MASTER DEVELOPMENT DRAINAGE PLAN
FOR
TRAILRIDGE SOUTH AT NORTHGATE

J·R ENGINEERING
A Subsidiary of Westrian

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MASTER DEVELOPMENT DRAINAGE PLAN
FOR
TRAILRIDGE SOUTH AT NORTHGATE

May 2000
Revised September 2000
Revised January 2001

Prepared For:

PICOLAN, INC.
90 S. Cascade Avenue, Suite 1300
Colorado Springs, CO 80903
(719) 381-8441

Prepared By:

JR ENGINEERING
4310 ArrowsWest Drive
Colorado Springs, CO 80907
(719) 593-2593

Job No. 9128.10

MASTER DEVELOPMENT DRAINAGE PLAN FOR TRAILRIDGE SOUTH AT NORTHGATE

JR ENGINEERING
A Subsidiary of Merrick

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.

COLORADO — AARON BRADLEY EGBERT — 34208 — REGISTERED PROFESSIONAL ENGINEER

Aaron Egbert, Colorado P.E. No. 34208
For and On Behalf of JR Engineering, LLC

3-15-01
Date

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: Picolan, Inc.

By: _____
Steve Sharkey

Title: _____

Address: 90 S. Cascade Avenue, Suite 1300

Colorado Springs, CO 80903

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.

_____
City Engineer

March 16, 2001
Date

Conditions:

4310 ArrowsWest Drive, Colorado Springs, CO 80907
719-593-2593 • Fax: 719-528-6613 • www.jrengineering.com

MASTER DEVELOPMENT DRAINAGE PLAN
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APPENDIX

MASTER DEVELOPMENT DRAINAGE PLAN
FOR
TRAILRIDGE SOUTH AT NORTHGATE

EXECUTIVE SUMMARY

The previous drafts of this report proposed a storm drainage system which released historic rates at the historic discharge points as required by the approved Black Squirrel Drainage Basin Planning Study. After multiple discussions with Richard and Ann Leach (the downstream property owners) and City Engineering, this alternative design was prepared to address the Leach's concerns. The Leach's requested that the storm system divert as much storm water runoff as possible away from the historical discharge point (Design Point 11). Through a collaborative effort with City Engineering along with the Leach's cooperation and approval, this report details a storm drainage system that accomplishes their request. While the cost of these improvements is significantly higher than the previous solutions, Picolan is willing to construct this proposed system.

In brief summary, all developed on-site runoff will be directed to a public detention pond where the release rates will be a fraction of the historical runoff. This is accomplished by the combination of two components: 1) the pond capacity will be greatly oversized in order to release a smaller amount of runoff over a longer period of time; and 2) all the off-site pipe flows from east of Voyager Parkway, will now be piped in a 36" RCP south directly into Black Squirrel Creek. At the Leach's request, a small diversion ditch will be constructed on their property to intercept the flows west of Design Point 11 and route the flows into an existing ditch (located to the southwest) that empties onto pasture land.

In consideration of this proposed system, the Leach's have granted a 25' storm drainage easement along a portion of their east property line adjacent to Voyager Parkway so that the proposed 36" RCP can be constructed to Black Squirrel Creek.

PURPOSE

The purpose of this report is to estimate anticipated storm water runoff quantities, recommend specific solutions for on-site and off-site drainage impacts resulting from development, and identify necessary improvements to safely route storm water runoff to its historic path or adequate outfall facilities for Trailridge South at Northgate.

GENERAL DESCRIPTION

Trailridge South at Northgate is 73.746-acres consisting of three single-family filings, a multi-family and a commercial development to be constructed separately. Trailridge South at Northgate is located in Section 17, Township 12 South, Range 66 West of the Sixth Principal Meridian in the City of Colorado Springs, El Paso County, Colorado. More specifically, the site lies south of "Trailridge at Northgate Filing No.'s 1, 2 and 5," and west of "Liberty Heights Filing No. 1." The site is bounded on the north and east by Voyager Parkway and to the west and south by unplatted county land owned by Richard and Ann Leach. A majority of the south part of Trailridge South at Northgate lies within the Black Squirrel Drainage Basin and a portion of the north part lies within the Middle Tributary Basin. This proposed development is part of the Northgate Master Planned Community.

EXISTING DRAINAGE CONDITIONS

The soils within the site boundary consist of Cruckton (Soil Unit #21), Peyton (Soil Unit #67) and Crowfoot (Soil Unit #93) as outlined in the S.C.S. Soil Survey for El Paso County. These soils units lie within Hydrological Soil Group "B".

The existing topography consists of slopes ranging from 2% to 50%. Two separate ridges divide the site into three individual historic basins H-A, H-B and H-C, and five off-site basins east of the site discharge historically onto Trailridge South at Northgate. An existing temporary detention pond detains the off-site Basins OS-1, OS-2, and OS-3. The pond was designed to detain runoff from "Ramtron Drive" and "Ramtron Filing No. 1." The pond was upsized to accommodate the developed flows from "Liberty Heights Filing No. 1." In an analysis done by URS Consultants called "Liberty Heights Storm Water Outfall," the existing 4.5-acre Northgate

Detention Pond No. 1 has an inflow at $Q_5 = 84$ cfs and $Q_{100} = 176$ cfs with an outflow of $Q_5 = 24$ cfs and $Q_{100} = 77$ cfs as calculated by URS.

A description of the three on-site historic basins and five historic off-site basins follows:

The north most section of the site comprises the 13.1-acres of historic basin H-A. Runoff ($Q_5 = 10$ cfs, $Q_{100} = 23$ cfs) sheet flows in a northwest direction to an existing 30" R.C.P. storm sewer stub and taken into the Voyager storm drain system and conveyed to Northgate Detention Pond No. 1.

Off-site Basin OS-1 consists of surface flow ($Q_5 = 19$ cfs, $Q_{100} = 37$ cfs) and pipe flow ($Q_5 = 67$ cfs, $Q_{100} = 111$ cfs) from several different sites, "Trailridge Filing No.'s 2 and 4," "Liberty Heights Filing No. 1" and "Ramtron Filing No. 1." Equivalent CA values were calculated (see appendix) from the above mentioned filings final drainage reports and used to calculate the runoff. The runoff is conveyed by a 36" R.C.P. and curb and gutter to a temporary swale located west of Ramtron Drive's north intersection with Voyager Parkway. The swale then conveys the runoff to the above mentioned temporary detention pond.

Basin OS-2's 1.1-acres consists of the east half of Voyager Parkway from Ramtron Drive's north intersection north to a high point. Runoff ($Q_5 = 5$ cfs, $Q_{100} = 9$ cfs) sheet flow west across the super-elevated pavement to the median where it is directed along with surface flow from Basin OS-1 to the aforementioned swale. A 5' at grade inlet located along the median curb picks up 1 cfs in both the 5 and 100-year storm and combines it with the pipe flow located in Voyager Parkway. A grated inlet located along the northeast curb return at Voyager Parkway and Ramtron Drive also picks up some nuisance flows ($Q_5 = 1$ cfs, $Q_{100} = 1$ cfs) that are discharged into the pipe system. The remaining runoff sheet flows to the existing temporary pond.

The 1.4-acres that make up Basin OS-3 is comprised of the west half street section mirroring Basin OS-2. Runoff ($Q_5 = 6$ cfs, $Q_{100} = 11$ cfs) sheet flows to the west curb of Voyager Parkway and is directed south to the previously mentioned swale and into the existing Northgate Detention Pond No. 1.

The combined pipe flow (Design Point 3) reaching the swale is $Q_5 = 67$ cfs, $Q_{100} = 111$ cfs. The surface runoff arriving to the same point (Design Point 4) is $Q_5 = 25$ cfs and $Q_{100} = 47$ cfs.

Historic Basin H-B's 45.8-acres consists of natural vegetation. Runoff ($Q_5 = 28$ cfs, $Q_{100} = 65$ cfs) sheet flows south to an existing channel that directs the water west along with the discharge from the pond. Per the "Northgate Master Development Drainage Plan," the allowable release rate is $Q_5 = 49$ cfs and $Q_{100} = 108$ cfs.

Basin OS-4, 1.2-acres, consists of the east half of Voyager Parkway street section from Ramtron Drive north to Ramtron Drive south. Runoff ($Q_5 = 5$ cfs, $Q_{100} = 10$ cfs) sheet flows to the east curb where it is directed south. A 2' grated inlet was placed at the curb return at Ramtron Drive south to catch nuisance flows. The capacity of the inlet was calculated (see appendix) to be $Q_5 = 5$ cfs and $Q_{100} = 9$ cfs with a ponding depth of .67'.

Basin OS-5's 1.1 acres is the mirrored image of Basin OS-4. Runoff ($Q_5 = 5$ cfs, $Q_{100} = 9$ cfs) also sheet flows to the east curb of the median due to the road being super-elevated. The curb directs the flow to a 2' grated inlet. The capacity of the grated inlet is the same ($Q_5 = 5$ cfs, $Q_{100} = 9$ cfs) as the grated inlet in Basin OS-4. The combined flow ($Q_5 = 10$ cfs, $Q_{100} = 17$ cfs) of the two grated inlets is then discharged onto Basin H-C via an 18" R.C.P. (Design Point 6).

Historic Basin H-C's 14.8-acres consists of a strip of land located in the south part of the site. Runoff ($Q_5 = 9$ cfs, $Q_{100} = 21$ cfs) sheet flows in a southwest direction along with the discharge from Design Point 6 in a southwest direction off the site onto unplatted county land to Design Point 10 ($Q_5 = 14$ cfs, $Q_{100} = 29$ cfs).

PROPOSED DRAINAGE CONDITIONS

This site has been previously studied in the "Northgate Master Development Plan" and "Black Squirrel Creek Drainage Basin Planning Study." These reports discuss in detail the historical drainage characteristics downstream of this site. Please refer to those reports for specific findings. These two reports recommend site specific improvements to release developed flows downstream at historic rates. The following details how these recommendations are followed for

the ten on-site basins, five off-site basins, and the public regional detention facility to be built per the MDDP for this area. Major outfall systems for each of the three separate zoned sites were sized to handle the total flows from on-site and off-site basins. Each individual site will need to have on-site drainage systems designed at the time of development to accommodate street capacity, site specific grading and other concerns.

Basin A's 12.2-acres makes up the northwest corner of the site and is composed of single-family units with a small amount of open space. Runoff (Q_5 = 23 cfs, Q_{100} = 45 cfs) sheet flows from the yards down 2% side and rear yard swales to the street sections where curb and gutter direct the flows northwest to Design Point 1 (Q_5 = 23 cfs, Q_{100} = 45 cfs), an existing 30" R.C.P. stub. Per "Addendum No. 1 to Northgate Filing No. 5 Voyager and Black Squirrel Parkways Phase 2B Preliminary/Final Drainage Report." The 30" R.C.P. was sized to handle a Q_5 = 29 cfs and Q_{100} = 56 cfs.

Basin B's 0.1-acres consists of a small piece of road section and lots near an entrance to Voyager Parkway. Runoff (Q_5 = 1 cfs, Q_{100} = 1 cfs) sheet flows to Voyager Parkway where it is directed northwest and picked up in a 12' inlet. The combined flows (Q_5 = 23 cfs, Q_{100} = 45 cfs) of Basin A and Basin B (Design Point 2) entering the existing Voyager Parkway system are then carried via a 36" R.C.P. to the existing Northgate Detention Pond No. 1. The Northgate Detention Pond No. 1 was designed to detain these developed flows and release at historic rates.

Basin C1's 5.2-acres is comprised of street sections and single-family development. Runoff (Q_5 = 7 cfs, Q_{100} = 13 cfs) is directed by 2% sideyard swales to the street section. Curb and gutter direct the flows west in Ramtron Drive to Design Point 5A where the combined runoff (Q_5 = 29 cfs, Q_{100} = 55 cfs) of Basins C1 and the surface flow from Basins OS-1 through OS-3 (DP-4) are picked up in an inlet and directed to the proposed public detention pond via a public 30" RCP storm drain.

The 17.9-acres of Basin C2 is comprised of single-family development. Runoff (Q_5 = 36 cfs, Q_{100} = 70 cfs) sheet flows to sideyard swales where it is directed to street sections. Curb and gutter route flow to several low points where an inlet system will capture the flow. On-site storm

systems to be designed at the time of platting will route the flow southwest to the pond. The runoff is directed by a public 30" RCP storm drain to the proposed public detention pond.

Basin C3's 3.5-acres also consists of single-family development. As with the two previously mentioned basins' runoff (Q_5 = 7 cfs, Q_{100} = 15 cfs) is routed by sideyard swales to the street section, where curb and gutter direct the flow to a low point (Design Point 5C). A public 18" RCP storm drain will carry the flow to the proposed public detention pond.

The pipe flow (Q_5 = 67 cfs, Q_{100} = 111 cfs) from off-site Basin OS-1 will be routed south via a 36" RCP storm drain. The storm drain will run parallel to the outside westerly right-of-way of Voyager Parkway. The runoff will combine with captured runoff from Basins OS-4 and OS-5 at Design Point 6. This combined runoff (Q_5 = 69 cfs, Q_{100} = 114 cfs) will be directed south via a public 36" RCP to the existing box culvert running under Voyager Parkway at Black Squirrel Creek.

Basin D's 5.2-acres encompasses the whole commercial property in the southeast corner of the site. Runoff (Q_5 = 17 cfs, Q_{100} = 31 cfs) sheet flows to the west. An on-site storm sewer system will be required to pick up the flow and carry it west to Design Point 7. A private 24" R.C.P. will need to convey the flow west through the multi-family site to the proposed public detention pond.

The multi-family site comprises the 24.4-acres of Basin E. Runoff (Q_5 = 48 cfs, Q_{100} = 95 cfs) heads in a northwesterly direction to the pond. A private storm drain system will need to be designed at the time of development to safely route the water to Design Point 8 (Q_5 = 63 cfs, Q_{100} = 121 cfs) where the combined flows of Basins D and E are directed into the public detention facility via a 36" RCP.

Basin F's 6.8-acres is comprised of the public pond surface area, rear lots and some open space. Runoff (Q_5 = 9 cfs, Q_{100} = 19 cfs) is captured in the pond where it combines at Design Point 9 (Q_5 = 115 cfs, Q_{100} = 218 cfs) with the flows from Design Point 5A, 5B, 5C, and 8.

Per the "Northgate Master Development Drainage Plan," a public regional detention facility is to be constructed at the west boundary. The allowable release rate per the MDDP is Q_5 = 49 cfs and Q_{100} = 108 cfs. For reasons already stated, JR Engineering is proposing to intercept the off-site pipe flows (Q_5 = 67 cfs, Q_{100} = 111 cfs) at Design Point 3 from the east and route them south via a 36" RCP paralleling Voyager Parkway into the box culvert which is Black Squirrel Creek. This diversion will allow us to detain the developed runoff (Q_5 = 116 cfs, Q_{100} = 221 cfs) in the public pond to minimal release rates. A model of the water shed and public pond was setup in Pond Pack. The public pond is to have 11.60 acre-foot of storage. The outlet structure consists of an 4'x4' inlet box. The box has three outlet systems. The first stage is from the bottom of the pond (6724.50 up to elevation 6728.50) to the 12" opening (second stage), the capacity of the pond is 1.82 acre-foot of storage (from the 2" opening) which will detain slightly less than a 2-year storm event. With the release rate of 4 cfs out the 2" opening and 12" opening, the model calculates it will take over 100 hours to empty this volume through the 2" opening. The second and third stages are from elevation 6728.50 to 6738.00 (the emergency spillway elevation) the total capacity of the pond is 11.60 acre-foot of storage which will contain an entire 100-year storm event with the release rate of 13 cfs through the 2" and 12" openings. The model calculates it will take less than 24 hours to get the water level below 6728.50 which is the City's criteria. A 23'x2' weir will act as an emergency spillway routing the complete developed 100-year event (Q_{100} = 221 cfs) in case of complete failure in the outlet structures.

