 %A=0 %B=5 %C=10 %D=85 TP=-0.133 HR
 MASS RAINFALL=-1

K = .072844HR TP = .133000HR K/TP RATIO = .547703 SHAPE CONSTANT, N = 7.061563
 UNIT PEAK = 311.14 CFS UNIT VOLUME = .9993 B = 524.16 P60 = 2.0100
 AREA = .078948 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .114297HR TP = .133000HR K/TP RATIO = .859375 SHAPE CONSTANT, N = 4.138142
 UNIT PEAK = 38.159 CFS UNIT VOLUME = .9999 B = 364.28 P60 = 2.0100
 AREA = .013932 SQ MI IA = .40000 INCHES INF = .97000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

4/11/14/08 3:12 PM

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C-2

SCHWARTZMAN INDUSTRIAL CENTER DRAINAGE MASTER PLAN AMENDMENT (PLUS MERCANTILE) 100-Year 24-Hour Duration Storm AHYMO Output File

PRINT HYD ID=100 CODE=1

HYDROGRAPH FROM AREA 310.DEV

RUNOFF VOLUME = 1.92140 INCHES = 9.5178 ACRE-Feet
PEAK DISCHARGE RATE = 262.33 CFS AT 1.500 HOURS BASIN AREA = .0929 SQ. MI.

*S COMPUTE MERCHANTILE SITE

COMPUTE NM HYD ID=110 HYD=110.DEV AREA=0.0036 SQ MI
%A=0 %B=10 %C=15 %D=75 TP=-0.133 HR
MASS RAINFALL=-1

K = .072485HR TP = .133000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 10.684 CFS UNIT VOLUME = .9983 B = 526.28 P60 = 2.0100
AREA = .002700 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .117039HR TP = .133000HR K/TP RATIO = .879990 SHAPE CONSTANT, N = 4.033581
UNIT PEAK = 2.4185 CFS UNIT VOLUME = .9951 B = 357.40 P60 = 2.0100
AREA = .000900 SQ MI IA = .41000 INCHES INF = .99800 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=110 CODE=1

HYDROGRAPH FROM AREA 110.DEV

RUNOFF VOLUME = 1.80542 INCHES = .3466 ACRE-Feet
PEAK DISCHARGE RATE = 9.73 CFS AT 1.500 HOURS BASIN AREA = .0036 SQ. MI.

*S ADD MERCHANTILE SITE TO BASIN 310

ADD HYD ID=200 HYD=200 IDS 110 AND 100
PRINT HYD ID=200 CODE=10

PARTIAL HYDROGRAPH 200.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	138.5	3.333	1.8	5.000	1.3	6.667	.0
.333	.0	2.000	64.2	3.667	1.4	5.333	1.3	7.000	.0
.667	.0	2.333	13.4	4.000	1.2	5.667	1.4	7.333	.0
1.000	.0	2.667	5.3	4.333	1.2	6.000	1.6		
1.333	76.1	3.000	2.7	4.667	1.2	6.333	.2		

RUNOFF VOLUME = 1.91706 INCHES = 9.8644 ACRE-Feet
PEAK DISCHARGE RATE = 272.06 CFS AT 1.500 HOURS BASIN AREA = .0965 SQ. MI.

*S-----
*S-----
*S-----POND ROUTING-----
*S-----
*S-----
*S ROUTE THROUGH POND.B
ROUTE RESERVOIR ID=51 HYD=POND.B INFLOW=200 CODE=5

OUTFLOW	STORAGE	ELEV
0.0		0.0000 25
0.7		2.8070 26
4.0		5.7232 27
6.0		8.7504 28
7.0		11.8907 29

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	25.00	.000	.00
.17	.00	25.00	.000	.00
.33	.00	25.00	.000	.00
.50	.00	25.00	.000	.00
.67	.00	25.00	.000	.00
.83	.00	25.00	.000	.00
1.00	.00	25.00	.000	.00
1.17	.16	25.00	.000	.00
1.33	76.06	25.12	.350	.09
1.50	272.06	26.00	2.795	.70
1.67	138.45	26.96	5.618	3.88
1.83	89.13	27.44	7.064	4.89
2.00	64.24	27.76	8.037	5.53
2.17	28.90	27.96	8.630	5.92
2.33	13.38	28.02	8.812	6.02
2.50	8.19	28.04	8.874	6.04
2.67	5.34	28.04	8.882	6.04

**SCHWARTZMAN INDUSTRIAL CENTER
DRAINAGE MASTER PLAN AMENDMENT (PLUS MERCANTILE)
100-Year 24-Hour Duration Storm
AHYMO Output File**

