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FINAL DRAINAGE REPORT
FOR
LOWER JL RANCH

DECEMBER 2003

PREPARED FOR:

STANLEY DEE & ASSOCIATES
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PREPARED BY:
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2004.10

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FINAL DRAINAGE REPORT FOR LOWER JL RANCH

DRAINAGE REPORT STATEMENT

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

Kyle R. Campbell, Colorado P.E. #29794 — Date: 12.16.03

DEVELOPER'S STATEMENT:
I, the developer, have read and will comply with all of the requirements specified in this drainage report and plan.

Business Name: Stanley Dee & Associates for Dermont Invst. Corp.

By:

Title: Agent for Dermont Investment Co-P

Address: 2211 W. 4th Avenue, Suite 209

Vancouver, B.C., Canada V6K452

CITY OF COLORADO SPRINGS ONLY:
Filed in accordance with Section 15-3-906 of the Code of the City of Colorado Springs, 1980, as amended.

For the City Engineer — Date: 12/29/03

Conditions:

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FINAL DRAINAGE REPORT FOR LOWER JL RANCH

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APPENDICES:

FINAL DRAINAGE REPORT FOR LOWER JL RANCH

PURPOSE

This document is the Final Drainage Report for Lower JL Ranch. The purpose of this report is to identify site-specific drainage patterns and design the required storm facilities for both the on-site and off-site flows to safely route developed storm water to proposed and existing outfall facilities.

GENERAL DESCRIPTION

Lower JL Ranch consists of approximately 350 acres of single-family development, community commercial, and open space. This development is proposed in phases with the entrance road to the new state park constructed first. It is located in Sections 7, 17, 18, 19 and 20, Township 15 South, Range 66 West of the Sixth Principal Meridian in the City of Colorado Springs, El Paso County, Colorado. The site is bounded to the north by undeveloped County of El Paso property, to the east by Highway 115, to the south by future state park, and to the west by existing Norad facilities.

The average soil condition reflects Hydrologic Group "C" (Razer Stony Clay Loam) and Group "B" (Jarre-Tecolote Compex) as determined by the "S.C.S. Soil Survey for El Paso County", prepared by the Soil Conservation Service (see map in Appendix).

EXISTING DRAINAGE CONDITIONS

The site is vegetated in many areas with evergreen trees and scrub oak with native grasses and surface rocks in much of the pasture areas. In general, the site slopes west to east ranging from 5 to 35%. There are many well-defined drainage courses running through the site that contain flows from Cheyenne Mountain, Pike National Forest and the surrounding developments to the west. These

existing single-family developments directly to the west were not required to and do not provide any on-site detention of these off-site flows. The Existing/Developed Drainage Conditions Map contained within this report defines these natural drainage ways and differentiates between the tributary on-site historic flows and the existing flows currently traveling through the site. JR Engineering previously studied this site in the "Master Development Drainage Plan for JL Ranch Retained Property," July 1999.

There are multiple culvert crossings under State Hwy 115. These culverts are currently undersized for the 100-year flows that are tributary to these culverts. It is the plan of this development to limit flows released into these culverts to remain at the capacity of those pipes and detain excess flows in order to minimize the disruption to State Hwy 115 and replacement of the exiting culvert crossings.

Design Point EX-1 (Q_5 = 73 cfs and Q_{100} = 166 cfs) is an adequately sized 48" CMP storm crossing under State Hwy 115. Developed flows will be at this level or less. The capacity of the 48" pipe is Q_{100} = 175 cfs.

Design Point EX-2 (Q_5 = 93 cfs and Q_{100} = 210 cfs) is an inadequately sized 24" CMP storm crossing under State Hwy 115. Existing flow pond and overflow to Design Point EX-3. Developed flows will be reduced to the capacity of this 24" CMP storm crossing, which is Q_{100} = 30 cfs

Design Point EX-3 (Q_5 = 280 cfs and Q_{100} = 622 cfs) are inadequately sized dual 39" x 55" corrugated metal arch pipes crossing under State Hwy. 115. These culverts accept overflow from Design Points EX-2 and EX-4. Flows at this design point will be minimized to existing capacity levels of flow of Q_{100} = 290 cfs

Design Point EX-4 (Q_5 = 206 cfs and Q_{100} = 458 cfs) is an inadequately sized 48" CMP storm crossing under State Hwy 115. Existing flow pond and overflow to Design Point EX-3. Developed flows will be reduced to capacity of this 48" CMP storm crossing which is Q_{100} = 135 cfs

PROPOSED DRAINAGE CONDITIONS

Upon development of this subdivision, all on-site stormwater will be directed into the following Basins (see drainage map).

Basin A (Q_5 = 10 cfs and Q_{100} = 24 cfs) includes 10 acres proposed residential area with low densities. Flows from this basin will be in the form of run off from associated streets, landscape areas and structures. These flows are going to be intercepted by Pipe 4 (Q_5 = 10 cfs and Q_{100} = 24 cfs), a proposed 30" storm system. Flows will then be routed to the proposed Detention Facility No. 1.

Basin B (Q_5 = 15 cfs and Q_{100} = 38 cfs) includes 21 acres of proposed residential area with low densities, and open space. Flows from this basin will be in the form of runoff from associated streets, landscape areas, and structures. The existing channel will be maintained through the open space areas, and possibly the residential areas. Flows will be intercepted by pipe 13 (Q_5 = 15 cfs and Q_{100} = 38 cfs), a proposed 30" storm system at the point when the natural channel crosses the proposed roadway. Flows will then be routed to the proposed Detention Facility No. 2.

Basin C (Q_5 = 8 cfs and Q_{100} = 19 cfs) includes 14.9 acres of residential area with low densities. Flows from this basin will be in the form of runoff from associated streets, landscape areas, and structures. Flows are proposed to be intercepted by Pipe 12 (Q_5 = 8 cfs and Q_{100} = 19 cfs). Flows will be routed to Detention Facility No. 2.

Basin D (Q_5 = 10 cfs and Q_{100} = 25 cfs) includes 10.30 acres of residential area with low densities. Flows from this basin will be in the form of runoff from associated streets, landscape areas, and structures. Developed flows are to be intercepted by Pipe 1 (Q_5 = 10 cfs and Q_{100} = 25 cfs), a 30" storm system. Flows will then be routed to proposed Detention Facility No. 1.

Basin E (Q_5 = 11 cfs and Q_{100} = 26 cfs) includes 10.80 acres of residential area with low densities and open space. Flows from this basin will be in the form of runoff from associated streets, landscape areas, and structures. Developed flows are to be intercepted by Pipe 2 (Q_5 = 11 cfs and Q_{100} = 26 cfs), a 30" storm system. Flows will them be routed to proposed Detention Facility No. 1.

Basin F (Q_5 = 26 cfs and Q_{100} = 65 cfs) includes 32.50 acres of residential area with low and medium densities. Flows from this basin will be in the form of runoff from associated streets, landscape areas, and structures. Developed flows are to be intercepted by Pipe 6 (Q_5 = 26 cfs and Q_{100} = 65 cfs), a 36" storm system. Flows will then be routed to proposed Detention Facility No. 1.

Basin G (Q_5 = 13 cfs and Q_{100} = 33 cfs) includes 20.50 acres of open space. Flows from this area are proposed to be left unchanged. There is an existing natural channel that traverses the proposed open space that conveys offsite flows. Total acreage of the offsite flows is approximately 93 acres of open space and unplatted land. Total flows (Q_5 = 77 cfs and Q_{100} = 200 cfs) will be routed though the existing channel to Detention Facility No. 1 by Pipe 11 (Q_5 = 82 cfs and Q_{100} = 223 cfs).

Basin H (Q_5 = 6 cfs and Q_{100} = 15 cfs) includes 8.90 acres of residential area with medium densities. Flows from this basin will be in the form of runoff from

associated streets, landscape areas, and structures. Developed flows are to be intercepted by Pipe 11, a 60" storm system. Flows will be routed to Detention Facility No.1.

Basin I (Q_5 = 8 cfs and Q_{100} = 17 cfs) includes 5.30 acres of residential area with medium densities. Flows from this basin will be in the form of runoff from associated streets, landscape areas, and structures. Developed flows are to be intercepted by Pipe 8, a 24" storm system. Flows are to be routed to Detention facility No. 1.

Basin J (Q_5 = 21 cfs and Q_{100} = 35 cfs) includes 7.15 acres of roadway surface. Flows from this basin will be in the form of sheet flow from the roadway surface. Developed flows are to be intercepted by two 8' D-10-R sump inlets located at Design Point 4. Flows will then be routed to the existing dual 39"x55" CM arch pipes crossing under State Hwy 115.

Basin K (Q_5 = 41 cfs and Q_{100} = 95 cfs) includes 40.85 acres of residential area with low to medium densities. Flows from this basin will be in the form of runoff from associated streets, landscaped areas, and structures. Developed flows are to be intercepted by Pipe 15. Flows will be routed to proposed Detention Facility No. 2.

Basin L (Q_5 = 20 cfs and Q_{100} = 32 cfs) includes 6.55 acres of roadway surface. Flows from this basin will be in the form of sheet flow from the roadway surface. Developed flows are to be intercepted by a proposed 6' D-10-R sump inlet and a proposed 4' D-10-R sump inlet located at Design Point 2. Flows will then travel to proposed Detention Facility No. 2.

Basin M (Q_5 = 23 cfs and Q_{100} = 56 cfs) includes 23.00 acres of residential area with low densities. Flows from this basin will be in the form of runoff from associated streets, landscaped areas, and structures. Developed flows are to be routed by Pipe 37, a 36" storm system. Flows are then routed to the existing 48" CMP crossing under State Hwy 115. Flows will be reduced at this outfall point due the addition of Detention Facility No's 1 and 2. Existing flows contributing to the existing 48" CMP are (Q_5 = 73 cfs and Q_{100} = 166 cfs).

Basin N (Q_5 = 5 cfs and Q_{100} = 11 cfs) includes 4.50 acres of residential area with medium densities. Flows from this basin will be in the form of runoff from associated streets, landscaped areas, and structures. Developed flows are to be routed by Pipe 32 to the proposed Detention Facility No.1

Basin O (Q_5 = 41 cfs and Q_{100} = 89 cfs) includes 32.00 acres of residential area with high densities. . Flows from this basin will be in the form of runoff from associated streets, landscaped areas, and structures. Developed flows are to be routed by Pipe 36 to the existing dual 39"x55" CM arch pipe crossing State Hwy 115. Due to the high density land use of this basin, water quality control measures will need to be addressed with the final drainage report once development occurs with-in this parcel.

Basin P (Q_5 = 41 cfs and Q_{100} = 89 cfs) includes 14.30 acres of community commercial area. Flows from this basin will be in the form of runoff from associated streets, parking lots, landscaped areas, and structures. Developed flows are to be routed by Pipe 26 to the proposed Detention Facility No.2

Basin Q (Q_5 = 4 cfs and Q_{100} = 7 cfs) includes 1.40 acres of roadway surface. Flows from this basin will be in the form of sheet flow from asphalt surfaces. Developed flows from this basin are to be intercepted by two 4' D-10-R sump

inlets located at Design Point 3. Flows are to be routed by Pipes 27 and 28 to the existing 48" CMP crossing under State Hwy 115.

Basin R (Q_5 = 3 cfs and Q_{100} = 7 cfs) includes 5.57 acres of open space. Flows from this basin will remain relatively unchanged from existing conditions. Flows will continue to sheet flow into the existing roadside ditch running along State Hwy 115.

Basin S (Q_5 = 14 cfs and Q_{100} = 40 cfs) includes 31.06 acres of pond area. Flows from this basin will be in the form of sheet flow from natural ground. Flows will sheet flow into the pond.

Basin T (Q_5 = 45 cfs and Q_{100} = 102 cfs) includes 47 acres of residential area with medium densities. Flows from this basin will be in the form of runoff from associated streets, landscaped areas, and structures. Developed flows are to be routed by Pipe 23 to the proposed Detention Facility No.2

Basin U (Q_5 = 2 cfs and Q_{100} = 6 cfs) includes 3.0 acres of roadway surface. Flows from this basin will be in the form of sheet flow from asphalt surfaces. Developed flows are to be intercepted by a 12' D-10-R sump inlet on the north side, and a 4' D-10-R sump inlet on the south side of Design Point 1. Flows are to be routed to proposed Detention Facility No. 2 by Pipe 24 and 25.

Basin V (Q_5 = 2 cfs and Q_{100} = 6 cfs) includes 3.23 acres of open space and residential with medium densities. Flows from this basin will be in the form of runoff from associated streets, landscaped areas, and structures. Developed flows are to be routed by a roadside ditch to Pipe 23. Then routed to proposed Detention Facility No. 2.

Basin W (Q_5 = 9 cfs and Q_{100} = 15 cfs) includes 2.11 acres of open space and residential with medium densities. Flows from this basin will be in the form of runoff from associated streets, landscaped areas, and structures. Developed flows are to be routed by a roadside ditch to Pipe 23. Then routed to proposed Detention Facility No. 2.

DETENTION FACILITIES

Due to the unknown densities associated with the land development areas tributary to the two detention facilities it is proposed that separate interim improvements be implemented as each parcels developed. This will help us to not oversize facilities based upon unknown development needs. Storm water quality measures will be utilized in order to reduce the amount of sediment, debris and pollutants that are allowed to cross State Hwy 115. These features include but are not limited to Extended Detention Basin Sedimentation Facilities, Sand Filter Extended Detention Basins, and Constructed Wetlands Basin Sedimentation Facilities. These measures will be taken into consideration upon final design of the individual detention facilities as well as the development of the individual land uses within the Lower JL Ranch property. At this time it is proposed that all storm water quality features will be included in the regional detention facilities and that no site-specific features will be required.