Per the 5-year model setup in Pond Pack the release rate is 7 cfs in a 5-year event with a total peak storage of 4.51 acre-foot and a peak elevation of 6731.12. As previously detailed 100-year event the model calculated a 100-year release rate of 13 cfs with peak storage at 8.40 acre-foot and a peak elevation of 6735.51. The release rates (Q_5 = 7 cfs, Q_{100} = 13 cfs) are far below the historic rates (Q_5 = 49 cfs, Q_{100} = 108 cfs). With the diversion of the off-site flow (Q_5 = 67 cfs, Q_{100} = 111 cfs) south directly into Black Squirrel Creek the peak developed peak flows are within reason of the historic flows reaching Black Squirrel Creek.

Basin G's 0.2-acres consists of open space and rear yards in the very southeast corner. Runoff (Q_5 = 1 cfs, Q_{100} = 1 cfs) sheet flows south in its natural path.

Basin H's 0.2-acres consists of open space in the very southeast corner. Runoff (Q_5 = 1 cfs, Q_{100} = 1 cfs) also sheet flows south in its natural path. The combined runoff (Q_5 = 1 cfs, Q_{100} = 1 cfs) of Basins G and H sheet flow south undetained and are in conformance with the allowable release rate of (Q_5 = 8 cfs, Q_{100} = 20 cfs), as calculated in "North Creek Master Development Drainage Plan."

HYDROLOGIC CALCULATIONS

Hydrologic calculations were performed using the City of Colorado Springs/El Paso County Drainage Criteria Manual, as revised in November 1991 and 1994. The Rational Method was used to estimate storm water runoff anticipated from design storms with 5-year and 100-year recurrence intervals. Haestad's Pond Pack version 7.0 was used to site the pond.

FLOODPLAIN STATEMENT

No portion of this site is within a designated F.E.M.A. floodplain as determined by Flood Insurance Rate Map Community Panel Numbers 08041C0295, effective March 17, 1997. See the Appendix for a Floodplain Information Map, which shows the location of the site of the proposed Trailridge South at Northgate.

CONSTRUCTION COST OPINION

Public and Private Drainage Facilities

There are no specific drainage facilities designed for this Concept Plan. Assurances for drainage facilities should be posted for specific developments in accordance with the Final Drainage Report for that development.

DRAINAGE AND BRIDGE FEES

This area lies within Black Squirrel Creek and Middle Tributary Drainage Basins boundaries. When parcels within the Concept Plan are platted then the fees and/or credits are due prior to plat recordation. Prior to issuance of building permits, appropriate storm system assurances will need to be posted.

SUMMARY

On-site developed flows from Trailridge South at Northgate's northwest corner of the site will be routed to the Voyager Parkway storm drain system within the recommended runoff quantities. The existing detention pond located in the middle of the site will be removed and replaced with a new public regional detention facility. All the off-site pipe flow along with the runoff captured by the two (2) neenah inlets in Basin OS-4 and OS-5 will now be routed south directly into Black Squirrel Creek. All developed on-site runoff will be directed to a public detention facility where the release rates will be much smaller than the historical runoff to help minimize downstream disturbance.

At the time of development, final drainage calculations for each individual site will need to be calculated and this report will need to be followed.

PREPARED BY:

JR Engineering

Quentin N. Armijo, E.I.
Project Engineer

le:912810/MDDP

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. "Black Squirrel Creek Drainage Basin Planning Study," prepared by URS Consultants, January 1985.

4. "Northgate Master Development Drainage Plan," prepared by URS Consultants, August 1989.

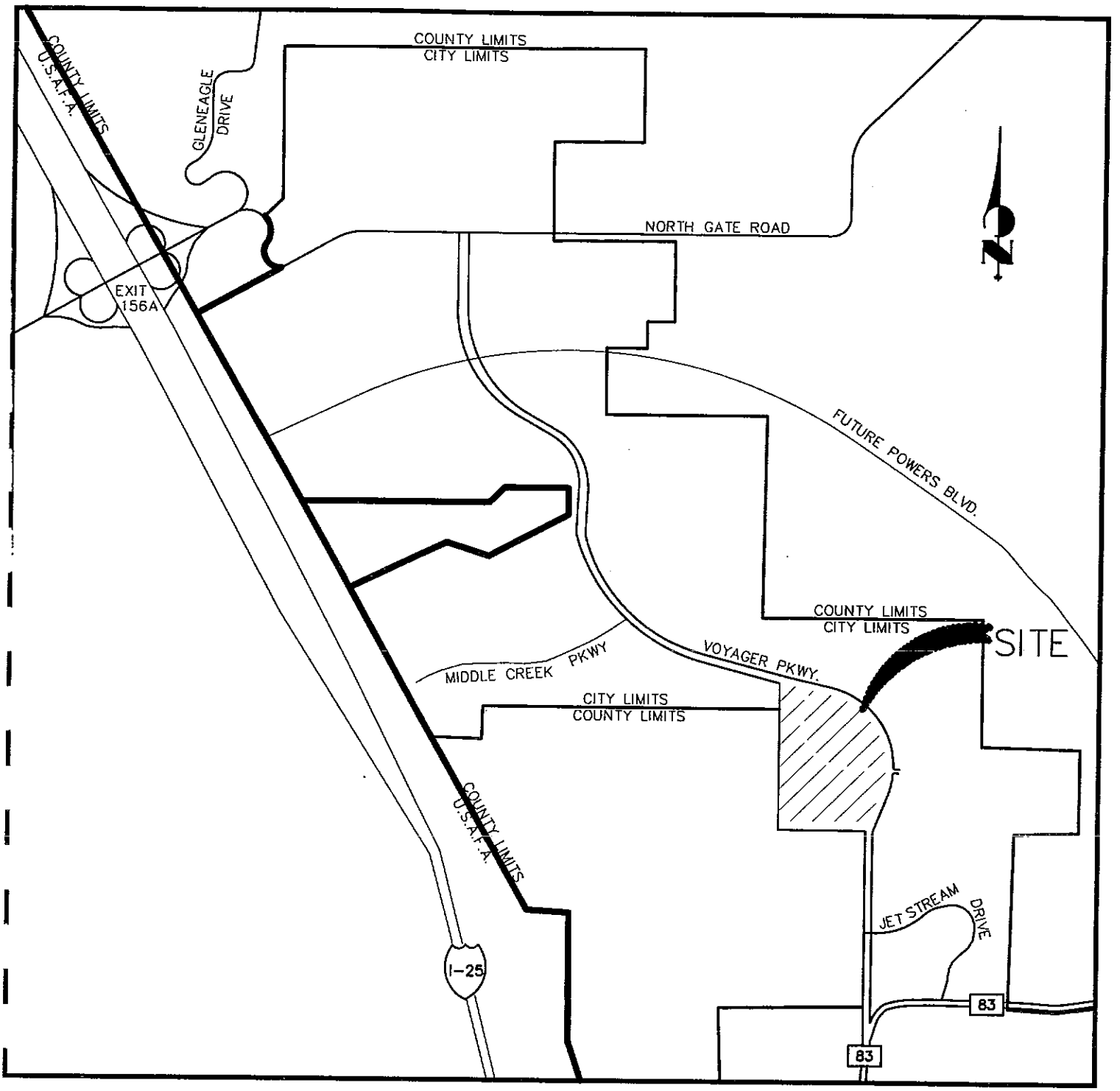
5. "Addendum No. 1 to Northgate Filing No. 5 Voyager and Black Squirrel Parkways Phase 2B Preliminary/Final Drainage Report," prepared by JR Engineering, November 1999.

6. "Northgate Filing No. 3 Addendum and Ramtron Filing No. 1 Preliminary and Final Drainage Report," prepared by URS Consultants, August 1989.

7. "Liberty Heights Filing No. 1 Preliminary/Final Drainage Report and Erosion Control Plan," prepared by JR Engineering, October 1989.

APPENDIX

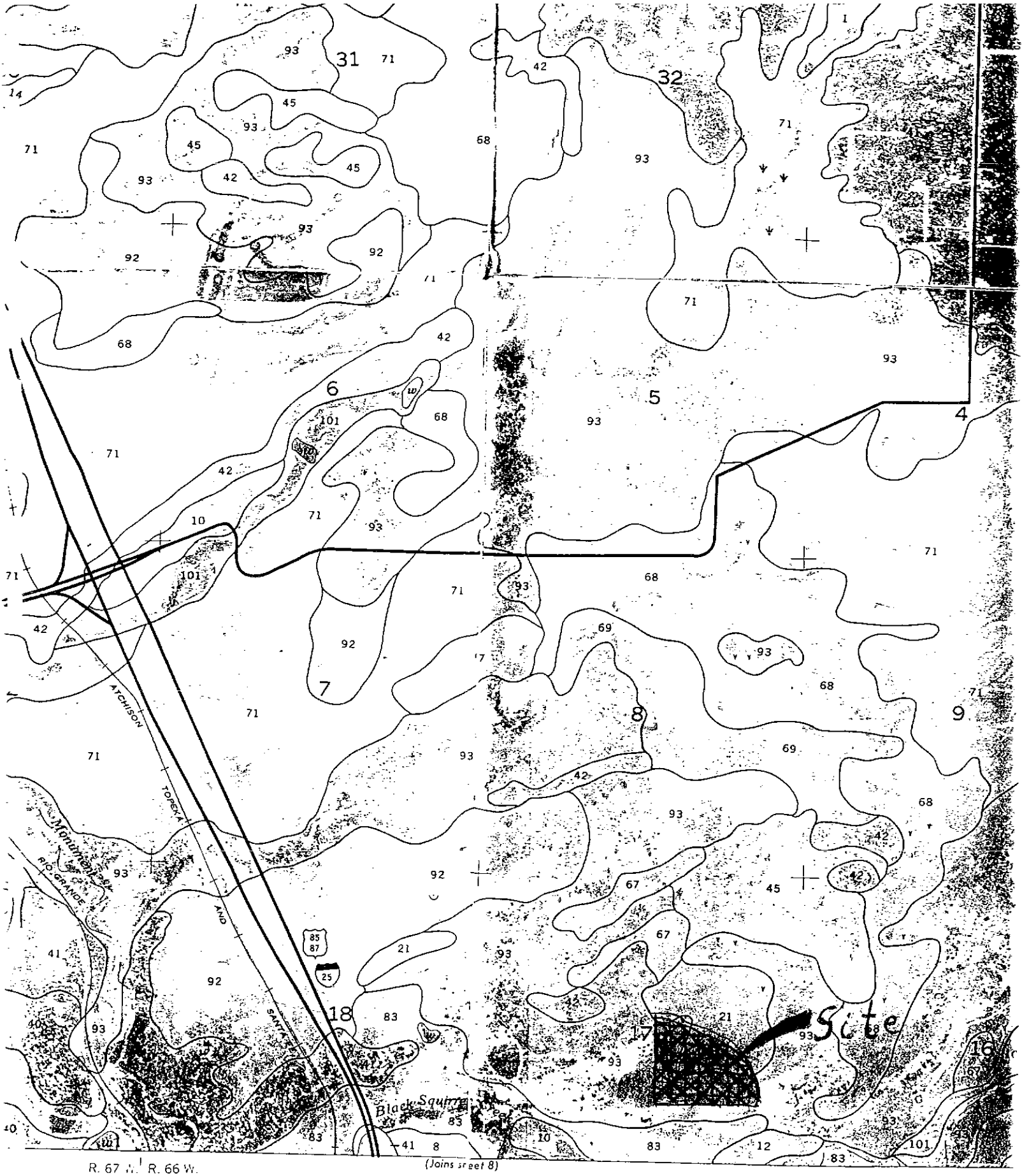
VICINITY MAP



VICINITY MAP

N.T.S.

S.C.S. SOIL MAP



EL PASO COUNTY AREA, COLORADO NO. 1

F.E.M.A. FLOODPLAIN MAP

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 295 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0295	F
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0295	F

MAP NUMBER
08041C0295 F

EFFECTIVE DATE:
MARCH 17, 1997

Federal Emergency Management Agency

ZONE X

7

8

EL PASO COUNTY
UNINCORPORATED AREAS
080059

CITY OF COLORADO SPRINGS
EL PASO COUNTY

CORPORATE LIMITS

CITY OF COLORADO SPRINGS
080060

CORPORATE LIMITS

ZONE X

18

EL PASO COUNTY
UNINCORPORATED AREAS
080059

17

EL PASO COUNTY
CITY OF COLORADO SPRINGS

Black Squirrel Creek

ZONE A

ZONE X

ZONE X

39°00'00"

104°48'45"

JOINS PANEL 0506

Site

6

HYDROLOGIC CALCULATIONS

TRAILRIDGE SOUTH AT NORTHGATE
MDDP
(Area Runoff Coefficient Summary)

		STREETS / DEVELOPED			*OVERLAND / UNDEVELOPED*			*WEIGHTED*	
BASIN	**TOTAL AREA** *(Acres)*	**AREA** *(Acres)*	C_5	C_{100}	**AREA** *(Acres)*	C_5	C_{100}	C_5	C_{100}
A	12.2	11.2	0.60	0.70	1.0	0.25	0.35	*0.57*	*0.67*
B	0.1	0.1	0.90	0.95	0.0	0.25	0.35	*0.90*	*0.95*
C1	3.4	3.4	0.60	0.70	0.0	0.25	0.35	*0.60*	*0.70*
C2	17.9	17.9	0.60	0.70	0.0	0.25	0.35	*0.60*	*0.70*
C3	3.5	3.5	0.60	0.70	0.0	0.25	0.35	*0.60*	*0.70*
D	5.2	5.2	0.75	0.80	0.0	0.25	0.35	*0.75*	*0.80*
E	24.4	23.7	0.60	0.70	0.7	0.25	0.35	*0.59*	*0.69*
F	6.8	2.0	0.60	0.70	4.8	0.25	0.35	*0.35*	*0.45*
G	0.2	0.0	0.60	0.70	0.2	0.25	0.35	*0.25*	*0.35*
H	0.2	0.0	0.60	0.70	0.2	0.25	0.35	*0.23*	*0.33*
*OS-1**									
OS-2	1.1	1.1	0.90	0.95	0.0	0.25	0.35	*0.90*	*0.95*
OS-3	1.4	1.4	0.90	0.95	0.0	0.25	0.35	*0.90*	*0.95*
OS-4	1.2	1.2	0.90	0.95	0.0	0.25	0.35	*0.90*	*0.95*
OS-5	1.1	1.1	0.90	0.95	0.0	0.25	0.35	*0.90*	*0.95*