2.83	3.73	28.04	8.861	6.04
3.00	2.74	28.02	8.821	6.02
3.17	2.14	28.01	8.772	6.01
3.33	1.77	27.99	8.716	5.98
3.50	1.55	27.97	8.657	5.94
3.67	1.39	27.95	8.595	5.90
3.83	1.30	27.93	8.533	5.86
4.00	1.23	27.91	8.470	5.81
4.17	1.19	27.89	8.407	5.77
4.33	1.16	27.87	8.344	5.73
4.50	1.18	27.85	8.281	5.69
4.67	1.20	27.82	8.219	5.65
4.83	1.20	27.80	8.158	5.61
5.00	1.26	27.78	8.098	5.57
5.17	1.27	27.77	8.039	5.53
5.33	1.33	27.75	7.981	5.49
5.50	1.38	27.73	7.925	5.45
5.67	1.42	27.71	7.869	5.42
5.83	1.50	27.69	7.815	5.38
6.00	1.56	27.67	7.762	5.35
6.17	.62	27.65	7.706	5.31
6.33	.17	27.63	7.637	5.26
6.50	.08	27.61	7.567	5.22
6.67	.04	27.59	7.496	5.17
6.83	.02	27.56	7.425	5.12
7.00	.01	27.54	7.355	5.08
7.17	.00	27.52	7.286	5.03
7.33	.00	27.49	7.217	4.99
7.50	.00	27.47	7.148	4.94
7.67	.00	27.45	7.081	4.90
7.83	.00	27.43	7.014	4.85
8.00	.00	27.40	6.947	4.81
8.17	.00	27.38	6.881	4.77
8.33	.00	27.36	6.816	4.72
8.50	.00	27.34	6.751	4.68
8.67	.00	27.32	6.687	4.64
8.83	.00	27.30	6.623	4.59
9.00	.00	27.28	6.560	4.55
9.17	.00	27.26	6.498	4.51

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
9.33	.00	27.24	6.436	4.47
9.50	.00	27.22	6.375	4.43
9.67	.00	27.20	6.314	4.39
9.83	.00	27.18	6.254	4.35
10.00	.00	27.16	6.194	4.31
10.17	.00	27.14	6.135	4.27
10.33	.00	27.12	6.076	4.23
10.50	.00	27.10	6.018	4.20
10.67	.00	27.08	5.961	4.16
10.83	.00	27.06	5.904	4.12
11.00	.00	27.04	5.847	4.08
11.17	.00	27.02	5.791	4.05
11.33	.00	27.00	5.736	4.01
11.50	.00	26.99	5.681	3.95
11.67	.00	26.97	5.627	3.89
11.83	.00	26.95	5.574	3.83
12.00	.00	26.93	5.522	3.77
12.17	.00	26.91	5.470	3.71
12.33	.00	26.90	5.419	3.66
12.50	.00	26.88	5.369	3.60
12.67	.00	26.86	5.320	3.54
12.83	.00	26.85	5.272	3.49
13.00	.00	26.83	5.224	3.44
13.17	.00	26.81	5.177	3.38
13.33	.00	26.80	5.131	3.33
13.50	.00	26.78	5.085	3.28
13.67	.00	26.77	5.040	3.23
13.83	.00	26.75	4.996	3.18
14.00	.00	26.74	4.953	3.13
14.17	.00	26.72	4.910	3.08
14.33	.00	26.71	4.868	3.03
14.50	.00	26.69	4.827	2.99
14.67	.00	26.68	4.786	2.94
14.83	.00	26.66	4.746	2.89
15.00	.00	26.65	4.706	2.85
15.17	.00	26.64	4.667	2.80
15.33	.00	26.62	4.629	2.76
15.50	.00	26.61	4.591	2.72
15.67	.00	26.60	4.554	2.68
15.83	.00	26.59	4.517	2.64
16.00	.00	26.57	4.481	2.59
16.17	.00	26.56	4.446	2.55
16.33	.00	26.55	4.411	2.52
16.50	.00	26.54	4.377	2.48
16.67	.00	26.53	4.343	2.44
16.83	.00	26.52	4.309	2.40
17.00	.00	26.50	4.277	2.36
17.17	.00	26.49	4.244	2.33
17.33	.00	26.48	4.213	2.29

SCHWARTZMAN INDUSTRIAL CENTER DRAINAGE MASTER PLAN AMENDMENT (PLUS MERCANTILE) 100-Year 24-Hour Duration Storm AHYMO Output File

TIME	INFLOW	ELEV	VOLUME	OUTFLOW
(HRS)	(CFS)	(FEET)	(AC-FT)	(CFS)
17.50	.00	26.47	4.181	2.26
17.67	.00	26.46	4.150	2.22
17.83	.00	26.45	4.120	2.19
18.00	.00	26.44	4.090	2.15
18.17	.00	26.43	4.061	2.12
18.33	.00	26.42	4.032	2.09
18.50	.00	26.41	4.003	2.05