Detention Facility No. 1 is an 18.34 acre-ft facility with a bottom of pond elevation of 5970.00 and a top of pond elevation of 5980.00. This pond will receive (Q_5 = 223 cfs and Q_{100} = 610 cfs). This facility will release flows at a rate of (Q_5 = 103 cfs and Q_{100} = 254 cfs) to help alleviate the developed flows that reach proposed Detention Facility No. 2. Release will be dictated by the outlet structure of this pond. It is proposed that the design of this pond be handled with construction drawings associated with the development of areas tributary to the facility. As a part of the initial submittal of this report for review, detention

facility calculations for both facilities have been provided. Final construction drawing preparation will include detailed drainage and facility specifications, and will include any revised hydraulics.

Detention Facility No. 2 is an 82.80 acre-ft facility with a bottom of pond elevation of 5922.00 and a top of pond elevation of 5938.00. This pond will receive (Q_5 = 248 cfs and Q_{100} = 651 cfs). This facility will release at a rate of (Q_5 = 80 cfs and Q_{100} = 107 cfs). This facility will discharge into the existing 48" CMP storm crossing located at Design Point EX-4. The release of this facility is limited to the capacity of the existing 48" CMP storm crossing located at Design Point EX-4. This facility will require dual 19"x30" ERCP outlets to clear the proposed entrance road utilities and maintain minimum coverage over the propose outfall structure. It is proposed that the design of this pond be handled with construction drawings. As a part of the initial submittal of this report for review, detention facility calculations for both facilities have been provided. Final construction drawing preparation will include detailed drainage and facility specifications, and will include any revised hydraulics.

MAINTENANCE

The proposed detention facilities are to be owned and maintained by the homeowners association with maintenance of the inlet and outlet structures by the city of Colorado Springs. In the interim condition while phasing of the detention facilities is taking place, maintenance of the inlet and outlet structures will be the responsibility of the owner/developer. With final construction of the proposed detention facilities the ultimate maintenance will be by the City of Colorado Springs. It is proposed that all other storm facilities be public with maintenance performed the City of Colorado Springs.

EROSION CONTROL PLAN

We respectfully request the Erosion Control Plan be submitted in conjunction with the Overlot Grading Plan and any necessary construction assurances posted prior to obtaining grading approval.

HYDROLOGIC CALCULATIONS

Hydrologic calculations were performed using the City of Colorado Springs/El Paso County Drainage Criteria Manual, as revised in November 1991 and October 1994. The Soil Conservation Service method utilizing Pond Pak version 8.0 was used to estimate peak storm water runoff and hydrograph generation anticipated from design storms with 5-year and 100-year recurrence interval. Rainfall data was obtained from standard isopluvial maps for this area from the City of Colorado Springs/El Paso County Drainage Criteria Manual, NOAA Atlas II, volume III. A 24-hour SCS Type II distribution was used per criteria with a 100-year precipitation of 4.40 inches and a 5-year precipitation of 2.7 inches.

FLOODPLAIN STATEMENT

No portion of this site is located within a floodplain as determined by the Flood Insurance Rate Maps (F.I.R.M.) Map Numbers 08041C 0935F and 08041C 0950F, with effective dates of March 17, 1997 (See Appendix).

DRAINAGE FEES

This portion of the JL Ranch is a self-contained area, which is proposed to retain all on-site developed flows to historic levels with on-site installation of a private detention facility. Due to this condition, it is proposed to allow the developer to install all required public and private storm facilities and not pay fees or file for any recoveries from the city.

CONSTRUCTION COST OPINION

Quantities and costs were evaluated for the major systems that will be required for the development of the proposed Master Plan for the Lower JL Ranch property. These improvements include the replacement of existing inadequately sized culverts, storm sewers, lined channels, box culverts and regional detention facilities. These costs and quantities are conceptual.

Public Drainage Facilities

ITEM	DESCRIPTION	QUANTITY	UNIT COST	COST
1.	4' D-10-R Sump Inlet	1 EACH	$3,230/EA	$ 3,230.00
2.	6' D-10-R Sump Inlet	1 EACH	$4,200/EA	$ 4,200.00
3.	8' D-10-R Sump Inlet	2 EACH	$4,200/EA	$ 8,400.00
4.	12' D-10-R Sump Inlet	2 EACH	$5,000/EA	$ 10,000.00
5.	18" RCP Storm Drain	155 LF	$19.75/LF	$ 3,061.25
6.	24" RCP Storm Drain	550 LF	$28.70/LF	$ 15,785.00
7.	30" RCP Storm Drain	525 LF	$34.20/LF	$ 17,955.00
8.	36" RCP Storm Drain	2,550 LF	$41.20/LF	$ 105,060.00
9.	42" RCP Storm Drain	5,265 LF	$48.00/LF	$ 252,720.00
10.	48" RCP Storm Drain	425 LF	$55.00LF	$ 23,375.00
11.	54" RCP Storm Drain	1850 LF	$65.00/LF	$ 120,250.00
12.	60" RCP Storm Drain	895 LF	$80/LF	$71,600.00
13.	66" RCP Storm Drain	750 LF	$95/LF	$ 71,250.00
14.	19"x30" ERCP Storm	600LF	$55/LF	$ 33,000.00
15.	36" F.E.S.	2 EACH	$650/EA	$ 1,300.00
16.	42" F.E.S.	1 EACH	$700/EA	$ 700.00
17.	54" F.E.S.	2 EACH	$750/EA	$ 1,500.00
18.	66" F.E.S.	1 EACH	$800/EA	$ 800.00
19.	19"x30" F.E.S.	2 EACH	$725/EA	$ 1,450.00
20.	Rip-Rap Pad	6 EACH	$1000/EA	$ 6,000.00

SUB-TOTAL	$ 751,636.25
10% ENGINEERING	$ 75,163.63
5% CONTINGENCIES	$ 37,581.81
TOTAL	**$ 864,381.69**

Classic Consulting Engineers & Surveyors cannot and does not guarantee that the construction cost will not vary from these opinions of probable construction costs. These opinions represent our best judgment as design professionals familiar with the construction industry and this development in particular.

SUMMARY

Construction of this subdivision will not adversely affect the surrounding developments. All drainage facilities were sized using the current Drainage Criteria and will safely discharge storm water runoff to proposed detention facilities or existing downstream storm facilities. This site will utilize detention and will continue to release only historic flows into existing channels and drainage structures with no increase in flows due to the development of this property. Existing storm crossings under State Hwy 115 will remain and be utilized but capacity of these structures will dictate release rates. This will improve the current drainage situation at the proposed site due the inability for the existing structures to handle existing flow rates.

PREPARED BY:

Classic Consulting Engineers & Surveyors, LLC

David L. Gibson E.I.
Project Engineer

mw/200410/Drainage Report.doc

REFERENCES

1. City of Colorado Springs/County of El Paso Drainage Criteria Manual dated November 1991.

2. "Soil Survey for El Paso County Area," Soil Conservation Service.

3. "Master Development Drainage Plan for JL Ranch Retained Property", prepared by JR Engineering, revised April, 2000.

4. "Preliminary and Final Drainage Study – Boulders Broadmoor Filing No. 2, Colo. Spgs., CO", prepared by Kiowa Engineering Corp., dated March 13, 1998.

5. "The Boulders Broadmoor Master Development Drainage Plan", prepared by Woodward-Clyde, dated Feb. 12, 1999.

6. "Neal Ranch Master Plan Update", prepared by Oliver E. Watts, dated July 21, 1988.

7. "Country Walk at Broadmoor No. 2, Drainage Letter, prepared by PKM Civil Engineers, dated October 4, 1990.

8. "Country Walk at Broadmoor No. 3, Drainage Letter, prepared by PKM Civil Engineers, dated May 3, 1991.

9. "Preliminary/Final Drainage Plan and Report, Country Walk at Broadmoor No. 5A, prepared by Oliver E. Watts, dated Aug. 24, 1992.

10. "Preliminary/Final Drainage Plan and Report, Country Walk at Broadmoor No. 5B, prepared by Oliver E. Watts, dated Aug. 24, 1992.

11. "Preliminary and Final Drainage Study Broadmoor Oaks Filing No. 4, prepared by Kiowa Engineering Corp., dated June 6, 1997.

12. "Final Drainage Report for JL Ranch Filing No's 1 & 2, Preliminary Drainage Report for JL Ranch Filing No. 3" prepared by Classic Consulting Engineers and Surveyors LLC., dated June 2002.

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APPENDIX

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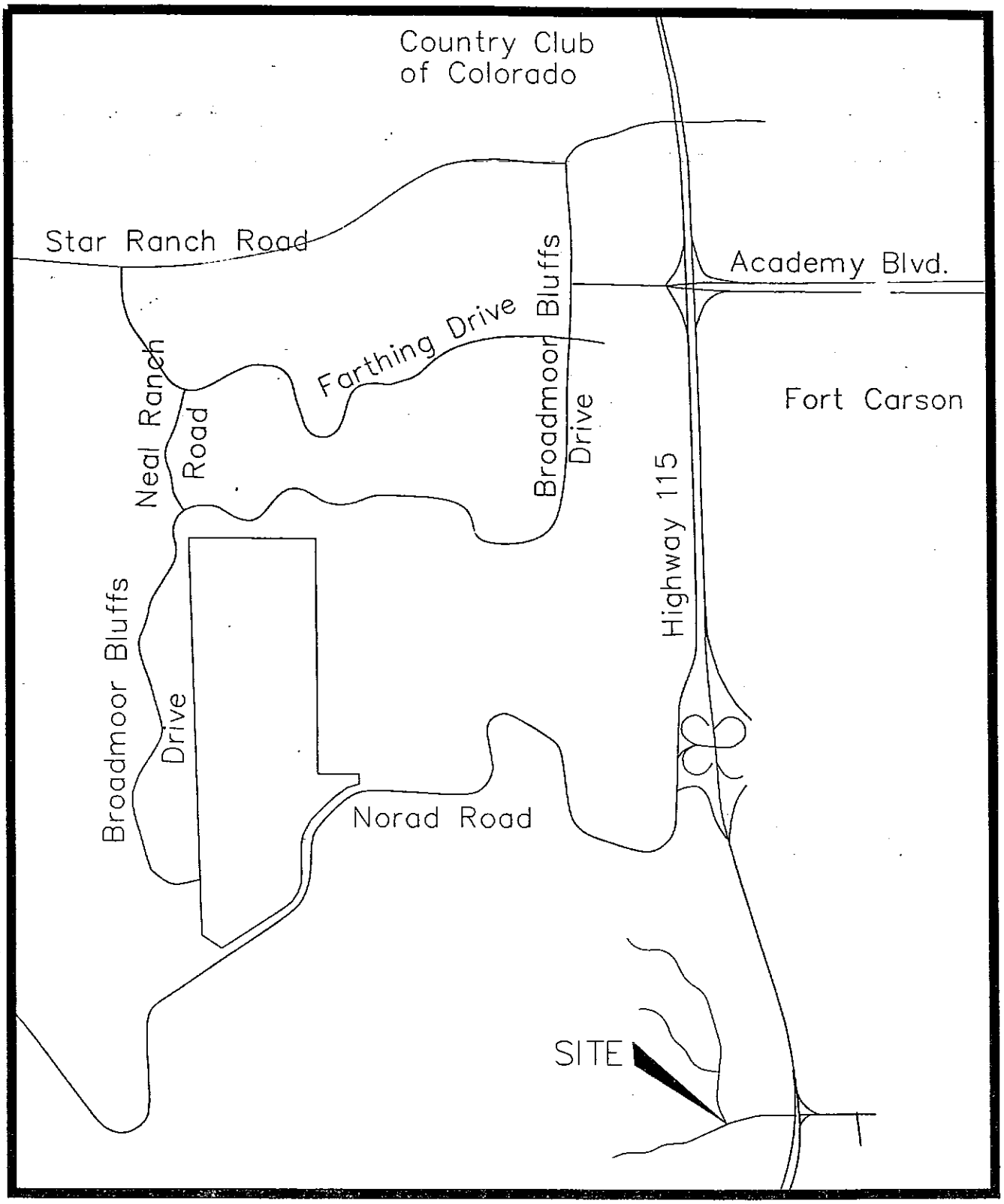
VICINITY MAP



VICINITY MAP

N.T.S.