* INFORMATION BASED ON EQUIVALENT CA VALUES PER "ADDENDUM NO. 1 TO NORTHGATE FILING NO. 5 VOYAGER AND BLACK SQUIRRELL PARKWAYS PHASE 2B", "LIBERTY HEIGHTS FILING NO. 1 PRELIMINARY/FINAL DRAINAGE REPORT", "NORTHGATE MASTER DEVELOPMENT DRAINAGE PLAN' AND "`NORTHGATE FILING NO. 3 ADDENDUM AND RAMTRON FILING NO. 1 PRELIMINARY AND FINAL DRAINAGE REPORT." SEE OFFSITE BASIN OS-1 PIPE AND SURFACE FLOW SHEET

Calculated by: QNA
Date: 1/31/01
Checked by: _____

TRAILRIDGE SOUTH AT NORTHGATE
MDDP
(Area Drainage Summary)

		WEIGHTED		*OVERLAND*				*STREET / CHANNEL FLOW*				T_t	*INTENSITY*		*TOTAL FLOWS*	
BASIN	AREA TOTAL *(Acres)*	C_5	C_{100}	C_5	Length *(ft)*	Height *(ft)*	T_C *(min)*	Length *(ft)*	Slope *(%)*	Velocity *(fps)*	T_t *(min)*	TOTAL *(min)*	I_5 *(in/hr)*	I_{100} *(in/hr)*	Q_5 *(c.f.s.)*	Q_{100} *(c.f.s.)*
		* For Calcs See Runoff Summary														
A	12.2	0.57	0.67	0.25	130	2.6	14.4	830	1.9%	4.9	2.8	17.3	3.3	5.5	*23*	*45*
B	0.1	0.90	0.95	0.25	6	0.1	3.1	100	2.0%	4.9	0.3	5.0	5.0	9.1	*1*	*1*
C1	3.4	0.60	0.70	0.25	120	2.4	13.9	1010	5.7%	8.4	2.0	15.9	3.4	5.7	*7*	*13*
C2	17.9	0.60	0.70	0.25	120	2.4	13.9	700	1.4%	4.2	2.8	16.6	3.3	5.6	*36*	*70*
C3	3.5	0.60	0.70	0.25	100	2.0	12.6	610	1.8%	4.7	2.2	14.8	3.5	5.9	*7*	*15*
D	5.2	0.75	0.80	0.25	100	16.0	6.4	690	2.0%	4.9	2.3	8.7	4.3	7.5	*17*	*31*
E	24.4	0.59	0.69	0.25	170	9.0	12.0	1630	3.3%	6.4	4.3	16.2	3.4	5.7	*48*	*95*

TRAILRIDGE SOUTH AT NORTHGATE
MDDP
(Area Drainage Summary)

		WEIGHTED		*OVERLAND*				*STREET / CHANNEL FLOW*				T_t	*INTENSITY*		*TOTAL FLOWS*	
BASIN	AREA TOTAL *(Acres)*	C_5	C_{100}	C_5	Length *(ft)*	Height *(ft)*	T_c *(min)*	Length *(ft)*	Slope *(%)*	Velocity *(fps)*	T_t *(min)*	TOTAL *(min)*	I_5 *(in/hr)*	I_{100} *(in/hr)*	Q_5 *(c.f.s.)*	Q_{100} *(c.f.s.)*
		* For Calcs See Runoff Summary														
F	6.8	0.35	0.45	0.25	215	13.0	12.9					12.9	3.7	6.3	*9*	*19*
G	0.2	0.25	0.35	0.25	50	42.0	2.6					5.0	5.0	9.1	*1*	*1*
H	0.2	0.23	0.33	0.25	100	12	7.0					7.0	4.6	8.1	*1*	*1*
*OS-1**								840	3.0%	6.1	2.3	26.0 **28.3**	2.7 2.6	4.4 4.2	*82*	*148*
OS-2	1.1	0.90	0.95	0.25	10	0.2	4.0	835	5.6%	8.3	1.7	5.7	4.8	8.7	*5*	*9*
OS-3	1.4	0.90	0.95	0.25	10	0.2	4.0	790	5.6%	8.3	1.6	5.6	4.9	8.8	*6*	*11*
OS-4	1.2	0.90	0.95	0.25	10	0.2	4.0	830	5.6%	8.3	1.7	5.7	4.8	8.7	*5*	*10*
OS-5	1.1	0.90	0.95	0.25	10	0.2	4.0	790	5.6%	8.3	1.6	5.6	4.9	8.8	*5*	*9*

* INFORMATION BASED ON EQUIVALENT CA VALUES PER "ADDENDUM NO. 1 TO NORTHGATE FILING NO. 5 VOYAGER AND BLACK SQUIRRELL PARKWAYS PHASE 2B", "LIBERTY HEIGHTS FILING NO. 1 PRELIMINARY/FINAL DRAINAGE REPORT", "NORTHGATE MASTER DEVELOPMENT DRAINAGE PLAN", AND "'NORTHGATE FILING NO. 3 ADDENDUM AND RAMTRON FILING NO. 1 PRELIMINARY AND FINAL DRAINAGE REPORT." SEE OFFSITE BASIN OS-1 PIPE AND SURFACE FLOW SHEET

Calculated by: QNA
Date: 1/31/01
Checked by: _____

TRAILRIDGE SOUTH AT NORTHGATE
MDDP
(Surface Routing Summary)

Design Point(s)	*Contributing Basins*	*Equivalent* CA_5	*Equivalent* CA_{100}	*Maximum* T_C	*Intensity*		*Flow*	
					I_5	I_{100}	Q_5	Q_{100}
1	A	6.97	8.19	17.3	3.3	5.5	*23*	*45*
2	A & B	7.03	8.25	17.3	3.3	5.5	*23*	*45*
3	OS-1, OS-2, & OS-3 PIPE FLOW	24.88	25.20	26.0	2.7	4.4	*67*	*111*
4	OS-1, OS-2, & OS-3 SURFACE FLOW	9.46	10.66	26.0	2.7	4.4	*25*	*47*
5A	C1, OS-1, OS-2, & OS-3 SURFACE FLOW	11.47	13.01	28.3	2.6	4.2	*29*	*55*
5B	C2	10.76	12.56	16.6	3.3	5.6	*36*	*70*
5C	C3	2.12	2.47	14.8	3.5	5.9	*7*	*15*
*6**	OS-4, OS-5, OS-1, OS-2, & OS-3 PIPE FLOW	26.94	27.15	28.3	2.6	4.2	*69*	*114*
7	D	3.90	4.16	8.7	4.3	7.5	*17*	*31*
8	D & E	18.28	20.98	16.2	3.4	5.7	*61*	*119*
9	C1, C2, C3, D, E, F, & OS-1THRU OS-3 SURFACE FLOW	45.01	52.08	28.3	2.6	4.2	*115*	*218*
10	G & H	0.09	0.13	7.0	4.6	8.1	*1*	*1*

* DESIGN POINT 6's BASINS OS-4 AND OS-5 ARE BASED ON THE CAPACITY OF THE TWO NEENAH INLETS IN VOYAGER PARKWAY (SEE NEENAH INLET CAPACITY CALCS. IN APPENDIX).

Calculated by: QNA
Date: 1/31/01
Checked by: _____

TRAILRIDGE SOUTH AT NORTHGATE
MDDP
(Area Runoff Coefficient Summary Historic)

BASIN	TOTAL AREA (Acres)	STREETS / DEVELOPED			OVERLAND / UNDEVELOPED			WEIGHTED	
		AREA (Acres)	C_5	C_{100}	AREA (Acres)	C_5	C_{100}	C_5	C_{100}
H-A	13.1	0.0	0.60	0.70	13.1	0.25	0.35	***0.25***	***0.35***
H-B	45.8	0.0	0.60	0.70	45.8	0.25	0.35	***0.25***	***0.35***
H-C	14.8	0.0	0.60	0.70	14.8	0.25	0.35	***0.25***	***0.35***
*OS-1**									
OS-2	1.1	1.1	0.90	0.95	0.0	0.25	0.35	***0.90***	***0.95***
OS-3	1.4	1.4	0.90	0.95	0.0	0.25	0.35	***0.90***	***0.95***
OS-4	1.2	1.2	0.90	0.95	0.0	0.25	0.35	***0.90***	***0.95***
OS-5	1.1	1.1	0.90	0.95	0.0	0.25	0.35	***0.90***	***0.95***

* INFORMATION BASED ON EQUIVALENT CA VALUES PER "ADDENDUM NO. 1 TO NORTHGATE FILING NO. 5 VOYAGER AND BLACK SQUIRRELL PARKWAYS PHASE 2B", "LIBERTY HEIGHTS FILING NO. 1 PRELIMINARY/FINAL DRAINAGE REPORT", "NORTHGATE MASTER DEVELOPMENT DRAINAGE PLAI AND "'NORTHGATE FILING NO. 3 ADDENDUM AND RAMTRON FILING NO. 1 PRELIMINARY AND FINAL DRAINAGE REPORT." SEE OFFSITE BASIN OS-1 PIPE AND SURFACE FLOW SHEET

Calculated by: QNA
Date: 1/31/01
Checked by: _____

TRAILRIDGE SOUTH AT NORTHGATE
MDDP
(Area Runoff Coefficient Summary)

		STREETS / DEVELOPED			*OVERLAND / UNDEVELOPED*			*WEIGHTED*	
BASIN	**TOTAL AREA** *(Acres)*	**AREA** *(Acres)*	C_5	C_{100}	**AREA** *(Acres)*	C_5	C_{100}	C_5	C_{100}
A	12.2	11.2	0.60	0.70	1.0	0.25	0.35	*0.57*	*0.67*
B	0.1	0.1	0.90	0.95	0.0	0.25	0.35	*0.90*	*0.95*
C1	3.4	3.4	0.60	0.70	0.0	0.25	0.35	*0.60*	*0.70*
C2	17.9	17.9	0.60	0.70	0.0	0.25	0.35	*0.60*	*0.70*
C3	3.5	3.5	0.60	0.70	0.0	0.25	0.35	*0.60*	*0.70*
D	5.2	5.2	0.75	0.80	0.0	0.25	0.35	*0.75*	*0.80*
E	25.0	24.3	0.60	0.70	0.7	0.25	0.35	*0.59*	*0.69*
F	7.0	2.2	0.60	0.70	4.8	0.25	0.35	*0.36*	*0.46*
G	0.2	0.0	0.60	0.70	0.2	0.25	0.35	*0.25*	*0.35*
H	0.2	0.0	0.60	0.70	0.2	0.25	0.35	*0.23*	*0.33*
*OS-1**									
OS-2	1.1	1.1	0.90	0.95	0.0	0.25	0.35	*0.90*	*0.95*
OS-3	1.4	1.4	0.90	0.95	0.0	0.25	0.35	*0.90*	*0.95*
OS-4	1.2	1.2	0.90	0.95	0.0	0.25	0.35	*0.90*	*0.95*
OS-5	1.1	1.1	0.90	0.95	0.0	0.25	0.35	*0.90*	*0.95*

* INFORMATION BASED ON EQUIVALENT CA VALUES PER "ADDENDUM NO. 1 TO NORTHGATE FILING NO. 5 VOYAGER AND BLACK SQUIRRELL PARKWAYS PHASE 2B", "LIBERTY HEIGHTS FILING NO. 1 PRELIMINARY/FINAL DRAINAGE REPORT", "NORTHGATE MASTER DEVELOPMENT DRAINAGE PLAN" AND "'NORTHGATE FILING NO. 3 ADDENDUM AND RAMTRON FILING NO. 1 PRELIMINARY AND FINAL DRAINAGE REPORT." SEE OFFSITE BASIN OS-1 PIPE AND SURFACE FLOW SHEET

Calculated by: QNA
Date: 1/31/01
Checked by: _____

TRAILRIDGE SOUTH AT NORTHGATE
MDDP
(OFFSITE BASIN OS-1 PIPE AND SURFACE FLOW)

TOTAL

	C_5	C_{100}	A	CA_5	CA_{100}	TC *(min)*	I_5 *(in/hr)*	I_{100} *(in/hr)*	Q_5 *(c.f.s.)*	Q_{100} *(c.f.s.)*
TRAIL RIDGE PIPE FLOW	0.43	0.57	10.5	4.5	3.8	18.9	3.1	5.2	14	20
LIBERTTY HEIGHTS NORTH RUNOFF	0.62	0.69	24.5	15.2	16.9	26	2.7	4.4	41	74
LIBERTTY HEIGHTS SOUTH RUNOFF	0.56	0.67	10.9	6.1	7.3	13	3.7	6.3	22	46
RAMTRON DRIVE NORTH CURB	0.56	0.63	4.1	2.3	2.6	16	3.4	5.7	8	15
RAMTRON DRIVE SOUTH CURB	0.73	0.88	3.5	2.6	3.1	8	4.4	7.7	11	24
TOTALS			53.5	30.7	33.6	26	2.7	4.4	**82**	**148**

PIPE

	C_5	C_{100}	A	Q_5 *(c.f.s.)*	Q_{100} *(c.f.s.)*	TC *(min)*	I_5 *(in/hr)*	I_{100} *(in/hr)*	CA_5	CA_{100}
TRAIL RIDGE PIPE FLOW	0.43	0.57	10.5	14	20	19	3.1	5.2	4.5	3.8
LIBERTTY HEIGHTS NORTH RUNOFF	0.62	0.69	24.5	35	64	26	2.7	4.4	13.3	14.6
LIBERTTY HEIGHTS SOUTH RUNOFF	0.56	0.67	10.9	12	23	13	3.7	6.3	3.4	3.6
5' INLET ON MEDIAN AT RAMTRON N.				1	1	6	4.8	8.7	0.2	0.1
RAMTRON DRIVE NORTH CURB	0.56	0.63	4.1	5	8	16	3.4	5.7	1.6	1.3
NEENAH INLET NO. 1 RAMTRON N.				1	1	16	3.4	5.7	0.1	0.1
RAMTRON DRIVE SOUTH CURB	0.73	0.88	3.5	8	13	8	4.4	7.7	1.8	1.6
TOTALS						26	2.7	4.4	24.9	25.2

$Q_5 = 24.9 * 2.7 =$ **67** *(c.f.s.)*

$Q_{100} = 25.2 * 4.4 =$ **111** *(c.f.s.)*

OVERLAND

	C_5	C_{100}	A	Q_5 *(c.f.s.)*	Q_{100} *(c.f.s.)*	TC *(min)*	I_5 *(in/hr)*	I_{100} *(in/hr)*	CA_5	CA_{100}
TRAIL RIDGE PIPE FLOW	0.43	0.57	10.5	0	0	19	3.1	5.2	0.0	0.0
LIBERTTY HEIGHTS NORTH RUNOFF	0.62	0.69	24.5	7	10	26	2.7	4.4	2.5	2.2
LIBERTTY HEIGHTS SOUTH RUNOFF	0.56	0.67	10.9	12	23	13	3.7	6.3	3.1	3.7
MINUS 5' INLET MEDIAN @ RAMTRON				1	1	6	4.8	8.7	0.2	0.1
RAMTRON DRIVE NORTH CURB	0.56	0.63	4.1	3	7	16	3.4	5.7	1.0	1.2
MINUS NEENAH INLET NO 1 RAMTRON				1	1	16	3.4	5.7	0.1	0.1
RAMTRON DRIVE SOUTH CURB	0.73	0.88	3.5	5	11	8	4.5	7.5	1.1	1.4
TOTALS						26	2.7	4.4	7.3	8.4