TIME	INFLOW	ELEV	VOLUME	OUTFLOW
(HRS)	(CFS)	(FEET)	(AC-FT)	(CFS)
18.67	.00	26.40	3.975	2.02
18.83	.00	26.39	3.948	1.99
19.00	.00	26.38	3.920	1.96
19.17	.00	26.37	3.894	1.93
19.33	.00	26.36	3.867	1.90
19.50	.00	26.35	3.841	1.87
19.67	.00	26.35	3.816	1.84
19.83	.00	26.34	3.791	1.81

PEAK DISCHARGE = 6.042 CFS - PEAK OCCURS AT HOUR 2.60
 MAXIMUM WATER SURFACE ELEVATION = 28.042
 MAXIMUM STORAGE = 8.8834 AC-FT INCREMENTAL TIME= .033333HRS

PRINT HYD

ID=51 CODE=5

HYDROGRAPH FROM AREA POND.B

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	4.000	5.8	8.000	4.8	12.000	3.8	16.000	2.6
.167	.0	4.167	5.8	8.167	4.8	12.167	3.7	16.167	2.6
.333	.0	4.333	5.7	8.333	4.7	12.333	3.7	16.333	2.5
.500	.0	4.500	5.7	8.500	4.7	12.500	3.6	16.500	2.5
.667	.0	4.667	5.6	8.667	4.6	12.667	3.5	16.667	2.4
.833	.0	4.833	5.6	8.833	4.6	12.833	3.5	16.833	2.4
1.000	.0	5.000	5.6	9.000	4.6	13.000	3.4	17.000	2.4
1.167	.0	5.167	5.5	9.167	4.5	13.167	3.4	17.166	2.3
1.333	.1	5.333	5.5	9.333	4.5	13.333	3.3	17.333	2.3
1.500	.7	5.500	5.5	9.500	4.4	13.500	3.3	17.500	2.3
1.667	3.9	5.667	5.4	9.667	4.4	13.667	3.2	17.666	2.2
1.833	4.9	5.833	5.4	9.833	4.4	13.833	3.2	17.833	2.2
2.000	5.5	6.000	5.3	10.000	4.3	14.000	3.1	18.000	2.2
2.167	5.9	6.167	5.3	10.167	4.3	14.167	3.1	18.166	2.1
2.333	6.0	6.333	5.3	10.333	4.2	14.333	3.0	18.333	2.1
2.500	6.0	6.500	5.2	10.500	4.2	14.500	3.0	18.500	2.1
2.667	6.0	6.667	5.2	10.667	4.2	14.667	2.9	18.666	2.0
2.833	6.0	6.833	5.1	10.833	4.1	14.833	2.9	18.833	2.0
3.000	6.0	7.000	5.1	11.000	4.1	15.000	2.8	19.000	2.0
3.167	6.0	7.167	5.0	11.167	4.0	15.167	2.8	19.166	1.9
3.333	6.0	7.333	5.0	11.333	4.0	15.333	2.8	19.333	1.9
3.500	5.9	7.500	4.9	11.500	4.0	15.500	2.7	19.500	1.9
3.667	5.9	7.667	4.9	11.667	3.9	15.667	2.7	19.666	1.8
3.833	5.9	7.833	4.9	11.833	3.8	15.833	2.6	19.833	1.8

RUNOFF VOLUME = 1.18475 INCHES = 6.0962 ACRE-Feet
 PEAK DISCHARGE RATE = 6.04 CFS AT 2.600 HOURS BASIN AREA = .0965 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 14:18:52

(sop10h4099T_&l6D_

Worksheet
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Trapezoidal Channel
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Mannings Coeff	0.030
Channel Slope	0.010000 ft/ft
Left Side Slope	3.00 H : V
Right Side Slope	3.00 H : V
Bottom Width	3.00 ft
Discharge	9.80 cfs

Results	
Depth	0.66 ft
Flow Area	3.3 ft ²
Wetted Perimeter	7.20 ft
Top Width	6.99 ft
Critical Depth	0.57 ft
Critical Slope	0.018216 ft/ft
Velocity	2.95 ft/s
Velocity Head	0.14 ft
Specific Energy	0.80 ft
Froude Number	0.76
Flow Type	Subcritical

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Worksheet
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Trapezoidal Channel
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Mannings Coefficient	0.030
Channel Slope	0.010000 ft/ft
Left Side Slope	3.00 H : V
Right Side Slope	3.00 H : V
Bottom Width	3.00 ft
Discharge	21.00 cfs

Results	
Depth	0.97 ft
Flow Area	5.8 ft ²
Wetted Perimeter	9.16 ft
Top Width	8.84 ft
Critical Depth	0.86 ft
Critical Slope	0.016358 ft/ft
Velocity	3.64 ft/s
Velocity Head	0.21 ft
Specific Energy	1.18 ft
Froude Number	0.79
Flow Type	Subcritical

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