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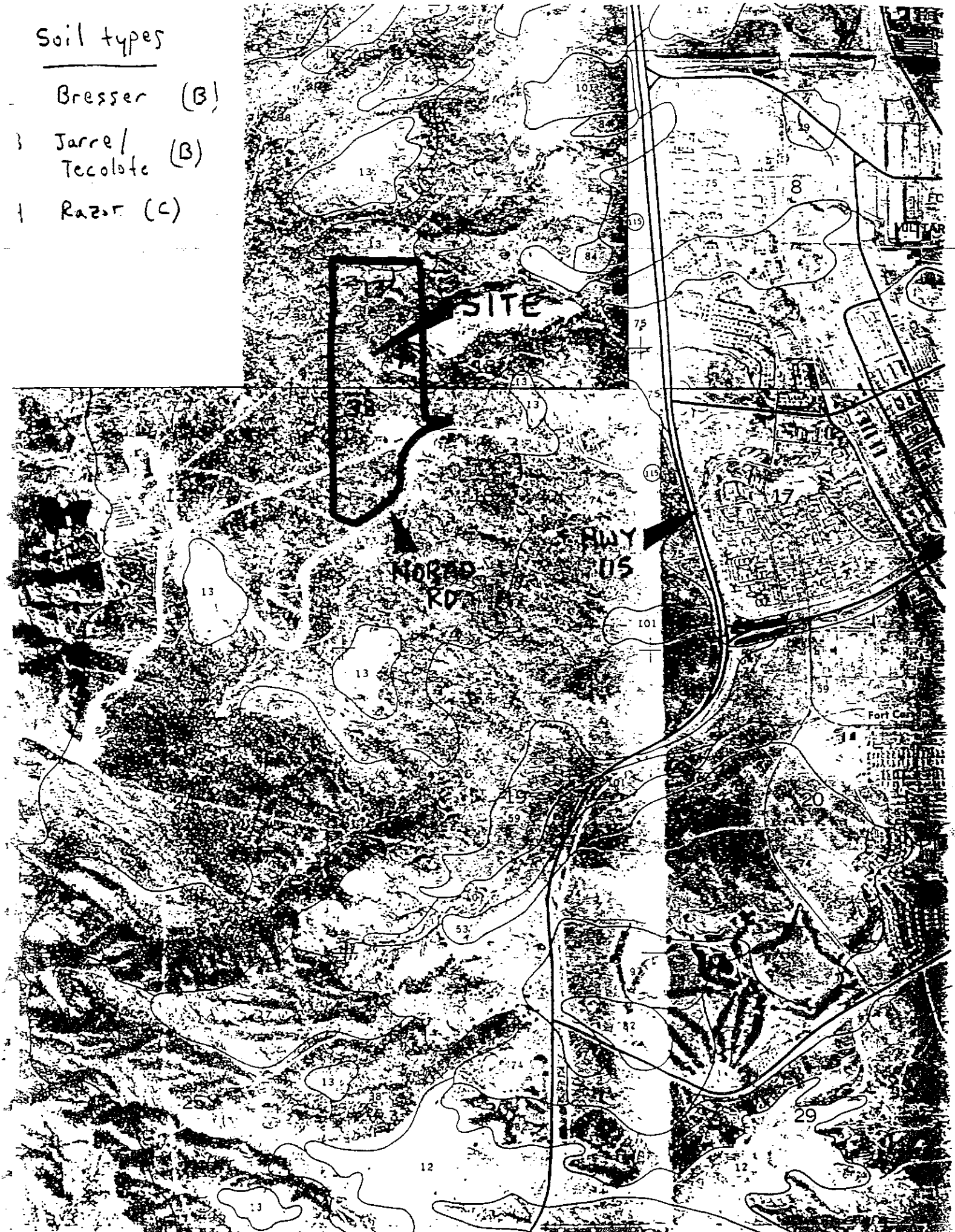
S.C.S. SOIL MAP

Soil types

Bresser (B)

Jarre/ Tecolote (B)

Razor (C)



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F.E.M.A. MAP

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 935 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0935	F

MAP NUMBER
08041C0935 F

EFFECTIVE DATE:
MARCH 17, 1997

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

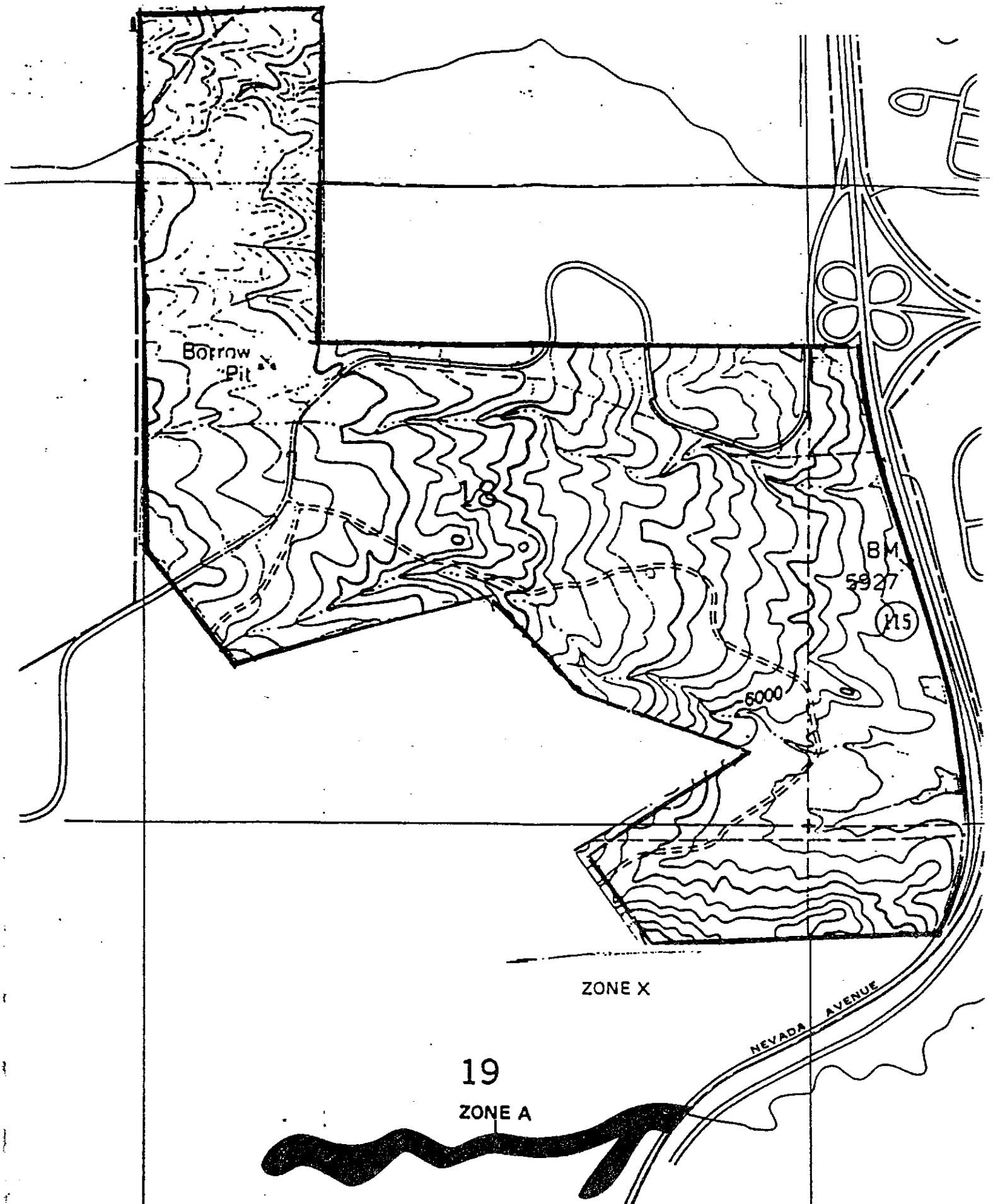
PANEL 950 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0950	F
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0950	F

MAP NUMBER
08041C0950 F

EFFECTIVE DATE:
MARCH 17, 1997

Federal Emergency Management Agency


Borrow Pit
BM 5927
M5
6000
ZONE X
NEVADA AVENUE
19
ZONE A

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HYDROLOGIC/HYDRAULIC CALCULATIONS

JOB NAME: *LOWER JL RANCH*
JOB NUMBER: *2004.10*
DATE: *10/10/03*
CALCULATED BY: *DLG*

MASTER DEVELOPMENT DRAINAGE PLAN (SUMMARY)

HISTORIC	TOTAL AREA (AC)	CN	LAND USE PER MASTER PLAN	Tc (MIN)	WEIGHTED CA		PIPE SIZE
					Q (5) cfs	Q (100) cfs	
BASIN A	10.00		RESIDENTIAL		10	24	
BASIN B	21.00		OPEN SPACE/RESIDENTIAL		15	38	
BASIN C	14.90		RESIDENTIAL		8	19	
BASIN D	10.30		RESIDENTIAL		10	25	
BASIN E	15.80		OPEN SPACE/RESIDENTIAL		11	29	
BASIN F	32.50		RESIDENTIAL		26	65	
BASIN G	14.57		OPEN SPACE		9	23	
BASIN H	8.90		RESIDENTIAL		6	15	
BASIN I	5.30		RESIDENTIAL		8	17	
BASIN J	7.15		STREET		21	35	
BASIN K	40.85		RESIDENTIAL		41	95	
BASIN L	6.55		STREET		20	32	
BASIN M	23.00		RESIDENTIAL		23	56	
BASIN N	4.50		RESIDENTIAL		5	11	
BASIN O	32.00		RESIDENTIAL		41	89	
BASIN P	14.30		COMMUNITY COMMERCIAL		36	63	
BASIN Q	1.40		STREET		4	7	
BASIN R	5.57		OPEN SPACE		3	7	
BASIN S	31.06		POND		14	40	
BASIN T	47.00		RESIDENTIAL		45	102	
BASIN U	3.00		STREET		9	15	
BASIN V	3.23		OPEN SPACE/RESIDENTIAL		2	6	
BASIN W	2.11		OPEN SPACE/RESIDENTIAL		2	4	
BASIN OS-1	46.79		OFFSITE BASIN		73	211	
BASIN OS-2	6.15		OFFSITE BASIN		72	207	
BASIN OS-3	14.82		OFFSITE BASIN		7	19	
BASIN OS-4	17.46		OFFSITE BASIN		16	47	
BASIN OS-5	6.90		OFFSITE BASIN		5	13	
BASIN OS-6	12.25		OFFSITE BASIN		6	16	
BASIN OS-7	6.10		OFFSITE BASIN		3	8	
BASIN OS-8	95.00		OFFSITE BASIN		14	41	

JOB NAME: *LOWER JL RANCH*
JOB NUMBER: *2004.10*
DATE: *10/10/03*
CALCULATED BY: *DLG*

MASTER DEVELOPMENT DRAINAGE PLAN (SUMMARY)

HISTORIC	TOTAL AREA (AC)	CN	LAND USE PER MASTER PLAN	Tc (MIN)	WEIGHTED CA		PIPE SIZE
					Q (5) cfs	Q (100) cfs	
BASIN A	10.00	61.00	RESIDENTIAL	32.00	10	24	
BASIN B	21.00	61.00	OPEN SPACE/RESIDENTIAL	32.00	15	38	
BASIN C	14.90	61.00	RESIDENTIAL	32.00	8	19	
BASIN D	10.30	61.00	RESIDENTIAL	32.00	10	25	
BASIN E	15.80	61.00	OPEN SPACE/RESIDENTIAL	32.00	11	29	
BASIN F	32.50	61.00	RESIDENTIAL	32.00	26	65	
BASIN G	14.57	61.00	OPEN SPACE	32.00	9	23	
BASIN H	8.90	61.00	RESIDENTIAL	32.00	6	15	
BASIN I	5.30	61.00	RESIDENTIAL	32.00	8	17	
BASIN J	7.15	61.00	STREET	32.00	21	35	
BASIN K	40.85	61.00	RESIDENTIAL	32.00	41	95	
BASIN L	6.55	61.00	STREET	32.00	20	32	
BASIN M	23.00	61.00	RESIDENTIAL	32.00	23	56	
BASIN N	4.50	61.00	RESIDENTIAL	32.00	5	11	
BASIN O	32.00	61.00	RESIDENTIAL	32.00	41	89	
BASIN P	14.30	68.00	COMMUNITY COMMERCIAL	25.00	36	63	
BASIN Q	1.40	68.00	STREET	25.00	4	7	
BASIN R	5.57	68.00	OPEN SPACE	25.00	3	7	
BASIN S	31.06	68.00	POND	25.00	14	40	
BASIN T	47.00	68.00	RESIDENTIAL	25.00	45	102	
BASIN U	3.00	68.00	STREET	25.00	9	15	
BASIN V	3.23	68.00	OPEN SPACE/RESIDENTIAL	25.00	2	6	
BASIN W	2.11	68.00	OPEN SPACE/RESIDENTIAL	25.00	2	4	
BASIN OS-1	46.79	68.00	OFFSITE BASIN	25.00	73	211	
BASIN OS-2	6.15	68.00	OFFSITE BASIN	25.00	72	207	
BASIN OS-3	14.82	68.00	OFFSITE BASIN	25.00	7	19	
BASIN OS-4	17.46	68.00	OFFSITE BASIN	25.00	16	47	
BASIN OS-5	6.90	68.00	OFFSITE BASIN	25.00	5	13	
BASIN OS-6	12.25	68.00	OFFSITE BASIN	25.00	6	16	
BASIN OS-7	6.10	68.00	OFFSITE BASIN	25.00	3	8	
BASIN OS-8	95.00	68.00	OFFSITE BASIN	25.00	14	41	

JOB NAME:	*LOWER JL RANCH*
JOB NUMBER:	*2004.10*
DATE:	*10/10/03*
CALCULATED BY:	*DLG*

Design Point(s)	Contributing Basins	Flow		Inlet Size
		Q(5)	Q(100)	
1	1/2 BASIN U & 1/2 BASIN L	15	24	12' D-10-R
1A	1/2 BASIN U	5	8	4' D-10-R
2	1/2 BASIN L	10	16	6' D-10-R
3	BASIN Q	4	7	4' D-10-R
4	1/2 BASIN J	11	18	8' D-10-R
4A	1/2 BASIN J	11	18	8' D-10-R
EX-1	EXISTING	73	166	EX 48" CMP
EX-2	EXISTING	93	210	EX 24" CMP
EX-3	EXISTING	280	622	EX 2 39"X55" CM ARCH
EX-4	EXISTING	206	458	EX 48" CMP

JOB NAME: *LOWER JL RANCH*
JOB NUMBER: *2004.10*
DATE: *10/10/03*
CALCULATED BY: *DLG*

PIPES ARE LISTED AT MAXIMUM SIZE REQUIRED TO ACCOMMODATE Q100 FLOWS AT MINIMUM GRADE. AT MINIMUM GRADE. REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION.