$Q_5 = 7.3 * 2.7 =$ **19** *(c.f.s.)*

$Q_{100} = 8.4 * 4.4 =$ **37** *(c.f.s.)*

TRAILRIDGE SOUTH AT NORTHGATE
MDDP
(Area Drainage Summary)

		WEIGHTED		*OVERLAND*				*STREET / CHANNEL FLOW*				T_t	*INTENSITY*		*TOTAL FLOWS*	
BASIN	AREA TOTAL *(Acres)*	C_5	C_{100}	C_5	Length *(ft)*	Height *(ft)*	T_C *(min)*	Length *(ft)*	Slope *(%)*	Velocity *(fps)*	T_t *(min)*	TOTAL *(min)*	I_5 *(in/hr)*	I_{100} *(in/hr)*	Q_5 *(c.f.s.)*	Q_{100} *(c.f.s.)*
		* For Calcs See Runoff Summary														
A	12.2	0.57	0.67	0.25	130	2.6	14.4	830	1.9%	4.9	2.8	17.3	3.3	5.5	*23*	*45*
B	0.1	0.90	0.95	0.25	6	0.1	3.1	100	2.0%	4.9	0.3	5.0	5.0	9.1	*1*	*1*
C1	3.4	0.60	0.70	0.25	120	2.4	13.9	1010	5.7%	8.4	2.0	15.9	3.4	5.7	*7*	*13*
C2	17.9	0.60	0.70	0.25	120	2.4	13.9	700	1.4%	4.2	2.8	16.6	3.3	5.6	*36*	*70*
C3	3.5	0.60	0.70	0.25	100	2.0	12.6	610	1.8%	4.7	2.2	14.8	3.5	5.9	*7*	*15*
D	5.2	0.75	0.80	0.25	100	16.0	6.4	690	2.0%	4.9	2.3	8.7	4.3	7.5	*17*	*31*
E	25.0	0.59	0.69	0.25	170	9.0	12.0	1630	3.3%	6.4	4.3	16.2	3.4	5.7	*49*	*98*

TRAILRIDGE SOUTH AT NORTHGATE
MDDP
(Area Drainage Summary)

		WEIGHTED		*OVERLAND*				*STREET / CHANNEL FLOW*				T_i	*INTENSITY*		*TOTAL FLOWS*	
BASIN	AREA TOTAL *(Acres)*	C_5 * For Calcs See Runoff Summary	C_{100}	C_5	Length *(ft)*	Height *(ft)*	T_C *(min)*	Length *(ft)*	Slope *(%)*	Velocity *(fps)*	T_t *(min)*	TOTAL *(min)*	I_5 *(in/hr)*	I_{100} *(in/hr)*	Q_5 *(c.f.s.)*	Q_{100} *(c.f.s.)*
F	7.0	0.36	0.46	0.25	215	13.0	12.9					12.9	3.7	6.3	*9*	*20*
G	0.2	0.25	0.35	0.25	50	42.0	2.6					5.0	5.0	9.1	*1*	*1*
H	0.2	0.23	0.33	0.25	100	12	7.0					7.0	4.6	8.1	*1*	*1*
*OS-1**								840	3.0%	6.1	2.3	26.0 28.3	2.7 2.6	4.4 4.2	*82*	*148*
OS-2	1.1	0.90	0.95	0.25	10	0.2	4.0	835	5.6%	8.3	1.7	5.7	4.8	8.7	*5*	*9*
OS-3	1.4	0.90	0.95	0.25	10	0.2	4.0	790	5.6%	8.3	1.6	5.6	4.9	8.8	*6*	*11*
OS-4	1.2	0.90	0.95	0.25	10	0.2	4.0	830	5.6%	8.3	1.7	5.7	4.8	8.7	*5*	*10*
OS-5	1.1	0.90	0.95	0.25	10	0.2	4.0	790	5.6%	8.3	1.6	5.6	4.9	8.8	*5*	*9*

* INFORMATION BASED ON EQUIVALENT CA VALUES PER "ADDENDUM NO. 1 TO NORTHGATE FILING NO. 5 VOYAGER AND BLACK SQUIRRELL PARKWAYS PHASE 2B", "LIBERTY HEIGHTS FILING NO. 1 PRELIMINARY/FINAL DRAINAGE REPORT", "NORTHGATE MASTER DEVELOPMENT DRAINAGE PLAN", AND "NORTHGATE FILING NO. 3 ADDENDUM AND RAMTRON FILING NO. 1 PRELIMINARY AND FINAL DRAINAGE REPORT." SEE OFFSITE BASIN OS-1 PIPE AND SURFACE FLOW SHEET

Calculated by: QNA
Date: 1/31/01
Checked by: _____

TRAILRIDGE SOUTH AT NORTHGATE
MDDP
(Surface Routing Summary)

Design Point(s)	*Contributing Basins*	*Equivalent CA_5*	*Equivalent CA_{100}*	*Maximum T_C*	*Intensity*		*Flow*	
					I_5	*I_{100}*	*Q_5*	*Q_{100}*
1	A	6.97	8.19	17.3	3.3	5.5	*23*	*45*
2	A & B	7.03	8.25	17.3	3.3	5.5	*23*	*45*
3	OS-1, OS-2, & OS-3 PIPE FLOW	24.88	25.20	26.0	2.7	4.4	*67*	*111*
4	OS-1, OS-2, & OS-3 SURFACE FLOW	9.46	10.66	26.0	2.7	4.4	*25*	*47*
5A	C1, OS-1, OS-2, & OS-3 SURFACE FLOW	11.47	13.01	28.3	2.6	4.2	*29*	*55*
5B	C2	10.76	12.56	16.6	3.3	5.6	*36*	*70*
5C	C3	2.12	2.47	14.8	3.5	5.9	*7*	*15*
*6**	OS-4, OS-5, OS-1, OS-2, & OS-3 PIPE FLOW	26.94	27.15	28.3	2.6	4.2	*69*	*114*
7	D	3.90	4.16	8.7	4.3	7.5	*17*	*31*
8	D & E	18.66	21.42	16.2	3.4	5.7	*63*	*121*
9	C1, C2, C3, D, E, F, & OS-1THRU OS-3 SURFACE FLOW	45.52	52.67	28.3	2.6	4.2	*116*	*221*
10	G & H	0.09	0.13	7.0	4.6	8.1	*1*	*1*

* DESIGN POINT 6's BASINS OS-4 AND OS-5 ARE BASED ON THE CAPACITY OF THE TWO NEENAH INLETS IN VOYAGER PARKWAY (SEE NEENAH INLET CAPACITY CALCS. IN APPENDIX).

Calculated by: QNA
Date: 1/31/01
Checked by: _____

TRAILRIDGE SOUTH AT NORTHGATE
MDDP
(Area Drainage Summary Historic)

		WEIGHTED		*OVERLAND*				*STREET / CHANNEL FLOW*				.	*INTENSITY*		*TOTAL FLOWS*	
BASIN	AREA TOTAL *(Acres)*	C_5	C_{100}	C_5	Length *(ft)*	Height *(ft)*	T_C *(min)*	Length *(ft)*	Slope *(%)*	Velocity *(fps)*	T_t *(min)*	TOTAL *(min)*	I_5 *(in/hr)*	I_{100} *(in/hr)*	Q_5 *(c.f.s.)*	Q_{100} *(c.f.s.)*
		* For Calcs See Runoff Summary														
H-A	13.1	0.25	0.35	0.25	390	18	18.9	900	4.7%	7.6	2.0	20.9	3.0	5.0	*10*	*23*
H-B	45.8	0.25	0.35	0.25	1000	57	28.3	750	4.4%	7.3	1.7	30.0	2.5	4.0	*28*	*65*
H-C	14.8	0.25	0.35	0.25	965	44	29.9					29.9	2.5	4.1	*9*	*21*
*OS-1**												26.0	2.7	4.4	*82*	*148*
OS-2	1.1	0.90	0.95	0.25	10	0.2	4.0	835	5.6%	8.3	1.7	5.7	4.8	8.7	*5*	*9*
OS-3	1.4	0.90	0.95	0.25	10	0.2	4.0	790	5.6%	8.3	1.6	5.6	4.9	8.8	*6*	*11*

TRAILRIDGE SOUTH AT NORTHGATE
MDDP
(Area Drainage Summary Historic)

OS-4	1.2	0.90	0.95	0.25	10	0.2	4.0	830	5.6%	8.3	1.7	5.7	4.8	8.7	*5*	*10*
OS-5	1.1	0.90	0.95	0.25	10	0.2	4.0	790	5.6%	8.3	1.6	5.6	4.9	8.8	*5*	*9*

* INFORMATION BASED ON EQUIVALENT CA VALUES PER "ADDENDUM NO. 1 TO NORTHGATE FILING NO. 5 VOYAGER AND BLACK SQUIRRELL PARKWAYS PHASE 2B", "LIBERTY HEIGHTS FILING NO. 1 PRELIMINARY/FINAL DRAINAGE REPORT", "NORTHGATE MASTER DEVELOPMENT DRAINAGE PLAN", AND "`NORTHGATE FILING NO. 3 ADDENDUM AND RAMTRON FILING NO. 1 PRELIMINARY AND FINAL DRAINAGE REPORT." SEE OFFSITE BASIN OS-1 PIPE AND SURFACE FLOW SHEET

Calculated by: QNA
Date: 1/31/01
Checked by: _____

TRAILRIDGE SOUTH AT NORTHGATE
MDDP
(Surface Routing Summary Historic)

Design Point(s)	*Contributing Basins*	*Equivalent* CA_5	*Equivalent* CA_{100}	*Maximum* T_C	*Intensity*		*Flow*	
					I_5	I_{100}	Q_5	Q_{100}
1	**H-A**	3.28	4.59	20.9	3.0	5.0	*10*	*23*
3	**OS-1, OS-2, & OS-3 PIPE FLOW**	24.88	25.20	26.0	2.7	4.4	*67*	*111*
4	**OS-1, OS-2, & OS-3 SURFACE FLOW**	9.46	10.66	26.0	2.7	4.4	*25*	*47*
*6**	**OS-4 & OS-5**	2.06	1.95	5.7	4.8	8.7	*10*	*17*
10	**H-C, OS-4, OS-5**	5.76	7.14	29.9	2.5	4.1	*14*	*29*

* DESIGN POINT 6's BASINS OS-4 AND OS-5 ARE BASED ON THE CAPACITY OF THE TWO NEENAH INLETS IN VOYAGER PARKWAY (SEE NEENAH INLET CAPACITY CALCS. IN APPENDIX).

Calculated by: QNA
Date: 1/31/01
Checked by: _____

HYDRAULIC CALCULATIONS

DP-5A TO DP-9
Worksheet for Circular Channel

Project Description	
Project File	x:\2910000.all\2912810\hydro\piperuns.fm2
Worksheet	DP-5A TO DP-9
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Slope

Input Data		
Mannings Coefficient	0.013	
Diameter	30.00	in
Discharge	55.00	cfs

Results		
Channel Slope	1.80	%
Depth	30.0	in
Flow Area	4.91	ft²
Wetted Perimeter	7.85	ft
Top Width	0.00	ft
Critical Depth	2.35	ft
Percent Full	100.00	
Critical Slope	0.015543	ft/ft
Velocity	11.20	ft/s
Velocity Head	1.95	ft
Specific Energy	FULL	ft
Froude Number	FULL	
Maximum Discharge	59.16	cfs
Full Flow Capacity	55.00	cfs
Full Flow Slope	0.017982	ft/ft

DP-5B TO DP-9
Worksheet for Circular Channel

Project Description	
Project File	x:\2910000.all\2912810\hydro\piperuns.fm2
Worksheet	DP-5B TO DP-9
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Slope

Input Data		
Mannings Coefficient	0.013	
Diameter	30.00	in
Discharge	70.00	cfs

Results		
Channel Slope	2.91	%
Depth	30.0	in
Flow Area	4.91	ft²
Wetted Perimeter	7.85	ft
Top Width	0.00	ft
Critical Depth	2.44	ft
Percent Full	100.00	
Critical Slope	0.025893	ft/ft
Velocity	14.26	ft/s
Velocity Head	3.16	ft
Specific Energy	FULL	ft
Froude Number	FULL	
Maximum Discharge	75.30	cfs
Full Flow Capacity	70.00	cfs
Full Flow Slope	0.029128	ft/ft

DP-5C TO DP-9
Worksheet for Circular Channel

Project Description	
Project File	x:\2910000.all\2912810\hydro\piperuns.fm2
Worksheet	DP-5C TO DP-9
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Slope

Input Data		
Mannings Coefficient	0.013	
Diameter	18.00	in
Discharge	15.00	cfs

Results		
Channel Slope	2.04	%
Depth	18.0	in
Flow Area	1.77	ft²
Wetted Perimeter	4.71	ft
Top Width	0.00	ft
Critical Depth	1.41	ft
Percent Full	100.00	
Critical Slope	0.017624	ft/ft
Velocity	8.49	ft/s
Velocity Head	1.12	ft
Specific Energy	FULL	ft
Froude Number	FULL	
Maximum Discharge	16.14	cfs
Full Flow Capacity	15.00	cfs
Full Flow Slope	0.020394	ft/ft

DP-6 TO BOX CULVERT
Worksheet for Circular Channel

Project Description	
Project File	x:\2910000.all\2912810\hydro\piperuns.fm2
Worksheet	DP-6 TO BOX CULVERT
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Slope

Input Data		
Mannings Coefficient	0.013	
Diameter	36.00	in
Discharge	114.00	cfs

Results		
Channel Slope	0.029216	ft/ft
Depth	36.0	in
Flow Area	7.07	ft^2
Wetted Perimeter	9.42	ft
Top Width	0.00	ft
Critical Depth	2.94	ft
Percent Full	100.00	
Critical Slope	0.026109	ft/ft
Velocity	16.13	ft/s
Velocity Head	4.04	ft
Specific Energy	FULL	ft
Froude Number	FULL	
Maximum Discharge	122.63	cfs
Full Flow Capacity	114.00	cfs
Full Flow Slope	0.029216	ft/ft

DP-7 TO DP-8
Worksheet for Circular Channel

Project Description	
Project File	x:\2910000.all\2912810\hydro\piperuns.fm2
Worksheet	DP-7 TO DP-8
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Slope

Input Data		
Mannings Coefficient	0.013	
Diameter	24.00	in
Discharge	31.00	cfs

Results		
Channel Slope	1.88	%
Depth	24.0	in
Flow Area	3.14	ft²
Wetted Perimeter	6.28	ft
Top Width	0.00	ft
Critical Depth	1.88	ft
Percent Full	100.00	
Critical Slope	0.016230	ft/ft
Velocity	9.87	ft/s
Velocity Head	1.51	ft
Specific Energy	FULL	ft
Froude Number	FULL	
Maximum Discharge	33.35	cfs
Full Flow Capacity	31.00	cfs
Full Flow Slope	0.018780	ft/ft

DP-8 TO DP-9
Worksheet for Circular Channel

Project Description	
Project File	x:\2910000.all\2912810\hydro\piperuns.fm2
Worksheet	DP-8 TO DP-9
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Slope

Input Data		
Mannings Coefficient	0.013	
Diameter	36.00	in
Discharge	119.00	cfs

Results		
Channel Slope	3.18	%
Depth	36.0	in
Flow Area	7.07	ft^2
Wetted Perimeter	9.42	ft
Top Width	0.00	ft
Critical Depth	2.95	ft
Percent Full	100.00	
Critical Slope	0.028655	ft/ft
Velocity	16.84	ft/s
Velocity Head	4.40	ft
Specific Energy	FULL	ft
Froude Number	FULL	
Maximum Discharge	128.01	cfs
Full Flow Capacity	119.00	cfs
Full Flow Slope	0.031835	ft/ft

TRAILRIDGE SOUTH MMDP
POND VOLUME

ELEV.	AREA	AREA AVG.	DELTA ELEV.	VOLUME	VOLUME TOTAL
6724.50	2000				
		10766	1.5	16149	
6726.00	19532				16149
		24196	2	48392	
6728.00	28860				64541
		32202	2	64403	
6730.00	35543				128944
		38010	2	76019	
6732.00	40476				204963
		43543	2	87086	
6734.00	46610				292049
		49790	2	99580	
6736.00	52970				391629
		56260	2	112520	
6738.00	59550				504149

End Area Method: 504149 C.F.
11.57 A.F.

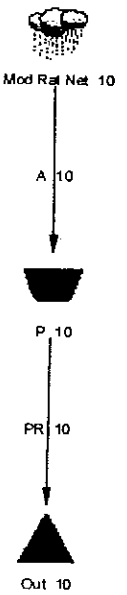
EMERGENCY SPILLWAY:

The general form of the equation for horizontal crested weirs is $Q = CLH^{3/2}$ where:

Q = Weir flow discharge (cfs)	218.00	cfs
C = Weir flow coefficient	3.4	
H = Depth of flow over the weir (ft)	2.00	ft
L = Length of the weir (ft)	**23**	ft

POND CALCULATIONS

100-year.



Job File: X:\2910000.ALL\2912810\HYDRO\100-YEAR.PPW
Rain Dir: H:\PPKW\RAINFALL\

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

JOB TITLE NOT SPECIFIED
Press Units & Storm button (main menu screen) to enter title.

S/N: f21801306a8b JR Engineering
PondPack Ver: 7.0 (325) Compute Time: 09:19:37 Date: 02-02-2001

Table of Contents

File.... H:\PPKW\RAINFALL\COLOSPGS.IDQ
Title...

JOB TITLE NOT SPECIFIED
Press Units & Storm button (main menu screen) to
enter title.

I-D-F DESIGN STORM SUMMARY

Storm Queue File,ID = COLOSPGS.IDQ 100yr

Storm Tag Name = 100yr
Description: 100yr I-D-F curve for Colo Spgs from DCM

File: Type, ID = COS100YR.IDF: I-D-F Storm... cos100yr
Storm Frequ. = 100 yr

File.... X:\2910000.ALL\2912810\HYDRO\100-YEAR.PPW

TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: User Defined

Segment #1 Time: .4700 hrs

Total Tc: .4700 hrs

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
.0000	.000	.025	.179	.419	.767
.2500	1.212	1.755	2.381	3.099	3.906
.5000	4.750	5.542	6.244	6.836	7.335
.7500	7.726	8.024	8.226	8.329	8.340
1.0000	8.285	8.230	8.175	8.121	8.067
1.2500	8.013	7.960	7.908	7.855	7.803
1.5000	7.752	7.700	7.649	7.598	7.548
1.7500	7.498	7.448	7.399	7.350	7.302
2.0000	7.253	7.206	7.156	7.105	7.056
2.2500	7.006	6.957	6.908	6.860	6.811
2.5000	6.763	6.716	6.669	6.622	6.576
2.7500	6.530	6.484	6.439	6.394	6.350
3.0000	6.305	6.261	6.218	6.174	6.132
3.2500	6.088	6.042	5.998	5.953	5.909
3.5000	5.865	5.822	5.779	5.736	5.694
3.7500	5.653	5.611	5.570	5.529	5.489
4.0000	5.449	5.410	5.370	5.331	5.292
4.2500	5.254	5.216	5.178	5.141	5.104
4.5000	5.064	5.025	4.987	4.948	4.911
4.7500	4.873	4.836	4.800	4.763	4.728
5.0000	4.692	4.657	4.622	4.588	4.554
5.2500	4.520	4.486	4.453	4.421	4.388
5.5000	4.356	4.324	4.292	4.261	4.230
5.7500	4.199	4.168	4.136	4.104	4.073
6.0000	4.042	4.011	3.982	3.952	3.922
6.2500	3.893	3.865	3.836	3.808	3.781
6.5000	3.753	3.726	3.700	3.674	3.647
6.7500	3.622	3.596	3.571	3.546	3.522
7.0000	3.498	3.474	3.450	3.427	3.404
7.2500	3.381	3.359	3.336	3.314	3.291
7.5000	3.268	3.246	3.224	3.202	3.181
7.7500	3.160	3.140	3.119	3.100	3.080
8.0000	3.061	3.042	3.024	3.006	2.988
8.2500	2.970	2.953	2.936	2.919	2.903
8.5000	2.887	2.871	2.855	2.840	2.825
8.7500	2.810	2.796	2.782	2.768	2.754
9.0000	2.740	2.727	2.714	2.702	2.689
9.2500	2.677	2.664	2.652	2.641	2.629
9.5000	2.618	2.607	2.596	2.585	2.575
9.7500	2.564	2.554	2.544	2.534	2.524
10.0000	2.515	2.505	2.495	2.486	2.476
10.2500	2.466	2.456	2.447	2.437	2.428
10.5000	2.419	2.410	2.401	2.392	2.383
10.7500	2.375	2.366	2.358	2.350	2.341
11.0000	2.334	2.325	2.318	2.310	2.302

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
11.2500	2.295	2.287	2.280	2.273	2.265
11.5000	2.258	2.251	2.244	2.237	2.231
11.7500	2.224	2.217	2.211	2.205	2.198
12.0000	2.192	2.186	2.180	2.174	2.168
12.2500	2.162	2.156	2.150	2.145	2.139
12.5000	2.134	2.128	2.123	2.117	2.112
12.7500	2.107	2.102	2.097	2.092	2.087
13.0000	2.082	2.077	2.073	2.068	2.063
13.2500	2.059	2.054	2.049	2.045	2.041
13.5000	2.036	2.032	2.028	2.024	2.020
13.7500	2.016	2.012	2.007	2.004	2.000
14.0000	1.996	1.992	1.989	1.985	1.981
14.2500	1.978	1.974	1.971	1.967	1.964
14.5000	1.961	1.957	1.954	1.950	1.947
14.7500	1.944	1.941	1.938	1.935	1.932
15.0000	1.929	1.926	1.923	1.920	1.917
15.2500	1.914	1.911	1.909	1.906	1.903
15.5000	1.901	1.898	1.896	1.893	1.891
15.7500	1.888	1.886	1.883	1.881	1.878
16.0000	1.876	1.874	1.871	1.869	1.867
16.2500	1.865	1.862	1.860	1.858	1.856
16.5000	1.854	1.852	1.850	1.848	1.846
16.7500	1.844	1.842	1.840	1.838	1.836
17.0000	1.834	1.833	1.831	1.829	1.827
17.2500	1.825	1.824	1.822	1.821	1.819
17.5000	1.817	1.815	1.814	1.812	1.811
17.7500	1.809	1.808	1.806	1.805	1.803
18.0000	1.802	1.800	1.799	1.798	1.796
18.2500	1.795	1.793	1.792	1.791	1.789
18.5000	1.788	1.787	1.786	1.785	1.783
18.7500	1.782	1.781	1.779	1.778	1.777
19.0000	1.776	1.775	1.774	1.773	1.772
19.2500	1.770	1.769	1.768	1.767	1.766
19.5000	1.765	1.764	1.763	1.762	1.761
19.7500	1.760	1.759	1.758	1.756	1.755
20.0000	1.754	1.753	1.752	1.751	1.750
20.2500	1.749	1.748	1.747	1.746	1.745
20.5000	1.744	1.742	1.741	1.740	1.739
20.7500	1.738	1.737	1.736	1.735	1.733
21.0000	1.732	1.731	1.730	1.729	1.728
21.2500	1.727	1.726	1.725	1.723	1.722
21.5000	1.721	1.720	1.719	1.718	1.717
21.7500	1.716	1.715	1.714	1.713	1.712
22.0000	1.711	1.709	1.708	1.707	1.706
22.2500	1.705	1.704	1.703	1.702	1.701
22.5000	1.700	1.698	1.697	1.696	1.695

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
22.7500	1.694	1.693	1.692	1.691	1.690
23.0000	1.689	1.688	1.687	1.686	1.685
23.2500	1.683	1.682	1.681	1.680	1.679
23.5000	1.678	1.677	1.676	1.675	1.674
23.7500	1.672	1.671	1.670	1.669	1.668
24.0000	1.667	1.666	1.665	1.664	1.663
24.2500	1.662	1.661	1.660	1.659	1.658
24.5000	1.657	1.655	1.654	1.653	1.652
24.7500	1.651	1.650	1.649	1.648	1.647
25.0000	1.646	1.645	1.644	1.643	1.642
25.2500	1.641	1.640	1.639	1.637	1.636
25.5000	1.635	1.634	1.633	1.632	1.631
25.7500	1.630	1.629	1.628	1.627	1.626
26.0000	1.624	1.623	1.622	1.621	1.620
26.2500	1.619	1.618	1.617	1.616	1.615
26.5000	1.614	1.613	1.612	1.611	1.610
26.7500	1.609	1.608	1.607	1.606	1.604
27.0000	1.603	1.602	1.601	1.600	1.599
27.2500	1.598	1.597	1.596	1.595	1.594
27.5000	1.593	1.592	1.591	1.590	1.589
27.7500	1.588	1.587	1.586	1.585	1.584
28.0000	1.582	1.581	1.580	1.580	1.579
28.2500	1.578	1.577	1.576	1.574	1.573
28.5000	1.572	1.571	1.570	1.569	1.568
28.7500	1.567	1.566	1.565	1.564	1.563
29.0000	1.562	1.561	1.560	1.559	1.558
29.2500	1.557	1.556	1.555	1.554	1.553
29.5000	1.552	1.551	1.549	1.548	1.547
29.7500	1.546	1.545	1.544	1.543	1.542
30.0000	1.541	1.540	1.539	1.538	1.537
30.2500	1.536	1.535	1.534	1.533	1.532
30.5000	1.531	1.530	1.529	1.528	1.527
30.7500	1.526	1.525	1.524	1.523	1.522
31.0000	1.521	1.520	1.519	1.518	1.517
31.2500	1.516	1.515	1.514	1.513	1.512
31.5000	1.511	1.510	1.509	1.508	1.507
31.7500	1.506	1.505	1.504	1.503	1.502
32.0000	1.501	1.500	1.499	1.498	1.496
32.2500	1.495	1.494	1.493	1.493	1.492
32.5000	1.491	1.490	1.489	1.488	1.487
32.7500	1.486	1.485	1.483	1.482	1.481
33.0000	1.480	1.479	1.478	1.477	1.476
33.2500	1.476	1.475	1.474	1.473	1.472
33.5000	1.471	1.470	1.468	1.467	1.466
33.7500	1.465	1.464	1.463	1.462	1.461
34.0000	1.461	1.460	1.459	1.458	1.457

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 100yr
File.... X:\2910000.ALL\2912810\HYDRO\100-YEAR.PPW
Storm... cos100yr Tag: 100yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
34.2500	1.456	1.455	1.454	1.453	1.452
34.5000	1.451	1.449	1.448	1.448	1.447
34.7500	1.446	1.445	1.444	1.443	1.442
35.0000	1.441	1.440	1.439	1.438	1.437
35.2500	1.436	1.435	1.434	1.433	1.432
35.5000	1.431	1.430	1.429	1.428	1.427
35.7500	1.426	1.425	1.424	1.423	1.422
36.0000	1.421	1.420	1.419	1.418	1.417
36.2500	1.416	1.415	1.414	1.413	1.412
36.5000	1.411	1.410	1.409	1.408	1.407
36.7500	1.406	1.405	1.404	1.404	1.403
37.0000	1.402	1.401	1.400	1.399	1.398
37.2500	1.397	1.396	1.395	1.394	1.393
37.5000	1.392	1.391	1.390	1.389	1.388
37.7500	1.387	1.386	1.385	1.384	1.383
38.0000	1.382	1.381	1.380	1.379	1.379
38.2500	1.378	1.377	1.376	1.375	1.374
38.5000	1.373	1.372	1.371	1.370	1.369
38.7500	1.368	1.367	1.366	1.365	1.364
39.0000	1.363	1.362	1.361	1.360	1.359
39.2500	1.358	1.357	1.357	1.356	1.355
39.5000	1.354	1.353	1.352	1.351	1.350
39.7500	1.349	1.348	1.347	1.346	1.345
40.0000	1.344	1.343	1.342	1.341	1.340
40.2500	1.339	1.338	1.337	1.337	1.336
40.5000	1.335	1.334	1.333	1.332	1.331
40.7500	1.330	1.329	1.328	1.327	1.326
41.0000	1.326	1.325	1.324	1.323	1.322
41.2500	1.321	1.320	1.319	1.318	1.317
41.5000	1.316	1.315	1.314	1.313	1.312
41.7500	1.311	1.310	1.309	1.309	1.308
42.0000	1.307	1.306	1.305	1.304	1.303
42.2500	1.302	1.301	1.300	1.299	1.299
42.5000	1.298	1.297	1.296	1.295	1.294
42.7500	1.293	1.292	1.291	1.290	1.289
43.0000	1.289	1.288	1.287	1.286	1.285
43.2500	1.284	1.283	1.282	1.281	1.280
43.5000	1.279	1.278	1.278	1.277	1.276
43.7500	1.275	1.274	1.273	1.272	1.271
44.0000	1.270	1.269	1.268	1.267	1.266
44.2500	1.266	1.265	1.264	1.263	1.262
44.5000	1.261	1.260	1.259	1.258	1.257
44.7500	1.257	1.256	1.255	1.254	1.253
45.0000	1.252	1.251	1.250	1.249	1.249
45.2500	1.248	1.247	1.246	1.245	1.244
45.5000	1.243	1.242	1.241	1.241	1.240