PIPE ROUTING SUMMARY

Pipe Run	Contributing Basins	Flow		Pipe Size*
		Q(5) cfs	Q(100) cfs	
1	BASIN D	11	25	30" RCP @ 1.00%
2	BASIN E	11	29	30" RCP @ 1.00%
3	PIPE 1 & PIPE 2	25	64	30" RCP @ 1.00%
4	BASIN A	10	24	42" RCP @ 1.00%
5	PIPE 3 & 4	34	87	36" RCP @ 1.00%
6	BASIN F	26	65	54" RCP @ 1.00%
7	PIPE 5 & 6	60	152	24" RCP @ 1.00%
8	BASIN I	8	17	54" RCP @ 1.00%
9	PIPE 7 & 8	66	165	60" RCP @ 1.00%
10	BASIN H	77	223	60" RCP @ 1.00%
11	BASIN G	82	233	24" RCP @ 1.00%
12	BASIN C	8	19	30" RCP @ 1.00%
13	BASIN B	15	38	42" RCP @ 1.00%
14	PIPE 12 & 13	36	99	42" RCP @ 1.00%

JOB NAME:	*LOWER JL RANCH*
JOB NUMBER:	*2004.10*
DATE:	*10/10/03*
CALCULATED BY:	*DLG*

PIPES ARE LISTED AT MAXIMUM SIZE REQUIRED TO ACCOMMODATE Q100 FLOWS AT MINIMUM GRADE. AT MINIMUM GRADE. REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION.

PIPE ROUTING SUMMARY

Pipe Run	Contributing Basins	Flow		Pipe Size*
		Q(5) cfs	Q(100) cfs	
15	BASIN K	41	95	54" RCP @ 1.00%
16	PIPE 14 & 15	76	191	60" RCP @ 1.00%
17	POND#1 OUT	102	253	66" RCP @ 1.00%
18	PIPE 16 & 17	145	389	24" RCP @ 1.00%
19	1/2 BASIN L	10	16	24" RCP @ 1.00%
20	1/2 BASIN L	10	16	24" RCP @ 1.00%
21	PIPE 18 & 20	147	392	66" RCP @ 1.5%
22	BASIN OS-6	5	16	24" RCP @ 1.00%
23	BASIN T, V, V, OS-3,OS-4,OS-5, & PIPE 22	74	190	54" RCP @ 1.00%
24	BASIN U & BASIN 1/2 BASIN L & PIPE 23	80	198	54" RCP @ 1.00%
25	PIPE 24	80	198	54" RCP @ 1.00%
26	BASIN P	36	63	36" RCP @ 1.00%
27	1/2 BASIN Q	2	3	18" RCP @ 1.00%

JOB NAME: *LOWER JL RANCH*
JOB NUMBER: *2004.10*
DATE: *10/10/03*
CALCULATED BY: *DLG*

PIPES ARE LISTED AT MAXIMUM SIZE REQUIRED TO ACCOMMODATE Q100 FLOWS AT MINIMUM GRADE. AT MINIMUM GRADE. REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION.

PIPE ROUTING SUMMARY

Pipe Run	Contributing Basins	Flow		Pipe Size*
		Q(5) cfs	Q(100) cfs	
28	1/2 BASIN Q & PIPE 27	4	7	18" RCP @ 1.00%
29	POND #2 OUT	80	107	48" RCP @ 1.00%
30	BASIN R & BASIN OS-7	5	15	24" RCP @ 1.00%
31	PIPE 29 & 30	80	108	48" RCP @ 1.00%
32	BASIN N	5	11	24" RCP @ 1.00%
33	1/2 BASIN J & PIPE 32	16	29	30" RCP @ 1.00%
34	1/2 BASIN J	11	18	24" RCP @ 1.00%
35	PIPE 33 & 34	27	47	36" RCP @ 1.00%
36	BASIN O	41	89	42" RCP @ 1.00%
37	BASIN M	23	56	36" RCP @ 1.00%

JOB NAME:	*LOWER JL RANCH*
JOB NUMBER:	*2004.10*
DATE:	*10/10/03*
CALCULATED BY:	*DLG*

DESIGN POINT 1

Total Flow: Q_5 = 15 cfs

Q_{100} = 24 cfs

Maximum allowable ponding depth at sump:

D_5 = 0.50

D_{100} = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: [10] foot inlet required

100-Year Event: [12] foot inlet required

INSTALL A PUBLIC [12] FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

JOB NAME:	*LOWER JL RANCH*
JOB NUMBER:	*2004.10*
DATE:	*10/10/03*
CALCULATED BY:	*DLG*

DESIGN POINT 1A

Total Flow: Q_5 = 5 cfs

Q_{100} = 8 cfs

Maximum allowable ponding depth at sump:

D_5 = 0.50

D_{100} = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: [4] foot inlet required

100-Year Event: [4] foot inlet required

INSTALL A PUBLIC [4] FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

JOB NAME:	*LOWER JL RANCH*
JOB NUMBER:	*2004.10*
DATE:	*10/10/03*
CALCULATED BY:	*DLG*

DESIGN POINT **2**

Total Flow: Q_5 = 10 cfs

Q_{100} = 16 cfs

Maximum allowable ponding depth at sump:

D_5 = 0.50

D_{100} = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: [4] foot inlet required

100-Year Event: [6] foot inlet required

INSTALL A PUBLIC [6] FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

JOB NAME:	*LOWER JL RANCH*
JOB NUMBER:	*2004.10*
DATE:	*10/10/03*
CALCULATED BY:	*DLG*

DESIGN POINT 3

Total Flow: Q_5 = 4 cfs

Q_{100} = 7 cfs

Maximum allowable ponding depth at sump:

D_5 = 0.50

D_{100} = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: [4] foot inlet required

100-Year Event: [4] foot inlet required

INSTALL A PUBLIC [12] FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

JOB NAME:	*LOWER JL RANCH*
JOB NUMBER:	*2004.10*
DATE:	*10/10/03*
CALCULATED BY:	*DLG*

DESIGN POINT 4

Total Flow: Q_5 = 11 cfs

Q_{100} = 18 cfs

Maximum allowable ponding depth at sump:

D_5 = 0.50

D_{100} = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 6 foot inlet required

100-Year Event: 8 foot inlet required

INSTALL A PUBLIC 8 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

JOB NAME:	*LOWER JL RANCH*
JOB NUMBER:	*2004.10*
DATE:	*10/10/03*
CALCULATED BY:	*DLG*

DESIGN POINT 4A

Total Flow: Q_5 = 11 cfs

Q_{100} = 18 cfs

Maximum allowable ponding depth at sump:

D_5 = 0.50

D_{100} = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: [6] foot inlet required

100-Year Event: [8] foot inlet required

INSTALL A PUBLIC [8] FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

CLASSIC
CONSULTING
ENGINEERS & SURVEYORS

DETENTION FACILITIES CALCULATIONS

Job File: X:\200410\DRAINAGE\LOWER JL-REV.PPW
Rain Dir: X:\200410\DRAINAGE\

==========
JOB TITLE
==========

Project Date: 9/23/2002
Project Engineer: David Gibson
Project Title: LOWER JL RANCH
Project Comments:
MASTER DEVELOPEMENT DRAINAGE PLAN FOR
LOWER JL RANCH 5 AND 100 YEAR STORM EVENTS

Table of Contents

MASTER DESIGN STORM SUMMARY

Network Storm Collection: COLO SPRGS

Return Event	Total Depth in	Rainfall Type	RNF ID
Dev100	4.4000	Synthetic Curve	TypeII 24hr
Dev 5	2.7000	Synthetic Curve	TypeII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
1/2 BASIN L	AREA	100	1.128		12.0000	15.87		
1/2 BASIN L	AREA	5	.669		12.0000	9.64		
1/2 BASIN L2	AREA	100	1.128		12.0000	15.87		
1/2 BASIN L2	AREA	5	.669		12.0000	9.64		
1/2 BASIN Q	AREA	100	.243		12.0000	3.42		
1/2 BASIN Q	AREA	5	.144		12.0000	2.08		
1/2 BASIN Q 2	AREA	100	.243		12.0000	3.42		
1/2 BASIN Q 2	AREA	5	.144		12.0000	2.08		
BASIN A	AREA	100	1.909		12.1000	24.21		
BASIN A	AREA	5	.811		12.1000	9.98		
BASIN B	AREA	100	3.711		12.2000	37.80		
BASIN B	AREA	5	1.514		12.2000	14.52		
BASIN C	AREA	100	1.890		12.2000	19.29		
BASIN C	AREA	5	.787		12.2000	7.64		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
BASIN D	AREA	100	1.969		12.1000	25.32		
BASIN D	AREA	5	.837		12.1000	10.46		
BASIN E	AREA	100	2.064		12.1000	26.31		
BASIN E	AREA	5	.877		12.1000	10.85		
BASIN F	AREA	100	5.982		12.1500	64.54		
BASIN F	AREA	5	2.542		12.1500	26.20		
BASIN G	AREA	100	3.919		12.3000	32.78		
BASIN G	AREA	5	1.665		12.3000	13.27		
BASIN H	AREA	100	1.521		12.2000	15.44		
BASIN H	AREA	5	.607		12.2000	5.74		
BASIN I	AREA	100	1.165		12.0500	16.85		
BASIN I	AREA	5	.534		12.0500	7.74		
BASIN K	AREA	100	8.385		12.1500	94.90		
BASIN K	AREA	5	3.704		12.1500	41.06		
BASIN P	AREA	100	4.338		12.0000	63.32		
BASIN P	AREA	5	2.405		12.0000	36.28		
BASIN R	AREA	100	.880		12.3000	7.23		
BASIN R	AREA	5	.336		12.3500	2.48		
BASIN S	AREA	100	4.907		12.3000	40.29		
BASIN S	AREA	5	1.874		12.3500	13.80		
BASIN T	AREA	100	9.980		12.2000	102.24		
BASIN T	AREA	5	4.492		12.2000	45.21		
BASIN U	AREA	100	1.041		12.0000	14.65		
BASIN U	AREA	5	.617		12.0000	8.90		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
BASIN V	AREA	100	.604		12.2000	6.17		
BASIN V	AREA	5	.252		12.2000	2.44		
BASIN W	AREA	100	.401		12.2000	4.10		
BASIN W	AREA	5	.170		12.2000	1.67		
DP-1	JCT	100	23.165		12.2000	198.19		
DP-1	JCT	5	10.023		12.2000	79.55		
JUNC 10	JCT	100	18.093		12.1500	190.86		
JUNC 10	JCT	5	7.573		12.2000	75.79		
JUNC 100	JCT	100	22.058		12.2000	222.45		
JUNC 100	JCT	5	8.449		12.2000	77.19		
JUNC 110	JCT	100	20.996		12.2000	189.69		
JUNC 110	JCT	5	8.737		12.2000	74.37		
JUNC 120	JCT	100	79.387		12.2500	390.91		
JUNC 120	JCT	5	31.775		12.3500	146.63		
JUNC 130	JCT	100	13.220		12.1000	149.37		
JUNC 130	JCT	5	5.561		12.1500	60.10		
JUNC 140	JCT	100	14.384		12.1000	164.78		
JUNC 140	JCT	5	6.095		12.1000	66.81		
JUNC 150	JCT	100	24.851		12.2000	242.21		
JUNC 150	JCT	5	9.658		12.2000	85.09		
JUNC 20	JCT	100	9.708		12.2000	98.49		
JUNC 20	JCT	5	3.869		12.2000	36.45		
JUNC 30	JCT	100	80.515		12.2500	394.26		
JUNC 30	JCT	5	32.444		12.3500	148.08		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
JUNC 40	JCT	100	.486		12.0000	6.84		
JUNC 40	JCT	5	.288		12.0000	4.15		
JUNC 50	JCT	100	23.165		12.2000	198.19		
JUNC 50	JCT	5	10.023		12.2000	79.55		
JUNC 60	JCT	100	7.238		12.1000	87.44		
JUNC 60	JCT	5	3.019		12.1000	35.02		
JUNC 70	JCT	100	5.329		12.1000	63.23		
JUNC 70	JCT	5	2.208		12.1000	25.04		
JUNC 80	JCT	100	115.255		14.3500	108.52		
JUNC 80	JCT	5	47.738		13.4500	80.68		
JUNC 90	JCT	100	1.844		12.3000	15.14		
JUNC 90	JCT	5	.704		12.3500	5.19		
OS-1	AREA	100	20.933		12.2000	210.98		
OS-1	AREA	5	7.993		12.2000	72.83		
OS-2	AREA	100	20.538		12.2000	207.00		
OS-2	AREA	5	7.842		12.2000	71.45		
OS-3	AREA	100	2.341		12.3000	19.22		
OS-3	AREA	5	.894		12.3500	6.59		
OS-4	AREA	100	5.735		12.3000	47.09		
OS-4	AREA	5	2.190		12.3500	16.13		
OS-5	AREA	100	1.295		12.2000	13.06		
OS-5	AREA	5	.495		12.2000	4.51		
OS-6	AREA	100	1.935		12.3000	15.89		
OS-6	AREA	5	.739		12.3500	5.44		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
OS-7	AREA	100	.964		12.3000	7.91		
OS-7	AREA	5	.368		12.3500	2.71		
OS-8	AREA	100	4.108		12.2000	41.40		
OS-8	AREA	5	1.568		12.2000	14.29		
*OUT 10	JCT	100	115.255		14.3500	108.52		
*OUT 10	JCT	5	47.738		13.4500	80.68		
POND 10 IN	POND	100	113.411		12.2000	651.25		
POND 10 IN	POND	5	47.034		12.2500	247.50		
POND 10 OUT	POND	100	113.411		14.5500	107.11	5934.38	51.446
POND 10 OUT	POND	5	47.034		13.6000	79.63	5928.83	13.348
POND 20 IN	POND	100	61.294		12.2000	610.63		
POND 20 IN	POND	5	24.202		12.2000	223.12		
POND 20 OUT	POND	100	61.294		12.6000	253.73	5979.75	17.763
POND 20 OUT	POND	5	24.202		12.5500	103.38	5973.97	6.056