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 100yr
File.... X:\2910000.ALL\2912810\HYDRO\100-YEAR.PPW
Storm... cos100yr Tag: 100yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
45.7500	1.239	1.238	1.237	1.236	1.235
46.0000	1.234	1.233	1.233	1.232	1.231
46.2500	1.230	1.229	1.228	1.227	1.226
46.5000	1.225	1.225	1.224	1.223	1.222
46.7500	1.221	1.220	1.219	1.218	1.218
47.0000	1.217	1.216	1.215	1.214	1.213
47.2500	1.212	1.211	1.211	1.210	1.209
47.5000	1.208	1.207	1.206	1.205	1.204
47.7500	1.204	1.203	1.202	1.201	1.200
48.0000	1.199	1.198	1.197	1.197	1.196
48.2500	1.195	1.194	1.193	1.192	1.191
48.5000	1.190	1.190	1.189	1.188	1.187
48.7500	1.186	1.185	1.184	1.183	1.183
49.0000	1.182	1.181	1.180	1.179	1.178
49.2500	1.177	1.177	1.176	1.175	1.174
49.5000	1.173	1.172	1.171	1.171	1.170
49.7500	1.169	1.168	1.167	1.166	1.165
50.0000	1.165	1.164	1.163	1.162	1.161
50.2500	1.160	1.159	1.158	1.158	1.157
50.5000	1.156	1.155	1.154	1.153	1.152
50.7500	1.152	1.151	1.150	1.149	1.148
51.0000	1.147	1.147	1.146	1.145	1.144
51.2500	1.143	1.142	1.141	1.141	1.140
51.5000	1.139	1.138	1.137	1.136	1.135
51.7500	1.135	1.134	1.133	1.132	1.131
52.0000	1.130	1.130	1.129	1.128	1.127
52.2500	1.126	1.125	1.124	1.124	1.123
52.5000	1.122	1.121	1.120	1.119	1.119
52.7500	1.118	1.117	1.116	1.115	1.115
53.0000	1.114	1.113	1.112	1.111	1.111
53.2500	1.110	1.109	1.108	1.107	1.106
53.5000	1.105	1.104	1.103	1.102	1.101
53.7500	1.100	1.099	1.098	1.097	1.096
54.0000	1.095	1.094	1.093	1.093	1.091
54.2500	1.090	1.090	1.088	1.088	1.087
54.5000	1.085	1.085	1.084	1.083	1.082
54.7500	1.081	1.080	1.079	1.078	1.077
55.0000	1.076	1.075	1.074	1.073	1.072
55.2500	1.071	1.070	1.069	1.068	1.067
55.5000	1.066	1.065	1.064	1.063	1.062
55.7500	1.061	1.060	1.059	1.059	1.057
56.0000	1.057	1.056	1.054	1.054	1.053
56.2500	1.052	1.051	1.050	1.049	1.048
56.5000	1.047	1.046	1.045	1.044	1.043
56.7500	1.042	1.041	1.040	1.039	1.039
57.0000	1.037	1.037	1.036	1.034	1.034

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 100yr
File.... X:\2910000.ALL\2912810\HYDRO\100-YEAR.PPW
Storm... cos100yr Tag: 100yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
57.2500	1.033	1.032	1.031	1.030	1.029
57.5000	1.028	1.027	1.026	1.025	1.024
57.7500	1.023	1.022	1.022	1.020	1.020
58.0000	1.019	1.018	1.017	1.016	1.015
58.2500	1.014	1.013	1.012	1.011	1.010
58.5000	1.009	1.008	1.007	1.007	1.005
58.7500	1.005	1.004	1.003	1.002	1.001
59.0000	1.000	.999	.998	.997	.996
59.2500	.995	.995	.993	.993	.992
59.5000	.991	.990	.989	.988	.987
59.7500	.986	.985	.984	.983	.983
60.0000	.981	.981	.980	.979	.978
60.2500	.977	.976	.975	.974	.973
60.5000	.972	.972	.971	.970	.969
60.7500	.968	.967	.966	.965	.964
61.0000	.963	.963	.962	.961	.960
61.2500	.959	.958	.957	.956	.955
61.5000	.954	.953	.953	.952	.951
61.7500	.950	.949	.948	.947	.946
62.0000	.945	.945	.944	.943	.942
62.2500	.941	.940	.939	.938	.937
62.5000	.937	.936	.935	.934	.933
62.7500	.932	.931	.931	.929	.929
63.0000	.928	.927	.926	.925	.924
63.2500	.923	.922	.922	.921	.920
63.5000	.919	.918	.917	.916	.915
63.7500	.915	.914	.913	.912	.911
64.0000	.910	.909	.909	.908	.907
64.2500	.906	.905	.904	.903	.902
64.5000	.902	.901	.900	.899	.898
64.7500	.897	.896	.896	.895	.894
65.0000	.893	.892	.891	.890	.889
65.2500	.889	.888	.887	.886	.885
65.5000	.884	.883	.883	.882	.881
65.7500	.880	.879	.878	.878	.877
66.0000	.876	.875	.874	.873	.872
66.2500	.872	.871	.870	.869	.868
66.5000	.867	.866	.866	.865	.864
66.7500	.863	.862	.861	.861	.860
67.0000	.859	.858	.857	.856	.855
67.2500	.855	.854	.853	.852	.851
67.5000	.851	.850	.849	.848	.847
67.7500	.846	.845	.845	.844	.843
68.0000	.842	.841	.841	.840	.839
68.2500	.838	.837	.836	.836	.835
68.5000	.834	.833	.832	.831	.831

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 100yr
File.... X:\2910000.ALL\2912810\HYDRO\100-YEAR.PPW
Storm... cos100yr Tag: 100yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
68.7500	.830	.829	.828	.827	.827
69.0000	.826	.825	.824	.823	.822
69.2500	.822	.821	.820	.819	.818
69.5000	.818	.817	.816	.815	.814
69.7500	.813	.813	.812	.811	.810
70.0000	.809	.808	.808	.807	.806
70.2500	.805	.804	.804	.803	.802
70.5000	.801	.800	.800	.799	.798
70.7500	.797	.796	.796	.795	.794
71.0000	.793	.792	.792	.791	.790
71.2500	.789	.788	.788	.787	.786
71.5000	.785	.784	.784	.783	.782
71.7500	.781	.781	.780	.779	.778
72.0000	.777	.777	.776	.775	.774
72.2500	.773	.773	.772	.771	.770
72.5000	.769	.769	.768	.767	.766
72.7500	.765	.765	.764	.763	.762
73.0000	.761	.761	.760	.759	.759
73.2500	.758	.757	.756	.755	.755
73.5000	.754	.753	.752	.752	.751
73.7500	.750	.749	.748	.748	.747
74.0000	.746	.745	.744	.744	.743
74.2500	.742	.742	.741	.740	.739
74.5000	.738	.738	.737	.736	.735
74.7500	.734	.734	.733	.732	.731
75.0000	.731	.730	.729	.729	.728
75.2500	.727	.726	.725	.725	.724
75.5000	.723	.722	.721	.721	.720
75.7500	.719	.719	.718	.717	.716
76.0000	.716	.715	.714	.713	.712
76.2500	.712	.711	.710	.710	.709
76.5000	.708	.707	.706	.706	.705
76.7500	.704	.703	.703	.702	.701
77.0000	.701	.700	.699	.698	.697
77.2500	.697	.696	.695	.695	.694
77.5000	.693	.692	.692	.691	.690
77.7500	.689	.689	.688	.687	.686
78.0000	.686	.685	.684	.683	.683
78.2500	.682	.681	.681	.680	.679
78.5000	.678	.677	.677	.676	.675
78.7500	.675	.674	.673	.672	.672
79.0000	.671	.670	.670	.669	.668
79.2500	.667	.667	.666	.665	.665
79.5000	.664	.663	.662	.662	.661
79.7500	.660	.659	.659	.658	.657
80.0000	.657	.656	.655	.654	.654

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 100yr
File.... X:\2910000.ALL\2912810\HYDRO\100-YEAR.PPW
Storm... cos100yr Tag: 100yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
80.2500	.653	.652	.652	.651	.650
80.5000	.649	.649	.648	.647	.647
80.7500	.646	.645	.644	.644	.643
81.0000	.642	.641	.641	.640	.639
81.2500	.639	.638	.637	.636	.636
81.5000	.635	.634	.634	.633	.632
81.7500	.632	.631	.630	.629	.629
82.0000	.628	.627	.627	.626	.625
82.2500	.625	.624	.623	.622	.622
82.5000	.621	.620	.620	.619	.618
82.7500	.618	.617	.616	.615	.615
83.0000	.614	.613	.613	.612	.611
83.2500	.611	.610	.609	.608	.608
83.5000	.607	.606	.606	.605	.605
83.7500	.604	.603	.602	.602	.601
84.0000	.600	.600	.599	.598	.598
84.2500	.597	.596	.595	.595	.594
84.5000	.593	.593	.592	.591	.591
84.7500	.590	.589	.589	.588	.587
85.0000	.587	.586	.585	.585	.584
85.2500	.583	.583	.582	.581	.581
85.5000	.580	.579	.579	.578	.577
85.7500	.576	.576	.575	.574	.574
86.0000	.573	.572	.572	.571	.571
86.2500	.570	.569	.568	.568	.567
86.5000	.566	.566	.565	.564	.564
86.7500	.563	.562	.562	.561	.561
87.0000	.560	.559	.559	.558	.557
87.2500	.556	.556	.555	.554	.553
87.5000	.552	.552	.551	.550	.549
87.7500	.548	.547	.546	.545	.544
88.0000	.544	.543	.542	.541	.540
88.2500	.539	.538	.538	.537	.536
88.5000	.535	.534	.533	.532	.532
88.7500	.531	.530	.529	.528	.527
89.0000	.526	.526	.525	.524	.523
89.2500	.522	.521	.520	.520	.519
89.5000	.518	.517	.516	.515	.515
89.7500	.514	.513	.512	.511	.510
90.0000	.510	.509	.508	.507	.506
90.2500	.505	.505	.504	.503	.502
90.5000	.501	.500	.500	.499	.498
90.7500	.497	.496	.495	.495	.494
91.0000	.493	.492	.491	.490	.490
91.2500	.489	.488	.487	.486	.485
91.5000	.485	.484	.483	.482	.481

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 100yr
File.... X:\2910000.ALL\2912810\HYDRO\100-YEAR.PPW
Storm... cos100yr Tag: 100yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
91.7500	.481	.480	.479	.478	.477
92.0000	.477	.476	.475	.474	.473
92.2500	.472	.472	.471	.470	.469
92.5000	.468	.468	.467	.466	.465
92.7500	.464	.464	.463	.462	.461
93.0000	.461	.460	.459	.458	.457
93.2500	.457	.456	.455	.454	.454
93.5000	.453	.452	.451	.450	.450
93.7500	.449	.448	.447	.446	.446
94.0000	.445	.444	.443	.442	.442
94.2500	.441	.440	.439	.439	.438
94.5000	.437	.436	.435	.435	.434
94.7500	.433	.432	.432	.431	.430
95.0000	.429	.429	.428	.427	.426
95.2500	.426	.425	.424	.423	.423
95.5000	.422	.421	.420	.419	.419
95.7500	.418	.417	.416	.416	.415
96.0000	.414	.413	.413	.412	.411
96.2500	.410	.410	.409	.408	.407
96.5000	.407	.406	.405	.404	.404
96.7500	.403	.402	.401	.401	.400
97.0000	.399	.399	.398	.397	.396
97.2500	.396	.395	.394	.393	.393
97.5000	.392	.391	.390	.390	.389
97.7500	.388	.387	.387	.386	.385
98.0000	.384	.384	.383	.382	.382
98.2500	.381	.380	.379	.379	.378
98.5000	.377	.377	.376	.375	.374
98.7500	.374	.373	.372	.371	.371
99.0000	.370	.369	.369	.368	.367
99.2500	.367	.366	.365	.364	.364
99.5000	.363	.362	.362	.361	.360
99.7500	.359	.359	.358	.357	.357
100.0000	.356				

File.... X:\2910000.ALL\2912810\HYDRO\100-YEAR.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 6724.50 ft
Increment = 1.00 ft
Max. Elev.= 6738.00 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	2	--->	TW	6724.500	6738.000
Inlet Box	IB	--->	TW	6735.600	6738.000
Culvert-Circular	12	--->	TW	6728.500	6738.000

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID	=	2	
Structure Type	=	Culvert-Circular	
No. Barrels	=	1	
Barrel Diameter	=	.1700	ft
Upstream Invert	=	6724.50	ft
Dnstream Invert	=	6724.00	ft
Horiz. Length	=	1.00	ft
Barrel Length	=	1.12	ft
Barrel Slope	=	.50000	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.5000	(forward entrance loss)
Kb	=	.332083	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0045
Inlet Control M	=	2.0000
Inlet Control c	=	.03170
Inlet Control Y	=	.6900
T1 ratio (HW/D)	=	.803
T2 ratio (HW/D)	=	.947
Slope Factor	=	-.500

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 = 6724.64 ft ---> Flow = .03 cfs
At T2 Elev = 6724.66 ft ---> Flow = .04 cfs

File.... X:\2910000.ALL\2912810\HYDRO\100-YEAR.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID	=	IB
Structure Type	=	Inlet Box
# of Openings	=	1
Invert Elev.	=	6735.60 ft
Orifice Area	=	1.0000 sq.ft
Orifice Coeff.	=	.600
Weir Length	=	4.00 ft
Weir Coeff.	=	3.400
Transition Elev.	=	6737.00 ft
Transition Ht.	=	.00 ft
Crossover Elev.	=	6735.60 ft (weir = orifice)
K, Submerged	=	.000
K, Reverse	=	1.000
Kb,Barrel	=	.000000 (per ft of full flow)
Barrel Length	=	.00 ft
Mannings n	=	.0000

File.... X:\2910000.ALL\2912810\HYDRO\100-YEAR.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID	=	12	
Structure Type	=	Culvert-Circular	
No. Barrels	=	1	
Barrel Diameter	=	1.0000	ft
Upstream Invert	=	6728.50	ft
Dnstream Invert	=	6724.00	ft
Horiz. Length	=	1.00	ft
Barrel Length	=	4.61	ft
Barrel Slope	=	4.50000	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.5000	(forward entrance loss)
Kb	=	.031274	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0045
Inlet Control M	=	2.0000
Inlet Control c	=	.03170
Inlet Control Y	=	.6900
T1 ratio (HW/D)	=	-1.155
T2 ratio (HW/D)	=	-1.053
Slope Factor	=	-.500

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 = 6727.35 ft ---> Flow = 2.75 cfs
At T2 Elev = 6727.45 ft ---> Flow = 3.14 cfs

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

Type.... Composite Rating Curve
Name.... PR 10

File.... X:\2910000.ALL\2912810\HYDRO\100-YEAR.PPW

***** COMPOSITE OUTFLOW SUMMARY ****

WS Elev, Total Q		Notes		
		Converge		
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
6724.50	.00	Free Outfall		None contributing
6725.50	.12	Free Outfall		2
6726.50	.18	Free Outfall		2
6727.50	.22	Free Outfall		2
6728.50	.25	Free Outfall		2
6729.50	2.34	Free Outfall		2 +12
6730.50	5.46	Free Outfall		2 +12
6731.50	7.61	Free Outfall		2 +12
6732.50	9.27	Free Outfall		2 +12
6733.50	10.67	Free Outfall		2 +12
6734.50	11.90	Free Outfall		2 +12
6735.50	13.02	Free Outfall		2 +12
6735.60	13.13	Free Outfall		2 +IB +12
6736.50	18.62	Free Outfall		2 +IB +12
6737.50	21.43	Free Outfall		2 +IB +12
6738.00	22.59	Free Outfall		2 +IB +12

Type.... Pond Routing Summary
Name.... P 10 OUT Tag: 100yr
File.... X:\2910000.ALL\2912810\HYDRO\100-YEAR.PPW
Storm... cos100yr Tag: 100yr

LEVEL POOL ROUTING SUMMARY

HYG Dir = X:\2910000.ALL\2912810\HYDRO\
Inflow HYG file = NONE STORED - P 10 IN 100yr
Outflow HYG file = NONE STORED - P 10 OUT 100yr

Pond Node Data = P 10
Pond Volume Data = P 10
Pond Outlet Data = PR 10

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	6724.50 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

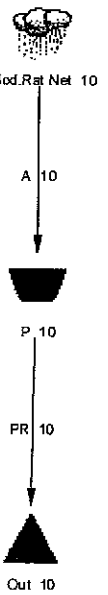
Peak Inflow	=	212.86 cfs	at	.4500 hrs
Peak Outflow	=	13.03 cfs	at	.9500 hrs
Peak Elevation	=	6735.51 ft		
Peak Storage	=	8.340 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	8.857
- Infiltration	=	.000
- HYG Vol OUT	=	8.475
- Retained Vol	=	.356
Unrouted Vol	=	-.027 ac-ft (.300% of Inflow Volume)

WARNING: Inflow hydrograph truncated on right side.
WARNING: Outflow hydrograph truncated on right side.

5-year



Job File: X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW
Rain Dir: H:\PPKW\RAINFALL\

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

JOB TITLE NOT SPECIFIED
Press Units & Storm button (main menu screen) to enter title.

S/N: f21801306a8b JR Engineering
PondPack Ver: 7.0 (325) Compute Time: 09:10:55 Date: 02-02-2001

JOB TITLE NOT SPECIFIED
Press Units & Storm button (main menu screen) to
enter title.

I-D-F DESIGN STORM SUMMARY

Storm Queue File,ID = COLOSPGS.IDQ 5yr

Storm Tag Name = 5yr
Description: 5yr I-D-F curve for Colo Spgs from DCM

File: Type, ID = COS5YR.IDF: I-D-F Storm... cos5yr
Storm Frequ. = 5 yr

File.... X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW

TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: User Defined

Segment #1 Time: .4700 hrs

Total Tc: .4700 hrs

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 5yr
File.... X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW
Storm... cos5yr Tag: 5yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
.0000	.000	.007	.045	.185	.298
.2500	.494	.756	1.022	1.341	1.694
.5000	2.085	2.474	2.862	3.221	3.537
.7500	3.814	4.040	4.218	4.356	4.451
1.0000	4.504	4.514	4.494	4.467	4.439
1.2500	4.412	4.385	4.358	4.332	4.306
1.5000	4.280	4.255	4.229	4.204	4.180
1.7500	4.155	4.131	4.107	4.084	4.060
2.0000	4.037	4.014	3.992	3.970	3.947
2.2500	3.925	3.902	3.880	3.857	3.835
2.5000	3.813	3.792	3.771	3.750	3.729
2.7500	3.709	3.689	3.670	3.650	3.632
3.0000	3.613	3.595	3.576	3.559	3.541
3.2500	3.524	3.507	3.490	3.474	3.458
3.5000	3.442	3.426	3.411	3.395	3.380
3.7500	3.366	3.351	3.337	3.323	3.309
4.0000	3.295	3.282	3.269	3.256	3.243
4.2500	3.231	3.218	3.206	3.194	3.182
4.5000	3.171	3.159	3.148	3.137	3.125
4.7500	3.115	3.104	3.093	3.083	3.073
5.0000	3.063	3.053	3.043	3.034	3.024
5.2500	3.015	3.005	2.995	2.985	2.976
5.5000	2.966	2.957	2.947	2.938	2.929
5.7500	2.920	2.911	2.903	2.894	2.885
6.0000	2.877	2.868	2.860	2.852	2.843
6.2500	2.835	2.827	2.820	2.812	2.804
6.5000	2.796	2.789	2.781	2.774	2.767
6.7500	2.760	2.753	2.746	2.739	2.732
7.0000	2.725	2.718	2.711	2.705	2.698
7.2500	2.692	2.686	2.679	2.673	2.667
7.5000	2.661	2.655	2.648	2.643	2.637
7.7500	2.631	2.625	2.620	2.614	2.609
8.0000	2.603	2.598	2.592	2.587	2.582
8.2500	2.577	2.572	2.566	2.562	2.556
8.5000	2.552	2.547	2.542	2.537	2.533
8.7500	2.528	2.523	2.519	2.515	2.510
9.0000	2.506	2.501	2.497	2.492	2.488
9.2500	2.484	2.480	2.476	2.472	2.468
9.5000	2.464	2.460	2.457	2.453	2.449
9.7500	2.445	2.441	2.438	2.434	2.431
10.0000	2.427	2.423	2.420	2.417	2.413
10.2500	2.410	2.406	2.403	2.400	2.397
10.5000	2.394	2.391	2.387	2.384	2.381
10.7500	2.378	2.375	2.372	2.370	2.366
11.0000	2.364	2.361	2.358	2.355	2.353

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 5yr
File.... X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW
Storm... cos5yr Tag: 5yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
11.2500	2.350	2.347	2.345	2.342	2.339
11.5000	2.337	2.334	2.332	2.329	2.327
11.7500	2.324	2.322	2.320	2.317	2.315
12.0000	2.313	2.310	2.308	2.306	2.304
12.2500	2.302	2.299	2.297	2.295	2.293
12.5000	2.291	2.289	2.287	2.285	2.283
12.7500	2.281	2.279	2.277	2.275	2.273
13.0000	2.271	2.269	2.268	2.266	2.264
13.2500	2.262	2.261	2.259	2.257	2.255
13.5000	2.254	2.252	2.250	2.249	2.247
13.7500	2.246	2.244	2.243	2.241	2.239
14.0000	2.238	2.236	2.235	2.234	2.232
14.2500	2.231	2.229	2.228	2.226	2.225
14.5000	2.224	2.222	2.221	2.220	2.219
14.7500	2.217	2.216	2.215	2.213	2.212
15.0000	2.211	2.210	2.208	2.207	2.206
15.2500	2.205	2.204	2.203	2.201	2.200
15.5000	2.200	2.198	2.197	2.196	2.195
15.7500	2.194	2.193	2.192	2.191	2.190
16.0000	2.189	2.188	2.187	2.186	2.185
16.2500	2.184	2.183	2.182	2.181	2.180
16.5000	2.179	2.178	2.177	2.176	2.174
16.7500	2.173	2.172	2.171	2.170	2.169
17.0000	2.168	2.167	2.166	2.165	2.164
17.2500	2.163	2.162	2.161	2.160	2.159
17.5000	2.158	2.157	2.156	2.155	2.154
17.7500	2.152	2.152	2.151	2.149	2.148
18.0000	2.147	2.146	2.145	2.144	2.143
18.2500	2.142	2.141	2.140	2.139	2.138
18.5000	2.137	2.136	2.135	2.134	2.133
18.7500	2.132	2.131	2.130	2.129	2.127
19.0000	2.127	2.126	2.124	2.124	2.122
19.2500	2.121	2.121	2.119	2.118	2.117
19.5000	2.116	2.115	2.114	2.113	2.112
19.7500	2.111	2.110	2.109	2.108	2.107
20.0000	2.106	2.105	2.104	2.103	2.102
20.2500	2.101	2.100	2.099	2.098	2.097
20.5000	2.096	2.095	2.094	2.093	2.091
20.7500	2.091	2.090	2.088	2.088	2.087
21.0000	2.085	2.085	2.083	2.082	2.082
21.2500	2.080	2.079	2.078	2.077	2.076
21.5000	2.075	2.074	2.073	2.072	2.071
21.7500	2.070	2.069	2.068	2.067	2.066
22.0000	2.065	2.064	2.063	2.062	2.061
22.2500	2.060	2.059	2.058	2.057	2.056
22.5000	2.055	2.054	2.053	2.052	2.051

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 5yr
File.... X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW
Storm... cos5yr Tag: 5yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
22.7500	2.050	2.049	2.048	2.047	2.046
23.0000	2.045	2.044	2.043	2.042	2.041
23.2500	2.040	2.039	2.038	2.037	2.036
23.5000	2.035	2.034	2.033	2.032	2.031
23.7500	2.030	2.029	2.028	2.027	2.026
24.0000	2.025	2.024	2.023	2.022	2.021
24.2500	2.020	2.019	2.018	2.017	2.016
24.5000	2.015	2.014	2.013	2.012	2.011
24.7500	2.010	2.009	2.008	2.007	2.006
25.0000	2.005	2.004	2.003	2.002	2.001
25.2500	2.000	1.999	1.998	1.997	1.996
25.5000	1.995	1.994	1.993	1.992	1.991
25.7500	1.990	1.989	1.988	1.987	1.986
26.0000	1.985	1.984	1.983	1.982	1.981
26.2500	1.980	1.979	1.978	1.977	1.976
26.5000	1.975	1.974	1.973	1.972	1.971
26.7500	1.970	1.969	1.968	1.967	1.966
27.0000	1.965	1.964	1.963	1.962	1.961
27.2500	1.960	1.959	1.958	1.957	1.957
27.5000	1.955	1.954	1.954	1.952	1.952
27.7500	1.951	1.949	1.949	1.948	1.946
28.0000	1.946	1.945	1.944	1.943	1.942
28.2500	1.941	1.940	1.939	1.938	1.937
28.5000	1.936	1.935	1.934	1.933	1.932
28.7500	1.931	1.930	1.929	1.928	1.927
29.0000	1.926	1.925	1.924	1.923	1.922
29.2500	1.921	1.920	1.919	1.918	1.917
29.5000	1.916	1.915	1.915	1.913	1.913
29.7500	1.912	1.910	1.910	1.909	1.908
30.0000	1.907	1.906	1.905	1.904	1.903
30.2500	1.902	1.901	1.900	1.899	1.898
30.5000	1.897	1.896	1.895	1.894	1.893
30.7500	1.892	1.891	1.890	1.889	1.888
31.0000	1.887	1.887	1.885	1.885	1.884
31.2500	1.883	1.882	1.881	1.880	1.879
31.5000	1.878	1.877	1.876	1.875	1.874
31.7500	1.873	1.872	1.871	1.870	1.869
32.0000	1.868	1.867	1.867	1.865	1.865
32.2500	1.864	1.862	1.862	1.861	1.860
32.5000	1.859	1.858	1.857	1.856	1.855
32.7500	1.854	1.853	1.852	1.851	1.850
33.0000	1.849	1.848	1.847	1.846	1.845
33.2500	1.845	1.844	1.843	1.842	1.841
33.5000	1.840	1.839	1.838	1.837	1.836
33.7500	1.835	1.834	1.833	1.832	1.831
34.0000	1.830	1.829	1.828	1.828	1.826

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 5yr
File.... X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW
Storm... cos5yr Tag: 5yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
34.2500	1.826	1.825	1.824	1.823	1.822
34.5000	1.821	1.820	1.819	1.818	1.817
34.7500	1.816	1.815	1.814	1.814	1.812
35.0000	1.812	1.811	1.809	1.809	1.808
35.2500	1.807	1.806	1.805	1.804	1.803
35.5000	1.802	1.801	1.800	1.800	1.798
35.7500	1.798	1.797	1.795	1.795	1.794
36.0000	1.793	1.792	1.791	1.790	1.789
36.2500	1.788	1.787	1.786	1.786	1.784
36.5000	1.784	1.783	1.782	1.781	1.780
36.7500	1.779	1.778	1.777	1.776	1.775
37.0000	1.774	1.773	1.772	1.772	1.770
37.2500	1.770	1.769	1.768	1.767	1.766
37.5000	1.765	1.764	1.763	1.762	1.761
37.7500	1.761	1.759	1.758	1.758	1.757
38.0000	1.756	1.755	1.754	1.753	1.752
38.2500	1.751	1.750	1.749	1.748	1.747
38.5000	1.747	1.746	1.745	1.744	1.743
38.7500	1.742	1.741	1.740	1.739	1.738
39.0000	1.738	1.736	1.736	1.735	1.734
39.2500	1.733	1.732	1.731	1.730	1.729
39.5000	1.728	1.727	1.727	1.725	1.725
39.7500	1.724	1.723	1.722	1.721	1.720
40.0000	1.719	1.718	1.717	1.716	1.716
40.2500	1.715	1.714	1.713	1.712	1.711
40.5000	1.710	1.709	1.708	1.707	1.706
40.7500	1.705	1.705	1.704	1.703	1.702
41.0000	1.701	1.700	1.699	1.698	1.697
41.2500	1.697	1.696	1.695	1.694	1.693
41.5000	1.692	1.691	1.690	1.689	1.688
41.7500	1.688	1.686	1.686	1.685	1.684
42.0000	1.683	1.682	1.681	1.680	1.679
42.2500	1.678	1.677	1.677	1.676	1.675
42.5000	1.674	1.673	1.672	1.671	1.670
42.7500	1.669	1.669	1.668	1.667	1.666
43.0000	1.665	1.664	1.663	1.662	1.661
43.2500	1.661	1.660	1.659	1.658	1.657
43.5000	1.656	1.655	1.654	1.653	1.652
43.7500	1.652	1.651	1.650	1.649	1.648
44.0000	1.647	1.646	1.645	1.644	1.644
44.2500	1.643	1.642	1.641	1.640	1.639
44.5000	1.638	1.638	1.636	1.636	1.635
44.7500	1.634	1.633	1.632	1.631	1.630
45.0000	1.629	1.629	1.628	1.627	1.626
45.2500	1.625	1.624	1.623	1.622	1.621
45.5000	1.621	1.620	1.619	1.618	1.617

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 5yr
File.... X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW
Storm... cos5yr Tag: 5yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
45.7500	1.616	1.615	1.614	1.613	1.613
46.0000	1.612	1.611	1.610	1.609	1.608
46.2500	1.607	1.607	1.605	1.605	1.604
46.5000	1.603	1.602	1.601	1.600	1.599
46.7500	1.599	1.598	1.597	1.596	1.595
47.0000	1.594	1.593	1.592	1.592	1.591
47.2500	1.590	1.589	1.588	1.587	1.586
47.5000	1.586	1.585	1.584	1.583	1.582
47.7500	1.581	1.580	1.580	1.578	1.578
48.0000	1.577	1.576	1.575	1.574	1.573
48.2500	1.572	1.572	1.571	1.570	1.569
48.5000	1.568	1.567	1.566	1.566	1.565
48.7500	1.564	1.563	1.562	1.561	1.560
49.0000	1.559	1.558	1.558	1.557	1.556
49.2500	1.555	1.554	1.553	1.553	1.552
49.5000	1.551	1.550	1.549	1.548	1.547
49.7500	1.547	1.546	1.545	1.544	1.543
50.0000	1.542	1.541	1.541	1.539	1.539
50.2500	1.538	1.537	1.536	1.535	1.534
50.5000	1.534	1.533	1.532	1.531	1.530
50.7500	1.529	1.528	1.528	1.527	1.526
51.0000	1.525	1.524	1.523	1.522	1.522
51.2500	1.521	1.520	1.519	1.518	1.517
51.5000	1.517	1.516	1.515	1.514	1.513
51.7500	1.512	1.511	1.511	1.510	1.509
52.0000	1.508	1.507	1.506	1.506	1.505
52.2500	1.504	1.503	1.502	1.501	1.500
52.5000	1.500	1.499	1.498	1.497	1.496
52.7500	1.495	1.495	1.494	1.493	1.492
53.0000	1.491	1.490	1.489	1.489	1.488
53.2500	1.487	1.486	1.485	1.484	1.484
53.5000	1.483	1.482	1.481	1.480	1.479
53.7500	1.478	1.478	1.477	1.476	1.475
54.0000	1.474	1.473	1.473	1.472	1.471
54.2500	1.470	1.469	1.468	1.468	1.467
54.5000	1.466	1.465	1.464	1.463	1.462
54.7500	1.462	1.461	1.460	1.459	1.458
55.0000	1.457	1.457	1.456	1.455	1.454
55.2500	1.453	1.452	1.452	1.451	1.450
55.5000	1.449	1.448	1.448	1.446	1.446
55.7500	1.445	1.444	1.443	1.443	1.442
56.0000	1.441	1.440	1.439	1.438	1.438
56.2500	1.437	1.436	1.435	1.434	1.433
56.5000	1.432	1.432	1.431	1.430	1.429
56.7500	1.428	1.427	1.426	1.425	1.425
57.0000	1.424	1.423	1.422	1.421	1.420