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = COLO SPRGS

Storm Tag Name = Dev 5

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 2.7000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
1/2 BASIN L	AREA	.669		12.0000	9.64	
1/2 BASIN L2	AREA	.669		12.0000	9.64	
1/2 BASIN Q	AREA	.144		12.0000	2.08	
1/2 BASIN Q 2	AREA	.144		12.0000	2.08	
BASIN A	AREA	.811		12.1000	9.98	
BASIN B	AREA	1.514		12.2000	14.52	
BASIN C	AREA	.787		12.2000	7.64	
BASIN D	AREA	.837		12.1000	10.46	
BASIN E	AREA	.877		12.1000	10.85	
BASIN F	AREA	2.542		12.1500	26.20	
BASIN G	AREA	1.665		12.3000	13.27	
BASIN H	AREA	.607		12.2000	5.74	
BASIN I	AREA	.534		12.0500	7.74	
BASIN K	AREA	3.704		12.1500	41.06	
BASIN P	AREA	2.405		12.0000	36.28	
BASIN R	AREA	.336		12.3500	2.48	
BASIN S	AREA	1.874		12.3500	13.80	
BASIN T	AREA	4.492		12.2000	45.21	
BASIN U	AREA	.617		12.0000	8.90	
BASIN V	AREA	.252		12.2000	2.44	
BASIN W	AREA	.170		12.2000	1.67	
DP-1	JCT	10.023		12.2000	79.55	
JUNC 10	JCT	7.573		12.2000	75.79	
JUNC 100	JCT	8.449		12.2000	77.19	
JUNC 110	JCT	8.737		12.2000	74.37	
JUNC 120	JCT	31.775		12.3500	146.63	
JUNC 130	JCT	5.561		12.1500	60.10	
JUNC 140	JCT	6.095		12.1000	66.81	
JUNC 150	JCT	9.658		12.2000	85.09	
JUNC 20	JCT	3.869		12.2000	36.45	
JUNC 30	JCT	32.444		12.3500	148.08	
JUNC 40	JCT	.288		12.0000	4.15	

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
	JUNC 50		JCT	10.023		12.2000	79.55	
	JUNC 60		JCT	3.019		12.1000	35.02	
	JUNC 70		JCT	2.208		12.1000	25.04	
	JUNC 80		JCT	47.738		13.4500	80.68	
	JUNC 90		JCT	.704		12.3500	5.19	
	OS-1		AREA	7.993		12.2000	72.83	
	OS-2		AREA	7.842		12.2000	71.45	
	OS-3		AREA	.894		12.3500	6.59	
	OS-4		AREA	2.190		12.3500	16.13	
	OS-5		AREA	.495		12.2000	4.51	
	OS-6		AREA	.739		12.3500	5.44	
	OS-7		AREA	.368		12.3500	2.71	
	OS-8		AREA	1.568		12.2000	14.29	
Outfall	OUT 10		JCT	47.738		13.4500	80.68	
	POND 10	IN	POND	47.034		12.2500	247.50	
	POND 10	OUT	POND	47.034		13.6000	79.63	5928.83
	POND 20	IN	POND	24.202		12.2000	223.12	
	POND 20	OUT	POND	24.202		12.5500	103.38	5973.97

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = COLO SPRGS

Storm Tag Name = Dev 5

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 2.7000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points
ADDLINK 10	ADD	UN	.607		12.2000	5.74	BASIN H
		DL	.607		12.2000	5.74	
		DN	8.449		12.2000	77.19	JUNC 100
ADDLINK 100	ADD	UN	7.993		12.2000	72.83	OS-1
		DL	7.993		12.2000	72.83	
		DN	9.658		12.2000	85.09	JUNC 150
ADDLINK 110	ADD	UN	.144		12.0000	2.08	1/2 BASIN Q 2
		DL	.144		12.0000	2.08	
		DN	.288		12.0000	4.15	JUNC 40
ADDLINK 120	ADD	UN	7.842		12.2000	71.45	OS-2
		DL	7.842		12.2000	71.45	
		DN	8.449		12.2000	77.19	JUNC 100
ADDLINK 140	ADD	UN	.170		12.2000	1.67	BASIN W
		DL	.170		12.2000	1.67	
		DN	8.737		12.2000	74.37	JUNC 110
ADDLINK 20	ADD	UN	.252		12.2000	2.44	BASIN V
		DL	.252		12.2000	2.44	
		DN	8.737		12.2000	74.37	JUNC 110
ADDLINK 220	ADD	UN	1.665		12.3000	13.27	BASIN G
		DL	1.665		12.3000	13.27	
		DN	9.658		12.2000	85.09	JUNC 150

NETWORK SUMMARY -- LINKS

(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
ADDLINK 250	ADD	UN	2.190		12.3500	16.13	OS-4	
		DL	2.190		12.3500	16.13		
		DN	8.737		12.2000	74.37	JUNC 110	
ADDLINK 30	ADD	UN	.617		12.0000	8.90	BASIN U	
		DL	.617		12.0000	8.90		
		DN	10.023		12.2000	79.55	DP-1	
ADDLINK 300	ADD	UN	1.874		12.3500	13.80	BASIN S	
		DL	1.874		12.3500	13.80		
		DN	47.034		12.2500	247.50	POND 10	IN
ADDLINK 340	ADD	UN	.368		12.3500	2.71	OS-7	
		DL	.368		12.3500	2.71		
		DN	.704		12.3500	5.19	JUNC 90	
ADDLINK 360	ADD	UN	.336		12.3500	2.48	BASIN R	
		DL	.336		12.3500	2.48		
		DN	.704		12.3500	5.19	JUNC 90	
ADDLINK 40	ADD	UN	.495		12.2000	4.51	OS-5	
		DL	.495		12.2000	4.51		
		DN	2.208		12.1000	25.04	JUNC 70	
ADDLINK 50	ADD	UN	.669		12.0000	9.64	1/2 BASIN L	
		DL	.669		12.0000	9.64		
		DN	10.023		12.2000	79.55	DP-1	
ADDLINK 60	ADD	UN	1.568		12.2000	14.29	OS-8	
		DL	1.568		12.2000	14.29		
		DN	3.869		12.2000	36.45	JUNC 20	
ADDLINK 70	ADD	UN	.894		12.3500	6.59	OS-3	
		DL	.894		12.3500	6.59		
		DN	8.737		12.2000	74.37	JUNC 110	
ADDLINK 80	ADD	UN	4.492		12.2000	45.21	BASIN T	
		DL	4.492		12.2000	45.21		
		DN	8.737		12.2000	74.37	JUNC 110	

NETWORK SUMMARY -- LINKS

(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
PIEP 13	ADD	UN	1.514		12.2000	14.52	BASIN B	
		DL	1.514		12.2000	14.52		
		DN	3.869		12.2000	36.45	JUNC 20	
PIEP 16	ADD	UN	7.573		12.2000	75.79	JUNC 10	
		DL	7.573		12.2000	75.79		
		DN	31.775		12.3500	146.63	JUNC 120	
PIEP 7	ADD	UN	5.561		12.1500	60.10	JUNC 130	
		DL	5.561		12.1500	60.10		
		DN	6.095		12.1000	66.81	JUNC 140	
PIPE 1	ADD	UN	.837		12.1000	10.46	BASIN D	
		DL	.837		12.1000	10.46		
		DN	2.208		12.1000	25.04	JUNC 70	
PIPE 10	ADD	UN	8.449		12.2000	77.19	JUNC 100	
		DL	8.449		12.2000	77.19		
		DN	24.202		12.2000	223.12	POND 20	IN
PIPE 11	ADD	UN	9.658		12.2000	85.09	JUNC 150	
		DL	9.658		12.2000	85.09		
		DN	24.202		12.2000	223.12	POND 20	IN
PIPE 12	ADD	UN	.787		12.2000	7.64	BASIN C	
		DL	.787		12.2000	7.64		
		DN	3.869		12.2000	36.45	JUNC 20	
PIPE 14	ADD	UN	3.869		12.2000	36.45	JUNC 20	
		DL	3.869		12.2000	36.45		
		DN	7.573		12.2000	75.79	JUNC 10	
PIPE 15	ADD	UN	3.704		12.1500	41.06	BASIN K	
		DL	3.704		12.1500	41.06		
		DN	7.573		12.2000	75.79	JUNC 10	
PIPE 17	PONDrt	UN	24.202		12.2000	223.12	POND 20	IN
PIPE 17			24.202		12.5500	103.38	POND 20	OUT
		DL	24.202		12.5500	103.38		
		DN	31.775		12.3500	146.63	JUNC 120	

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
PIPE 18	ADD	UN	31.775		12.3500	146.63	JUNC 120	
		DL	31.775		12.3500	146.63		
		DN	32.444		12.3500	148.08	JUNC 30	
PIPE 19	ADD	UN	.669		12.0000	9.64	1/2 BASIN L2	
		DL	.669		12.0000	9.64		
		DN	32.444		12.3500	148.08	JUNC 30	
PIPE 2	ADD	UN	.877		12.1000	10.85	BASIN E	
		DL	.877		12.1000	10.85		
		DN	2.208		12.1000	25.04	JUNC 70	
PIPE 21	ADD	UN	32.444		12.3500	148.08	JUNC 30	
		DL	32.444		12.3500	148.08		
		DN	47.034		12.2500	247.50	POND 10	IN
PIPE 22	ADD	UN	.739		12.3500	5.44	OS-6	
		DL	.739		12.3500	5.44		
		DN	8.737		12.2000	74.37	JUNC 110	
PIPE 23	ADD	UN	8.737		12.2000	74.37	JUNC 110	
		DL	8.737		12.2000	74.37		
		DN	10.023		12.2000	79.55	DP-1	
PIPE 24	ADD	UN	10.023		12.2000	79.55	DP-1	
		DL	10.023		12.2000	79.55		
		DN	10.023		12.2000	79.55	JUNC 50	
PIPE 25	ADD	UN	10.023		12.2000	79.55	JUNC 50	
		DL	10.023		12.2000	79.55		
		DN	47.034		12.2500	247.50	POND 10	IN
PIPE 26	ADD	UN	2.405		12.0000	36.28	BASIN P	
		DL	2.405		12.0000	36.28		
		DN	47.034		12.2500	247.50	POND 10	IN
PIPE 27	ADD	UN	.144		12.0000	2.08	1/2 BASIN Q	
		DL	.144		12.0000	2.08		
		DN	.288		12.0000	4.15	JUNC 40	

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
PIPE 28	ADD	UN	.288		12.0000	4.15	JUNC 40	
		DL	.288		12.0000	4.15		
		DN	47.034		12.2500	247.50	POND 10	IN
PIPE 29	PONDrt	UN	47.034		12.2500	247.50	POND 10	IN
PIPE 29			47.034		13.6000	79.63	POND 10	OUT
		DL	47.034		13.6000	79.63		
		DN	47.738		13.4500	80.68	JUNC 80	
PIPE 30	ADD	UN	.704		12.3500	5.19	JUNC 90	
		DL	.704		12.3500	5.19		
		DN	47.738		13.4500	80.68	JUNC 80	
PIPE 31	ADD	UN	47.738		13.4500	80.68	JUNC 80	
		DL	47.738		13.4500	80.68		
		DN	47.738		13.4500	80.68	OUT 10	
PIPE 4	ADD	UN	.811		12.1000	9.98	BASIN A	
		DL	.811		12.1000	9.98		
		DN	3.019		12.1000	35.02	JUNC 60	
PIPE 5	ADD	UN	3.019		12.1000	35.02	JUNC 60	
		DL	3.019		12.1000	35.02		
		DN	5.561		12.1500	60.10	JUNC 130	
PIPE 6	ADD	UN	2.542		12.1500	26.20	BASIN F	
		DL	2.542		12.1500	26.20		
		DN	5.561		12.1500	60.10	JUNC 130	
PIPE 8	ADD	UN	.534		12.0500	7.74	BASIN I	
		DL	.534		12.0500	7.74		
		DN	6.095		12.1000	66.81	JUNC 140	
PIPE 9	ADD	UN	6.095		12.1000	66.81	JUNC 140	
		DL	6.095		12.1000	66.81		
		DN	24.202		12.2000	223.12	POND 20	IN
PIUPE 3	ADD	UN	2.208		12.1000	25.04	JUNC 70	
		DL	2.208		12.1000	25.04		
		DN	3.019		12.1000	35.02	JUNC 60	

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = COLO SPRGS

Storm Tag Name = Dev100

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 4.4000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
1/2 BASIN L	AREA	1.128		12.0000	15.87	
1/2 BASIN L2	AREA	1.128		12.0000	15.87	
1/2 BASIN Q	AREA	.243		12.0000	3.42	
1/2 BASIN Q 2	AREA	.243		12.0000	3.42	
BASIN A	AREA	1.909		12.1000	24.21	
BASIN B	AREA	3.711		12.2000	37.80	
BASIN C	AREA	1.890		12.2000	19.29	
BASIN D	AREA	1.969		12.1000	25.32	
BASIN E	AREA	2.064		12.1000	26.31	
BASIN F	AREA	5.982		12.1500	64.54	
BASIN G	AREA	3.919		12.3000	32.78	
BASIN H	AREA	1.521		12.2000	15.44	
BASIN I	AREA	1.165		12.0500	16.85	
BASIN K	AREA	8.385		12.1500	94.90	
BASIN P	AREA	4.338		12.0000	63.32	
BASIN R	AREA	.880		12.3000	7.23	
BASIN S	AREA	4.907		12.3000	40.29	
BASIN T	AREA	9.980		12.2000	102.24	
BASIN U	AREA	1.041		12.0000	14.65	
BASIN V	AREA	.604		12.2000	6.17	
BASIN W	AREA	.401		12.2000	4.10	
DP-1	JCT	23.165		12.2000	198.19	
JUNC 10	JCT	18.093		12.1500	190.86	
JUNC 100	JCT	22.058		12.2000	222.45	
JUNC 110	JCT	20.996		12.2000	189.69	
JUNC 120	JCT	79.387		12.2500	390.91	
JUNC 130	JCT	13.220		12.1000	149.37	
JUNC 140	JCT	14.384		12.1000	164.78	
JUNC 150	JCT	24.851		12.2000	242.21	
JUNC 20	JCT	9.708		12.2000	98.49	
JUNC 30	JCT	80.515		12.2500	394.26	
JUNC 40	JCT	.486		12.0000	6.84	

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
	JUNC 50		JCT	23.165		12.2000	198.19	
	JUNC 60		JCT	7.238		12.1000	87.44	
	JUNC 70		JCT	5.329		12.1000	63.23	
	JUNC 80		JCT	115.255		14.3500	108.52	
	JUNC 90		JCT	1.844		12.3000	15.14	
	OS-1		AREA	20.933		12.2000	210.98	
	OS-2		AREA	20.538		12.2000	207.00	
	OS-3		AREA	2.341		12.3000	19.22	
	OS-4		AREA	5.735		12.3000	47.09	
	OS-5		AREA	1.295		12.2000	13.06	
	OS-6		AREA	1.935		12.3000	15.89	
	OS-7		AREA	.964		12.3000	7.91	
	OS-8		AREA	4.108		12.2000	41.40	
Outfall	OUT 10		JCT	115.255		14.3500	108.52	
	POND 10	IN	POND	113.411		12.2000	651.25	
	POND 10	OUT	POND	113.411		14.5500	107.11	5934.38
	POND 20	IN	POND	61.294		12.2000	610.63	
	POND 20	OUT	POND	61.294		12.6000	253.73	5979.75

MASTER DESIGN STORM SUMMARY

Network Storm Collection: COLO SPRGS

Return Event	Total Depth in	Rainfall Type	RNF ID
100Y24	4.4000	Synthetic Curve	TypeII 24hr
5Y24H	2.7000	Synthetic Curve	TypeII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
BASIN N	AREA	100	.989		12.1500	11.18		
BASIN N	AREA	5	.454		12.1500	5.09		
*OUT 10	JCT	100	.989		12.1500	11.18		
*OUT 10	JCT	5	.454		12.1500	5.09		

MASTER DESIGN STORM SUMMARY

Network Storm Collection: COLO SPRGS

Return Event	Total Depth in	Rainfall Type	RNF ID
100Y24	4.4000	Synthetic Curve	TypeII 24hr
5Y24H	2.7000	Synthetic Curve	TypeII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
BASIN P	AREA	100	4.429		12.0500	59.64		
BASIN P	AREA	5	2.456		12.0500	34.23		
*OUT 10	JCT	100	4.429		12.0500	59.64		
*OUT 10	JCT	5	2.456		12.0500	34.23		

MASTER DESIGN STORM SUMMARY

Network Storm Collection: COLO SPRGS

Return Event	Total Depth in	Rainfall Type	RNF ID
100Y24	4.4000	Synthetic Curve	TypeII 24hr
5Y24H	2.7000	Synthetic Curve	TypeII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
BASIN M	AREA	100	4.395		12.1000	56.03		
BASIN M	AREA	5	1.867		12.1000	23.11		
*OUT 10	JCT	100	4.395		12.1000	56.03		
*OUT 10	JCT	5	1.867		12.1000	23.11		

MASTER DESIGN STORM SUMMARY

Network Storm Collection: COLO SPRGS

Return Event	Total Depth in	Rainfall Type	RNF ID
100Y24	4.4000	Synthetic Curve	TypeII 24hr
5Y24H	2.7000	Synthetic Curve	TypeII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
BASIN O	AREA	100	7.033		12.1000	89.42		
BASIN O	AREA	5	3.225		12.1000	40.85		
*OUT 10	JCT	100	7.033		12.1000	89.42		
*OUT 10	JCT	5	3.225		12.1000	40.85		

MASTER DESIGN STORM SUMMARY

Network Storm Collection: COLO SPRGS

Return Event	Total Depth in	Rainfall Type	RNF ID
100Y24	4.4000	Synthetic Curve	TypeII 24hr
5Y24H	2.7000	Synthetic Curve	TypeII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
BASIN J	AREA	100	2.481		12.0000	34.91		
BASIN J	AREA	5	1.472		12.0000	21.20		
*OUT 10	JCT	100	2.481		12.0000	34.91		
*OUT 10	JCT	5	1.472		12.0000	21.20		

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = COLO SPRGS

Storm Tag Name = Dev100

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 4.4000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points
ADDLINK 10	ADD	UN	1.521		12.2000	15.44	BASIN H
		DL	1.521		12.2000	15.44	
		DN	22.058		12.2000	222.45	JUNC 100
ADDLINK 100	ADD	UN	20.933		12.2000	210.98	OS-1
		DL	20.933		12.2000	210.98	
		DN	24.851		12.2000	242.21	JUNC 150
ADDLINK 110	ADD	UN	.243		12.0000	3.42	1/2 BASIN Q 2
		DL	.243		12.0000	3.42	
		DN	.486		12.0000	6.84	JUNC 40
ADDLINK 120	ADD	UN	20.538		12.2000	207.00	OS-2
		DL	20.538		12.2000	207.00	
		DN	22.058		12.2000	222.45	JUNC 100
ADDLINK 140	ADD	UN	.401		12.2000	4.10	BASIN W
		DL	.401		12.2000	4.10	
		DN	20.996		12.2000	189.69	JUNC 110
ADDLINK 20	ADD	UN	.604		12.2000	6.17	BASIN V
		DL	.604		12.2000	6.17	
		DN	20.996		12.2000	189.69	JUNC 110
ADDLINK 220	ADD	UN	3.919		12.3000	32.78	BASIN G
		DL	3.919		12.3000	32.78	
		DN	24.851		12.2000	242.21	JUNC 150

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
ADDLINK 250	ADD	UN	5.735		12.3000	47.09	OS-4	
		DL	5.735		12.3000	47.09		
		DN	20.996		12.2000	189.69	JUNC 110	
ADDLINK 30	ADD	UN	1.041		12.0000	14.65	BASIN U	
		DL	1.041		12.0000	14.65		
		DN	23.165		12.2000	198.19	DP-1	
ADDLINK 300	ADD	UN	4.907		12.3000	40.29	BASIN S	
		DL	4.907		12.3000	40.29		
		DN	113.411		12.2000	651.25	POND 10	IN
ADDLINK 340	ADD	UN	.964		12.3000	7.91	OS-7	
		DL	.964		12.3000	7.91		
		DN	1.844		12.3000	15.14	JUNC 90	
ADDLINK 360	ADD	UN	.880		12.3000	7.23	BASIN R	
		DL	.880		12.3000	7.23		
		DN	1.844		12.3000	15.14	JUNC 90	
ADDLINK 40	ADD	UN	1.295		12.2000	13.06	OS-5	
		DL	1.295		12.2000	13.06		
		DN	5.329		12.1000	63.23	JUNC 70	
ADDLINK 50	ADD	UN	1.128		12.0000	15.87	1/2 BASIN L	
		DL	1.128		12.0000	15.87		
		DN	23.165		12.2000	198.19	DP-1	
ADDLINK 60	ADD	UN	4.108		12.2000	41.40	OS-8	
		DL	4.108		12.2000	41.40		
		DN	9.708		12.2000	98.49	JUNC 20	
ADDLINK 70	ADD	UN	2.341		12.3000	19.22	OS-3	
		DL	2.341		12.3000	19.22		
		DN	20.996		12.2000	189.69	JUNC 110	
ADDLINK 80	ADD	UN	9.980		12.2000	102.24	BASIN T	
		DL	9.980		12.2000	102.24		
		DN	20.996		12.2000	189.69	JUNC 110	

NETWORK SUMMARY -- LINKS

(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
PIEP 13	ADD	UN	3.711		12.2000	37.80	BASIN B	
		DL	3.711		12.2000	37.80		
		DN	9.708		12.2000	98.49	JUNC 20	
PIEP 16	ADD	UN	18.093		12.1500	190.86	JUNC 10	
		DL	18.093		12.1500	190.86		
		DN	79.387		12.2500	390.91	JUNC 120	
PIEP 7	ADD	UN	13.220		12.1000	149.37	JUNC 130	
		DL	13.220		12.1000	149.37		
		DN	14.384		12.1000	164.78	JUNC 140	
PIPE 1	ADD	UN	1.969		12.1000	25.32	BASIN D	
		DL	1.969		12.1000	25.32		
		DN	5.329		12.1000	63.23	JUNC 70	
PIPE 10	ADD	UN	22.058		12.2000	222.45	JUNC 100	
		DL	22.058		12.2000	222.45		
		DN	61.294		12.2000	610.63	POND 20	IN
PIPE 11	ADD	UN	24.851		12.2000	242.21	JUNC 150	
		DL	24.851		12.2000	242.21		
		DN	61.294		12.2000	610.63	POND 20	IN
PIPE 12	ADD	UN	1.890		12.2000	19.29	BASIN C	
		DL	1.890		12.2000	19.29		
		DN	9.708		12.2000	98.49	JUNC 20	
PIPE 14	ADD	UN	9.708		12.2000	98.49	JUNC 20	
		DL	9.708		12.2000	98.49		
		DN	18.093		12.1500	190.86	JUNC 10	
PIPE 15	ADD	UN	8.385		12.1500	94.90	BASIN K	
		DL	8.385		12.1500	94.90		
		DN	18.093		12.1500	190.86	JUNC 10	
PIPE 17	PONDrt	UN	61.294		12.2000	610.63	POND 20	IN
PIPE 17			61.294		12.6000	253.73	POND 20	OUT
		DL	61.294		12.6000	253.73		
		DN	79.387		12.2500	390.91	JUNC 120	

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
PIPE 28	ADD	UN	.486		12.0000	6.84	JUNC 40	
		DL	.486		12.0000	6.84		
		DN	113.411		12.2000	651.25	POND 10	IN
PIPE 29	PONDrt	UN	113.411		12.2000	651.25	POND 10	IN
PIPE 29			113.411		14.5500	107.11	POND 10	OUT
		DL	113.411		14.5500	107.11		
		DN	115.255		14.3500	108.52	JUNC 80	
PIPE 30	ADD	UN	1.844		12.3000	15.14	JUNC 90	
		DL	1.844		12.3000	15.14		
		DN	115.255		14.3500	108.52	JUNC 80	
PIPE 31	ADD	UN	115.255		14.3500	108.52	JUNC 80	
		DL	115.255		14.3500	108.52		
		DN	115.255		14.3500	108.52	OUT 10	
PIPE 4	ADD	UN	1.909		12.1000	24.21	BASIN A	
		DL	1.909		12.1000	24.21		
		DN	7.238		12.1000	87.44	JUNC 60	
PIPE 5	ADD	UN	7.238		12.1000	87.44	JUNC 60	
		DL	7.238		12.1000	87.44		
		DN	13.220		12.1000	149.37	JUNC 130	
PIPE 6	ADD	UN	5.982		12.1500	64.54	BASIN F	
		DL	5.982		12.1500	64.54		
		DN	13.220		12.1000	149.37	JUNC 130	
PIPE 8	ADD	UN	1.165		12.0500	16.85	BASIN I	
		DL	1.165		12.0500	16.85		
		DN	14.384		12.1000	164.78	JUNC 140	
PIPE 9	ADD	UN	14.384		12.1000	164.78	JUNC 140	
		DL	14.384		12.1000	164.78		
		DN	61.294		12.2000	610.63	POND 20	IN
PIUPE 3	ADD	UN	5.329		12.1000	63.23	JUNC 70	
		DL	5.329		12.1000	63.23		
		DN	7.238		12.1000	87.44	JUNC 60	

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Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
5922.00	-----	.0010	.0000	.000	.000
5924.00	-----	.8600	.8903	.594	.594
5926.00	-----	2.2600	4.5141	3.009	3.603
5928.00	-----	3.9800	9.2391	6.159	9.762
5930.00	-----	5.8400	14.6411	9.761	19.523
5932.00	-----	7.3800	19.7850	13.190	32.713
5934.00	-----	8.2500	23.4329	15.622	48.335
5936.00	-----	8.6300	25.3179	16.879	65.214
5938.00	-----	9.0200	26.4729	17.649	82.862

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
5969.00	-----	.0010	.0000	.000	.000
5970.00	-----	1.0900	1.1240	.375	.375
5972.00	-----	1.4600	3.8115	2.541	2.916
5974.00	-----	1.7400	4.7939	3.196	6.112
5976.00	-----	1.9300	5.5025	3.668	9.780
5978.00	-----	2.1400	6.1023	4.068	13.848
5980.00	-----	2.3600	6.7473	4.498	18.346

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 5922.00 ft
Increment = .50 ft
Max. Elev.= 5938.00 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Culvert-Circular	cv	--->	TW	5922.000	5938.000

TW SETUP, DS Channel

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OUTLET STRUCTURE INPUT DATA

Structure ID	=	cv	
Structure Type	=	Culvert-Circular	
No. Barrels	=	2	
Barrel Diameter	=	2.0000	ft
Upstream Invert	=	5922.00	ft
Dnstream Invert	=	5920.00	ft
Horiz. Length	=	100.00	ft
Barrel Length	=	100.02	ft
Barrel Slope	=	.02000	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.5000	(forward entrance loss)
Kb	=	.012411	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0078
Inlet Control M	=	2.0000
Inlet Control c	=	.02920
Inlet Control Y	=	.7400
T1 ratio (HW/D)	=	1.135
T2 ratio (HW/D)	=	1.206
Slope Factor	=	-.050

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control, interpolate between flows at T1 & T2...

At T1 Elev =	5924.27 ft	--->	Flow =	15.55	cfs
At T2 Elev =	5924.41 ft	--->	Flow =	17.77	cfs

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OUTLET STRUCTURE INPUT DATA

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations=	30	
Min. TW tolerance =	.01	ft
Max. TW tolerance =	.01	ft
Min. HW tolerance =	.01	ft
Max. HW tolerance =	.01	ft
Min. Q tolerance =	.10	cfs
Max. Q tolerance =	.10	cfs

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 5969.00 ft
Increment = .50 ft
Max. Elev.= 5980.00 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Culvert-Circular	CV	--->	TW	5969.000	5980.000
TW SETUP, DS Channel					

OUTLET STRUCTURE INPUT DATA

Structure ID	=	CV	
Structure Type	=	Culvert-Circular	
No. Barrels	=	1	
Barrel Diameter	=	4.5000	ft
Upstream Invert	=	5969.00	ft
Dnstream Invert	=	5968.00	ft
Horiz. Length	=	20.00	ft
Barrel Length	=	20.02	ft
Barrel Slope	=	.05000	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.5000	(forward entrance loss)
Kb	=	.004209	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0078
Inlet Control M	=	2.0000
Inlet Control c	=	.02920
Inlet Control Y	=	.7400
T1 ratio (HW/D)	=	1.133
T2 ratio (HW/D)	=	1.205
Slope Factor	=	-.050

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control, interpolate between flows at T1 & T2...

At T1 Elev =	5974.10 ft	--->	Flow =	118.08	cfs
At T2 Elev =	5974.42 ft	--->	Flow =	134.95	cfs

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OUTLET STRUCTURE INPUT DATA

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations=	30
Min. TW tolerance =	.01 ft
Max. TW tolerance =	.01 ft
Min. HW tolerance =	.01 ft
Max. HW tolerance =	.01 ft
Min. Q tolerance =	.10 cfs
Max. Q tolerance =	.10 cfs

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MASTER DESIGN STORM SUMMARY

Network Storm Collection: COLO SPRGS

Return Event	Total Depth in	Rainfall Type	RNF ID
Dev100	4.4000	Synthetic Curve	TypeII 24hr
Dev 5	2.7000	Synthetic Curve	TypeII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
1/2 BASIN L	AREA	100	1.128		12.0000	15.87		
1/2 BASIN L	AREA	5	.669		12.0000	9.64		
1/2 BASIN L2	AREA	100	1.128		12.0000	15.87		
1/2 BASIN L2	AREA	5	.669		12.0000	9.64		
1/2 BASIN Q	AREA	100	.243		12.0000	3.42		
1/2 BASIN Q	AREA	5	.144		12.0000	2.08		
1/2 BASIN Q 2	AREA	100	.243		12.0000	3.42		
1/2 BASIN Q 2	AREA	5	.144		12.0000	2.08		
BASIN R	AREA	100	.880		12.3000	7.23		
BASIN R	AREA	5	.336		12.3500	2.48		
BASIN S	AREA	100	4.907		12.3000	40.29		
BASIN S	AREA	5	1.874		12.3500	13.80		
BASIN U	AREA	100	1.041		12.0000	14.65		
BASIN U	AREA	5	.617		12.0000	8.90		

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = COLO SPRGS

Storm Tag Name = Dev 5

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 2.7000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
	1/2 BASIN L		AREA	.669		12.0000	9.64	
	1/2 BASIN L2		AREA	.669		12.0000	9.64	
	1/2 BASIN Q		AREA	.144		12.0000	2.08	
	1/2 BASIN Q 2		AREA	.144		12.0000	2.08	
	BASIN R		AREA	.336		12.3500	2.48	
	BASIN S		AREA	1.874		12.3500	13.80	
	BASIN U		AREA	.617		12.0000	8.90	
	JUNC 40		JCT	.288		12.0000	4.15	
	JUNC 80		JCT	20.620		12.7000	62.48	
	JUNC 90		JCT	.704		12.3500	5.19	
	OS-7		AREA	.368		12.3500	2.71	
Outfall	OUT 10		JCT	20.620		12.7000	62.48	
	POND 10	IN	POND	19.916		12.2500	147.51	
	POND 10	OUT	POND	19.916		12.8000	59.70	5927.13
	SUBAREA 290		AREA	15.799		12.3000	127.89	

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = COLO SPRGS

Storm Tag Name = Dev 5

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 2.7000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Link ID	Type	-	HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
ADDLINK 10	ADD	UN	.669		12.0000	9.64	1/2 BASIN L	
		DL	.669		12.0000	9.64		
		DN	19.916		12.2500	147.51	POND 10	IN
ADDLINK 110	ADD	UN	.144		12.0000	2.08	1/2 BASIN Q 2	
		DL	.144		12.0000	2.08		
		DN	.288		12.0000	4.15	JUNC 40	
ADDLINK 20	ADD	UN	.617		12.0000	8.90	BASIN U	
		DL	.617		12.0000	8.90		
		DN	19.916		12.2500	147.51	POND 10	IN
ADDLINK 30	ADD	UN	15.799		12.3000	127.89	SUBAREA 290	
		DL	15.799		12.3000	127.89		
		DN	19.916		12.2500	147.51	POND 10	IN
ADDLINK 300	ADD	UN	1.874		12.3500	13.80	BASIN S	
		DL	1.874		12.3500	13.80		
		DN	19.916		12.2500	147.51	POND 10	IN
ADDLINK 340	ADD	UN	.368		12.3500	2.71	OS-7	
		DL	.368		12.3500	2.71		
		DN	.704		12.3500	5.19	JUNC 90	
ADDLINK 360	ADD	UN	.336		12.3500	2.48	BASIN R	
		DL	.336		12.3500	2.48		
		DN	.704		12.3500	5.19	JUNC 90	

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
ADDLINK 450	ADD	UN	.669		12.0000	9.64	1/2 BASIN L2	
		DL	.669		12.0000	9.64		
		DN	19.916		12.2500	147.51	POND 10	IN
PIPE 27	ADD	UN	.144		12.0000	2.08	1/2 BASIN Q	
		DL	.144		12.0000	2.08		
		DN	.288		12.0000	4.15	JUNC 40	
PIPE 28	ADD	UN	.288		12.0000	4.15	JUNC 40	
		DL	.288		12.0000	4.15		
		DN	19.916		12.2500	147.51	POND 10	IN
PIPE 29	PONDrt	UN	19.916		12.2500	147.51	POND 10	IN
PIPE 29			19.916		12.8000	59.70	POND 10	OUT
		DL	19.916		12.8000	59.70		
		DN	20.620		12.7000	62.48	JUNC 80	
PIPE 30	ADD	UN	.704		12.3500	5.19	JUNC 90	
		DL	.704		12.3500	5.19		
		DN	20.620		12.7000	62.48	JUNC 80	
PIPE 31	ADD	UN	20.620		12.7000	62.48	JUNC 80	
		DL	20.620		12.7000	62.48		
		DN	20.620		12.7000	62.48	OUT 10	

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = COLO SPRGS

Storm Tag Name = Dev100

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 4.4000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
	1/2 BASIN L		AREA	1.128		12.0000	15.87	
	1/2 BASIN L2		AREA	1.128		12.0000	15.87	
	1/2 BASIN Q		AREA	.243		12.0000	3.42	
	1/2 BASIN Q 2		AREA	.243		12.0000	3.42	
	BASIN R		AREA	.880		12.3000	7.23	
	BASIN S		AREA	4.907		12.3000	40.29	
	BASIN U		AREA	1.041		12.0000	14.65	
	JUNC 40		JCT	.486		12.0000	6.84	
	JUNC 80		JCT	51.908		12.5500	108.19	
	JUNC 90		JCT	1.844		12.3000	15.14	
	OS-7		AREA	.964		12.3000	7.91	
Outfall	OUT 10		JCT	51.908		12.5500	108.19	
	POND 10	IN	POND	50.065		12.2500	422.76	
	POND 10	OUT	POND	50.065		13.0000	101.55	5933.13
	SUBAREA 290		AREA	41.375		12.2500	371.79	

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = COLO SPRGS

Storm Tag Name = Dev100

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 4.4000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
ADDLINK 10	ADD	UN	1.128		12.0000	15.87	1/2 BASIN L	
		DL	1.128		12.0000	15.87		
		DN	50.065		12.2500	422.76	POND 10	IN
ADDLINK 110	ADD	UN	.243		12.0000	3.42	1/2 BASIN Q 2	
		DL	.243		12.0000	3.42		
		DN	.486		12.0000	6.84	JUNC 40	
ADDLINK 20	ADD	UN	1.041		12.0000	14.65	BASIN U	
		DL	1.041		12.0000	14.65		
		DN	50.065		12.2500	422.76	POND 10	IN
ADDLINK 30	ADD	UN	41.375		12.2500	371.79	SUBAREA 290	
		DL	41.375		12.2500	371.79		
		DN	50.065		12.2500	422.76	POND 10	IN
ADDLINK 300	ADD	UN	4.907		12.3000	40.29	BASIN S	
		DL	4.907		12.3000	40.29		
		DN	50.065		12.2500	422.76	POND 10	IN
ADDLINK 340	ADD	UN	.964		12.3000	7.91	OS-7	
		DL	.964		12.3000	7.91		
		DN	1.844		12.3000	15.14	JUNC 90	
ADDLINK 360	ADD	UN	.880		12.3000	7.23	BASIN R	
		DL	.880		12.3000	7.23		
		DN	1.844		12.3000	15.14	JUNC 90	

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
ADDLINK 450	ADD	UN	1.128		12.0000	15.87	1/2 BASIN L2	
		DL	1.128		12.0000	15.87		
		DN	50.065		12.2500	422.76	POND 10	IN
PIPE 27	ADD	UN	.243		12.0000	3.42	1/2 BASIN Q	
		DL	.243		12.0000	3.42		
		DN	.486		12.0000	6.84	JUNC 40	
PIPE 28	ADD	UN	.486		12.0000	6.84	JUNC 40	
		DL	.486		12.0000	6.84		
		DN	50.065		12.2500	422.76	POND 10	IN
PIPE 29	PONDrt	UN	50.065		12.2500	422.76	POND 10	IN
PIPE 29			50.065		13.0000	101.55	POND 10	OUT
		DL	50.065		13.0000	101.55		
		DN	51.908		12.5500	108.19	JUNC 80	
PIPE 30	ADD	UN	1.844		12.3000	15.14	JUNC 90	
		DL	1.844		12.3000	15.14		
		DN	51.908		12.5500	108.19	JUNC 80	
PIPE 31	ADD	UN	51.908		12.5500	108.19	JUNC 80	
		DL	51.908		12.5500	108.19		
		DN	51.908		12.5500	108.19	OUT 10	

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Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
5923.00	-----	.0010	.0000	.000	.000
5924.00	-----	.9300	.9615	.320	.320
5926.00	-----	1.9000	4.1593	2.773	3.093
5928.00	-----	2.0800	5.9680	3.979	7.072
5930.00	-----	2.2500	6.4933	4.329	11.401
5932.00	-----	2.4400	7.0331	4.689	16.090
5934.00	-----	2.6300	7.6032	5.069	21.158
5936.00	-----	2.8200	8.1733	5.449	26.607
5938.00	-----	3.0300	8.7731	5.849	32.456

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

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REQUESTED POND WS ELEVATIONS:

Min. Elev.= 5923.00 ft
Increment = .50 ft
Max. Elev.= 5938.00 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Culvert-Circular	cv	--->	TW	5923.000	5938.000
TW SETUP, DS Channel					

OUTLET STRUCTURE INPUT DATA

Structure ID	= cv	
Structure Type	= Culvert-Circular	
No. Barrels	= 2	
Barrel Diameter	= 2.0000	ft
Upstream Invert	= 5923.00	ft
Dnstream Invert	= 5920.00	ft
Horiz. Length	= 100.00	ft
Barrel Length	= 100.05	ft
Barrel Slope	= .03000	ft/ft

OUTLET CONTROL DATA...

Mannings n	= .0130	
Ke	= .5000	(forward entrance loss)
Kb	= .012411	(per ft of full flow)
Kr	= .5000	(reverse entrance loss)
HW Convergence	= .001	+/- ft

INLET CONTROL DATA...

Equation form	= 1	
Inlet Control K	= .0078	
Inlet Control M	= 2.0000	
Inlet Control c	= .02920	
Inlet Control Y	= .7400	
T1 ratio (HW/D)	= 1.134	
T2 ratio (HW/D)	= 1.206	
Slope Factor	= -.050	

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...
At T1 Elev = 5925.27 ft ---> Flow = 15.55 cfs
At T2 Elev = 5925.41 ft ---> Flow = 17.77 cfs

OUTLET STRUCTURE INPUT DATA

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 30
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

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Pond Surface Area Estimate

Pond Depth:	8.00	ft
Freeboard Depth:	2.00	ft
Total Pond Depth:	10.00	ft
Side Slope:	3.00	H:V

Volume up to Freeboard Elevation:	191.879	ac-ft
Volume From Freeboard to Top of Pond:	49.983	ac-ft
Total Pond Volume:	241.863	ac-ft

Top Pond Elevation:	6890.00	ft
Top Surface Area:	25.247	acres
Freeboard Elevation:	6888.00	ft
Freeboard Surface Area:	24.737	acres
Bottom Elevation:	6880.00	ft
Bottom Surface Area:	23.240	acres

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DETENTION STORAGE ESTIMATES -- Target Peak Outflow Rate

Return Events	Peak In (cfs)	Target (cfs)	Lower (ac-ft)	Linear (ac-ft)	Curvlinr (ac-ft)	Upper (ac-ft)	Total (ac-ft)
100	2846.628	2460.000	10.039	49.296	107.770	197.813	533.302
5	834.106	2.041	189.028	190.327	191.879	192.083	192.145

CALCULATION TIME RANGES

Return	Lower		Linear		Curvilinear		Upper		Total	
Events	From (hrs)	To (hrs)	From (hrs)	To (hrs)	From (hrs)	To (hrs)	From (hrs)	To (hrs)	From (hrs)	To (hrs)
100	12.52	13.01	11.80	13.01	3.40	13.01	3.40	13.01	3.40	27.35
5	9.08	26.00	5.25	26.00	5.12	26.00	5.15	26.00	5.15	27.30

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Rain Dir: X:\200410\DRAINAGE\

==========
JOB TITLE
==========

Project Date: 9/23/2002
Project Engineer: David Gibson
Project Title: LOWER JL RANCH
Project Comments:.
MASTER DEVELOPEMENT DRAINAGE PLAN FOR
LOWER JL RANCH PHASED POND
5 AND 100 YEAR STORM EVENTS

Table of Contents

MASTER DESIGN STORM SUMMARY

Network Storm Collection: COLO SPRGS

Return Event	Total Depth in	Rainfall Type	RNF ID
Dev100	4.4000	Synthetic Curve	TypeII 24hr
Dev 5	2.7000	Synthetic Curve	TypeII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
1/2 BASIN L	AREA	100	1.128		12.0000	15.87		
1/2 BASIN L	AREA	5	.669		12.0000	9.64		
1/2 BASIN L2	AREA	100	1.128		12.0000	15.87		
1/2 BASIN L2	AREA	5	.669		12.0000	9.64		
1/2 BASIN Q	AREA	100	.243		12.0000	3.42		
1/2 BASIN Q	AREA	5	.144		12.0000	2.08		
1/2 BASIN Q 2	AREA	100	.243		12.0000	3.42		
1/2 BASIN Q 2	AREA	5	.144		12.0000	2.08		
BASIN R	AREA	100	.880		12.3000	7.23		
BASIN R	AREA	5	.336		12.3500	2.48		
BASIN S	AREA	100	4.907		12.3000	40.29		
BASIN S	AREA	5	1.874		12.3500	13.80		
BASIN U	AREA	100	1.041		12.0000	14.65		
BASIN U	AREA	5	.617		12.0000	8.90		

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = COLO SPRGS

Storm Tag Name = Dev 5

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 2.7000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
	1/2 BASIN L		AREA	.669		12.0000	9.64	
	1/2 BASIN L2		AREA	.669		12.0000	9.64	
	1/2 BASIN Q		AREA	.144		12.0000	2.08	
	1/2 BASIN Q 2		AREA	.144		12.0000	2.08	
	BASIN R		AREA	.336		12.3500	2.48	
	BASIN S		AREA	1.874		12.3500	13.80	
	BASIN U		AREA	.617		12.0000	8.90	
	JUNC 40		JCT	.288		12.0000	4.15	
	JUNC 80		JCT	20.620		12.7000	62.48	
	JUNC 90		JCT	.704		12.3500	5.19	
	OS-7		AREA	.368		12.3500	2.71	
Outfall	OUT 10		JCT	20.620		12.7000	62.48	
	POND 10	IN	POND	19.916		12.2500	147.51	
	POND 10	OUT	POND	19.916		12.8000	59.70	5927.13
	SUBAREA 290		AREA	15.799		12.3000	127.89	

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = COLO SPRGS

Storm Tag Name = Dev 5

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 2.7000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
ADDLINK 10	ADD	UN	.669		12.0000	9.64	1/2 BASIN L	
		DL	.669		12.0000	9.64		
		DN	19.916		12.2500	147.51	POND 10	IN
ADDLINK 110	ADD	UN	.144		12.0000	2.08	1/2 BASIN Q 2	
		DL	.144		12.0000	2.08		
		DN	.288		12.0000	4.15	JUNC 40	
ADDLINK 20	ADD	UN	.617		12.0000	8.90	BASIN U	
		DL	.617		12.0000	8.90		
		DN	19.916		12.2500	147.51	POND 10	IN
ADDLINK 30	ADD	UN	15.799		12.3000	127.89	SUBAREA 290	
		DL	15.799		12.3000	127.89		
		DN	19.916		12.2500	147.51	POND 10	IN
ADDLINK 300	ADD	UN	1.874		12.3500	13.80	BASIN S	
		DL	1.874		12.3500	13.80		
		DN	19.916		12.2500	147.51	POND 10	IN
ADDLINK 340	ADD	UN	.368		12.3500	2.71	OS-7	
		DL	.368		12.3500	2.71		
		DN	.704		12.3500	5.19	JUNC 90	
ADDLINK 360	ADD	UN	.336		12.3500	2.48	BASIN R	
		DL	.336		12.3500	2.48		
		DN	.704		12.3500	5.19	JUNC 90	

NETWORK SUMMARY -- LINKS

(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
ADDLINK 450	ADD	UN	.669		12.0000	9.64	1/2 BASIN L2	
		DL	.669		12.0000	9.64		
		DN	19.916		12.2500	147.51	POND 10	IN
PIPE 27	ADD	UN	.144		12.0000	2.08	1/2 BASIN Q	
		DL	.144		12.0000	2.08		
		DN	.288		12.0000	4.15	JUNC 40	
PIPE 28	ADD	UN	.288		12.0000	4.15	JUNC 40	
		DL	.288		12.0000	4.15		
		DN	19.916		12.2500	147.51	POND 10	IN
PIPE 29	PONDrt	UN	19.916		12.2500	147.51	POND 10	IN
PIPE 29			19.916		12.8000	59.70	POND 10	OUT
		DL	19.916		12.8000	59.70		
		DN	20.620		12.7000	62.48	JUNC 80	
PIPE 30	ADD	UN	.704		12.3500	5.19	JUNC 90	
		DL	.704		12.3500	5.19		
		DN	20.620		12.7000	62.48	JUNC 80	
PIPE 31	ADD	UN	20.620		12.7000	62.48	JUNC 80	
		DL	20.620		12.7000	62.48		
		DN	20.620		12.7000	62.48	OUT 10	

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = COLO SPRGS

Storm Tag Name = Dev100

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 4.4000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
	1/2 BASIN L		AREA	1.128		12.0000	15.87	
	1/2 BASIN L2		AREA	1.128		12.0000	15.87	
	1/2 BASIN Q		AREA	.243		12.0000	3.42	
	1/2 BASIN Q 2		AREA	.243		12.0000	3.42	
	BASIN R		AREA	.880		12.3000	7.23	
	BASIN S		AREA	4.907		12.3000	40.29	
	BASIN U		AREA	1.041		12.0000	14.65	
	JUNC 40		JCT	.486		12.0000	6.84	
	JUNC 80		JCT	51.908		12.5500	108.19	
	JUNC 90		JCT	1.844		12.3000	15.14	
	OS-7		AREA	.964		12.3000	7.91	
Outfall	OUT 10		JCT	51.908		12.5500	108.19	
	POND 10	IN	POND	50.065		12.2500	422.76	
	POND 10	OUT	POND	50.065		13.0000	101.55	5933.13
	SUBAREA 290		AREA	41.375		12.2500	371.79	

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = COLO SPRGS

Storm Tag Name = Dev100

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 4.4000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
ADDLINK 10	ADD	UN	1.128		12.0000	15.87	1/2 BASIN L	
		DL	1.128		12.0000	15.87		
		DN	50.065		12.2500	422.76	POND 10	IN
ADDLINK 110	ADD	UN	.243		12.0000	3.42	1/2 BASIN Q 2	
		DL	.243		12.0000	3.42		
		DN	.486		12.0000	6.84	JUNC 40	
ADDLINK 20	ADD	UN	1.041		12.0000	14.65	BASIN U	
		DL	1.041		12.0000	14.65		
		DN	50.065		12.2500	422.76	POND 10	IN
ADDLINK 30	ADD	UN	41.375		12.2500	371.79	SUBAREA 290	
		DL	41.375		12.2500	371.79		
		DN	50.065		12.2500	422.76	POND 10	IN
ADDLINK 300	ADD	UN	4.907		12.3000	40.29	BASIN S	
		DL	4.907		12.3000	40.29		
		DN	50.065		12.2500	422.76	POND 10	IN
ADDLINK 340	ADD	UN	.964		12.3000	7.91	OS-7	
		DL	.964		12.3000	7.91		
		DN	1.844		12.3000	15.14	JUNC 90	
ADDLINK 360	ADD	UN	.880		12.3000	7.23	BASIN R	
		DL	.880		12.3000	7.23		
		DN	1.844		12.3000	15.14	JUNC 90	

NETWORK SUMMARY -- LINKS

(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
ADDLINK 450	ADD	UN	1.128		12.0000	15.87	1/2 BASIN L2	
		DL	1.128		12.0000	15.87		
		DN	50.065		12.2500	422.76	POND 10	IN
PIPE 27	ADD	UN	.243		12.0000	3.42	1/2 BASIN Q	
		DL	.243		12.0000	3.42		
		DN	.486		12.0000	6.84	JUNC 40	
PIPE 28	ADD	UN	.486		12.0000	6.84	JUNC 40	
		DL	.486		12.0000	6.84		
		DN	50.065		12.2500	422.76	POND 10	IN
PIPE 29	PONDrt	UN	50.065		12.2500	422.76	POND 10	IN
PIPE 29			50.065		13.0000	101.55	POND 10	OUT
		DL	50.065		13.0000	101.55		
		DN	51.908		12.5500	108.19	JUNC 80	
PIPE 30	ADD	UN	1.844		12.3000	15.14	JUNC 90	
		DL	1.844		12.3000	15.14		
		DN	51.908		12.5500	108.19	JUNC 80	
PIPE 31	ADD	UN	51.908		12.5500	108.19	JUNC 80	
		DL	51.908		12.5500	108.19		
		DN	51.908		12.5500	108.19	OUT 10	

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Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
5923.00	-----	.0010	.0000	.000	.000
5924.00	-----	.9300	.9615	.320	.320
5926.00	-----	1.9000	4.1593	2.773	3.093
5928.00	-----	2.0800	5.9680	3.979	7.072
5930.00	-----	2.2500	6.4933	4.329	11.401
5932.00	-----	2.4400	7.0331	4.689	16.090
5934.00	-----	2.6300	7.6032	5.069	21.158
5936.00	-----	2.8200	8.1733	5.449	26.607
5938.00	-----	3.0300	8.7731	5.849	32.456

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

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REQUESTED POND WS ELEVATIONS:

Min. Elev.= 5923.00 ft
Increment = .50 ft
Max. Elev.= 5938.00 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Culvert-Circular	cv	--->	TW	5923.000	5938.000
TW SETUP, DS Channel					

OUTLET STRUCTURE INPUT DATA

Structure ID	=	cv	
Structure Type	=	Culvert-Circular	
No. Barrels	=	2	
Barrel Diameter	=	2.0000	ft
Upstream Invert	=	5923.00	ft
Dnstream Invert	=	5920.00	ft
Horiz. Length	=	100.00	ft
Barrel Length	=	100.05	ft
Barrel Slope	=	.03000	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.5000	(forward entrance loss)
Kb	=	.012411	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0078
Inlet Control M	=	2.0000
Inlet Control c	=	.02920
Inlet Control Y	=	.7400
T1 ratio (HW/D)	=	1.134
T2 ratio (HW/D)	=	1.206
Slope Factor	=	-.050

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control, interpolate between flows at T1 & T2...

At T1 Elev =	5925.27 ft	--->	Flow =	15.55	cfs
At T2 Elev =	5925.41 ft	--->	Flow =	17.77	cfs

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OUTLET STRUCTURE INPUT DATA

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 30
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

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Pond Surface Area Estimate

Pond Depth:	8.00	ft
Freeboard Depth:	2.00	ft
Total Pond Depth:	10.00	ft
Side Slope:	3.00	H:V
Volume up to Freeboard Elevation:	191.879	ac-ft
Volume From Freeboard to Top of Pond:	49.983	ac-ft
Total Pond Volume:	241.863	ac-ft
Top Pond Elevation:	6890.00	ft
Top Surface Area:	25.247	acres
Freeboard Elevation:	6888.00	ft
Freeboard Surface Area:	24.737	acres
Bottom Elevation:	6880.00	ft
Bottom Surface Area:	23.240	acres

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DETENTION STORAGE ESTIMATES -- Target Peak Outflow Rate

Return Events	Peak In (cfs)	Target (cfs)	Lower (ac-ft)	Linear (ac-ft)	Curvlinr (ac-ft)	Upper (ac-ft)	Total (ac-ft)
100	2846.628	2460.000	10.039	49.296	107.770	197.813	533.302
5	834.106	2.041	189.028	190.327	191.879	192.083	192.145

CALCULATION TIME RANGES

Return	Lower		Linear		Curvilinear		Upper		Total	
Events	From (hrs)	To (hrs)	From (hrs)	To (hrs)	From (hrs)	To (hrs)	From (hrs)	To (hrs)	From (hrs)	To (hrs)
100	12.52	13.01	11.80	13.01	3.40	13.01	3.40	13.01	3.40	27.35
5	9.08	26.00	5.25	26.00	5.12	26.00	5.15	26.00	5.15	27.30

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DRAINAGE MAPS