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 5yr
File.... X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW
Storm... cos5yr Tag: 5yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
57.2500	1.419	1.418	1.417	1.417	1.415
57.5000	1.414	1.414	1.413	1.412	1.411
57.7500	1.410	1.409	1.408	1.407	1.406
58.0000	1.406	1.405	1.404	1.403	1.402
58.2500	1.401	1.400	1.399	1.398	1.398
58.5000	1.397	1.396	1.395	1.394	1.393
58.7500	1.392	1.391	1.390	1.390	1.388
59.0000	1.388	1.387	1.386	1.385	1.384
59.2500	1.383	1.382	1.381	1.380	1.380
59.5000	1.379	1.378	1.377	1.376	1.375
59.7500	1.374	1.373	1.373	1.372	1.371
60.0000	1.370	1.369	1.368	1.367	1.366
60.2500	1.365	1.365	1.364	1.363	1.362
60.5000	1.361	1.360	1.359	1.358	1.358
60.7500	1.357	1.356	1.355	1.354	1.353
61.0000	1.352	1.351	1.350	1.350	1.349
61.2500	1.348	1.347	1.346	1.345	1.344
61.5000	1.343	1.343	1.342	1.341	1.340
61.7500	1.339	1.338	1.337	1.336	1.336
62.0000	1.335	1.334	1.333	1.332	1.331
62.2500	1.331	1.329	1.329	1.328	1.327
62.5000	1.326	1.325	1.324	1.324	1.323
62.7500	1.322	1.321	1.320	1.319	1.318
63.0000	1.317	1.317	1.316	1.315	1.314
63.2500	1.313	1.312	1.311	1.310	1.310
63.5000	1.309	1.308	1.307	1.306	1.305
63.7500	1.304	1.303	1.303	1.302	1.301
64.0000	1.300	1.299	1.298	1.298	1.297
64.2500	1.296	1.295	1.294	1.293	1.292
64.5000	1.291	1.291	1.290	1.289	1.288
64.7500	1.287	1.286	1.285	1.284	1.284
65.0000	1.283	1.282	1.281	1.280	1.280
65.2500	1.279	1.278	1.277	1.276	1.275
65.5000	1.274	1.273	1.273	1.272	1.271
65.7500	1.270	1.269	1.269	1.267	1.267
66.0000	1.266	1.265	1.264	1.263	1.262
66.2500	1.262	1.261	1.260	1.259	1.258
66.5000	1.257	1.256	1.256	1.255	1.254
66.7500	1.253	1.252	1.251	1.251	1.250
67.0000	1.249	1.248	1.247	1.246	1.245
67.2500	1.245	1.244	1.243	1.242	1.241
67.5000	1.241	1.240	1.239	1.238	1.237
67.7500	1.236	1.235	1.234	1.234	1.233
68.0000	1.232	1.231	1.230	1.230	1.229
68.2500	1.228	1.227	1.226	1.226	1.224
68.5000	1.224	1.223	1.222	1.221	1.220

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 5yr
File.... X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW
Storm... cos5yr Tag: 5yr

TIME vs. VOLUME (ac-ft)

Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
68.7500	1.220	1.219	1.218	1.217	1.216
69.0000	1.215	1.215	1.214	1.213	1.212
69.2500	1.211	1.210	1.209	1.209	1.208
69.5000	1.207	1.206	1.205	1.205	1.204
69.7500	1.203	1.202	1.201	1.200	1.199
70.0000	1.199	1.198	1.197	1.196	1.195
70.2500	1.195	1.194	1.193	1.192	1.191
70.5000	1.191	1.190	1.189	1.188	1.187
70.7500	1.186	1.185	1.185	1.184	1.183
71.0000	1.182	1.181	1.181	1.180	1.179
71.2500	1.178	1.177	1.177	1.176	1.175
71.5000	1.174	1.173	1.173	1.172	1.171
71.7500	1.170	1.169	1.168	1.168	1.167
72.0000	1.166	1.165	1.164	1.164	1.163
72.2500	1.162	1.161	1.160	1.160	1.159
72.5000	1.158	1.157	1.156	1.155	1.154
72.7500	1.154	1.153	1.152	1.151	1.150
73.0000	1.150	1.149	1.148	1.147	1.146
73.2500	1.146	1.145	1.144	1.143	1.143
73.5000	1.142	1.141	1.140	1.139	1.139
73.7500	1.138	1.137	1.136	1.135	1.134
74.0000	1.133	1.133	1.132	1.131	1.130
74.2500	1.130	1.129	1.128	1.127	1.126
74.5000	1.126	1.125	1.124	1.123	1.122
74.7500	1.122	1.121	1.120	1.119	1.118
75.0000	1.118	1.117	1.116	1.115	1.114
75.2500	1.113	1.113	1.112	1.111	1.110
75.5000	1.110	1.109	1.108	1.107	1.106
75.7500	1.106	1.105	1.104	1.103	1.102
76.0000	1.102	1.101	1.100	1.099	1.099
76.2500	1.098	1.097	1.096	1.095	1.095
76.5000	1.094	1.093	1.092	1.092	1.091
76.7500	1.090	1.089	1.088	1.087	1.086
77.0000	1.086	1.085	1.084	1.083	1.083
77.2500	1.082	1.081	1.080	1.079	1.079
77.5000	1.078	1.077	1.076	1.076	1.075
77.7500	1.074	1.073	1.072	1.072	1.071
78.0000	1.070	1.069	1.069	1.068	1.067
78.2500	1.066	1.066	1.065	1.064	1.063
78.5000	1.062	1.062	1.061	1.060	1.059
78.7500	1.059	1.058	1.057	1.056	1.055
79.0000	1.055	1.054	1.053	1.052	1.052
79.2500	1.051	1.050	1.049	1.049	1.048
79.5000	1.047	1.046	1.045	1.044	1.044
79.7500	1.043	1.042	1.041	1.040	1.040
80.0000	1.039	1.038	1.037	1.037	1.036

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 5yr
File.... X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW
Storm... cos5yr Tag: 5yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
80.2500	1.035	1.034	1.034	1.033	1.032
80.5000	1.031	1.031	1.030	1.029	1.028
80.7500	1.027	1.027	1.026	1.025	1.024
81.0000	1.024	1.023	1.022	1.021	1.021
81.2500	1.020	1.019	1.018	1.018	1.017
81.5000	1.016	1.015	1.014	1.014	1.013
81.7500	1.012	1.011	1.011	1.010	1.009
82.0000	1.008	1.008	1.007	1.006	1.005
82.2500	1.005	1.004	1.003	1.002	1.002
82.5000	1.001	1.000	.999	.998	.998
82.7500	.997	.996	.995	.995	.994
83.0000	.993	.992	.992	.991	.990
83.2500	.989	.989	.988	.987	.986
83.5000	.986	.985	.984	.983	.983
83.7500	.982	.981	.980	.980	.979
84.0000	.978	.977	.977	.976	.975
84.2500	.975	.974	.973	.972	.972
84.5000	.971	.970	.969	.969	.968
84.7500	.967	.966	.966	.965	.964
85.0000	.963	.963	.962	.961	.960
85.2500	.960	.959	.958	.957	.957
85.5000	.956	.955	.954	.954	.953
85.7500	.952	.951	.951	.950	.949
86.0000	.948	.948	.947	.946	.945
86.2500	.945	.944	.943	.942	.942
86.5000	.941	.940	.939	.939	.938
86.7500	.937	.936	.936	.935	.934
87.0000	.933	.933	.932	.932	.931
87.2500	.930	.929	.929	.928	.927
87.5000	.926	.926	.925	.924	.923
87.7500	.923	.922	.921	.920	.920
88.0000	.919	.918	.918	.917	.916
88.2500	.915	.915	.914	.913	.912
88.5000	.912	.911	.910	.909	.909
88.7500	.908	.907	.907	.906	.905
89.0000	.905	.904	.903	.902	.902
89.2500	.901	.900	.899	.899	.898
89.5000	.897	.896	.896	.895	.894
89.7500	.894	.893	.892	.891	.891
90.0000	.890	.889	.888	.888	.887
90.2500	.886	.886	.885	.884	.884
90.5000	.883	.882	.881	.881	.880
90.7500	.879	.879	.878	.877	.876
91.0000	.876	.875	.874	.873	.873
91.2500	.872	.871	.871	.870	.869
91.5000	.868	.868	.867	.866	.866

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 5yr
File.... X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW
Storm... cos5yr Tag: 5yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
91.7500	.865	.864	.864	.863	.862
92.0000	.861	.861	.860	.859	.858
92.2500	.858	.857	.856	.856	.855
92.5000	.854	.853	.853	.852	.852
92.7500	.851	.850	.849	.849	.848
93.0000	.847	.847	.846	.845	.844
93.2500	.844	.843	.842	.841	.841
93.5000	.840	.839	.839	.838	.837
93.7500	.837	.836	.835	.835	.834
94.0000	.833	.832	.832	.831	.830
94.2500	.830	.829	.828	.827	.827
94.5000	.826	.825	.825	.824	.823
94.7500	.823	.822	.821	.821	.820
95.0000	.819	.818	.818	.817	.816
95.2500	.816	.815	.814	.813	.813
95.5000	.812	.812	.811	.810	.809
95.7500	.809	.808	.807	.807	.806
96.0000	.805	.804	.804	.803	.802
96.2500	.802	.801	.801	.800	.799
96.5000	.798	.798	.797	.796	.796
96.7500	.795	.794	.793	.793	.792
97.0000	.791	.791	.790	.790	.789
97.2500	.788	.787	.787	.786	.785
97.5000	.785	.784	.783	.782	.782
97.7500	.781	.780	.780	.779	.779
98.0000	.778	.777	.776	.776	.775
98.2500	.774	.774	.773	.772	.772
98.5000	.771	.770	.770	.769	.768
98.7500	.768	.767	.766	.766	.765
99.0000	.764	.763	.763	.762	.761
99.2500	.761	.760	.760	.759	.758
99.5000	.757	.757	.756	.755	.755
99.7500	.754	.753	.753	.752	.751
100.0000	.751				

File.... X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 6724.50 ft
Increment = 1.00 ft
Max. Elev.= 6738.00 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	12	--->	TW	6728.500	6738.000
Inlet Box	IB	--->	TW	6735.500	6738.000
Culvert-Circular	2	--->	TW	6724.500	6738.000

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID	= 12	
Structure Type	= Culvert-Circular	
No. Barrels	= 1	
Barrel Diameter	= 1.0000	ft
Upstream Invert	= 6728.50	ft
Dnstream Invert	= 6724.00	ft
Horiz. Length	= 1.00	ft
Barrel Length	= 4.61	ft
Barrel Slope	= 4.50000	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.5000	(forward entrance loss)
Kb	=	.031274	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0045
Inlet Control M	=	2.0000
Inlet Control c	=	.03170
Inlet Control Y	=	.6900
T1 ratio (HW/D)	=	-1.155
T2 ratio (HW/D)	=	-1.053
Slope Factor	=	-.500

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 =	6727.35 ft	--->	Flow =	2.75	cfs
At T2 Elev =	6727.45 ft	--->	Flow =	3.14	cfs

OUTLET STRUCTURE INPUT DATA

Structure ID	=	IB	
Structure Type	=	Inlet Box	
# of Openings	=	1	
Invert Elev.	=	6735.50	ft
Orifice Area	=	1.0000	sq.ft
Orifice Coeff.	=	.600	
Weir Length	=	4.00	ft
Weir Coeff.	=	3.400	
Transition Elev.	=	6736.90	ft
Transition Ht.	=	.00	ft
Crossover Elev.	=	6735.50	ft (weir = orifice)
K, Submerged	=	.000	
K, Reverse	=	1.000	
Kb,Barrel	=	.000000	(per ft of full flow)
Barrel Length	=	.00	ft
Mannings n	=	.0000	

File.... X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = 2
Structure Type = Culvert-Circular

No. Barrels	=	1	
Barrel Diameter	=	.1667	ft
Upstream Invert	=	6724.50	ft
Dnstream Invert	=	6724.00	ft
Horiz. Length	=	1.00	ft
Barrel Length	=	1.12	ft
Barrel Slope	=	.50000	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.5000	(forward entrance loss)
Kb	=	.340877	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0045
Inlet Control M	=	2.0000
Inlet Control c	=	.03170
Inlet Control Y	=	.6900
T1 ratio (HW/D)	=	.803
T2 ratio (HW/D)	=	.947
Slope Factor	=	-.500

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 = 6724.63 ft ---> Flow = .03 cfs
At T2 Elev = 6724.66 ft ---> Flow = .04 cfs

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

Type.... Composite Rating Curve
Name.... PR 10

File.... X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW

***** COMPOSITE OUTFLOW SUMMARY ****

WS Elev, Total Q		Notes		
		Converge		
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
6724.50	.00	Free Outfall		None contributing
6725.50	.12	Free Outfall		2
6726.50	.17	Free Outfall		2
6727.50	.21	Free Outfall		2
6728.50	.24	Free Outfall		2
6729.50	2.33	Free Outfall		12 +2
6730.50	5.45	Free Outfall		12 +2
6731.50	7.59	Free Outfall		12 +2
6732.50	9.26	Free Outfall		12 +2
6733.50	10.65	Free Outfall		12 +2
6734.50	11.89	Free Outfall		12 +2
6735.50	13.01	Free Outfall		12 +IB +2
6736.50	18.85	Free Outfall		12 +IB +2
6737.50	21.58	Free Outfall		12 +IB +2
6738.00	22.73	Free Outfall		12 +IB +2

Type.... Pond Routing Summary
Name.... P 10 OUT Tag: 5yr
File.... X:\2910000.ALL\2912810\HYDRO\5-YEAR.PPW
Storm... cos5yr Tag: 5yr

LEVEL POOL ROUTING SUMMARY

HYG Dir = X:\2910000.ALL\2912810\HYDRO\
Inflow HYG file = NONE STORED - P 10 IN 5yr
Outflow HYG file = NONE STORED - P 10 OUT 5yr

Pond Node Data = P 10
Pond Volume Data = P 10
Pond Outlet Data = PR 10

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	= 6724.50	ft
Starting Volume	= .000	ac-ft
Starting Outflow	= .00	cfs
Starting Infiltr.	= .00	cfs
Starting Total Qout	= .00	cfs
Time Increment	= .0500	hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

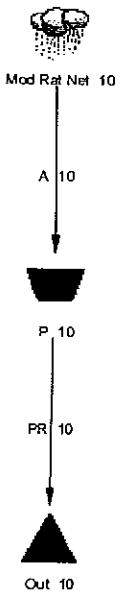
Peak Inflow	= 95.88	cfs	at	.5000 hrs
Peak Outflow	= 6.77	cfs	at	1.0500 hrs
Peak Elevation	= 6731.12	ft		
Peak Storage	= 4.514	ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	4.744
- Infiltration	=	.000
- HYG Vol OUT	=	3.993
- Retained Vol	=	.751
Unrouted Vol	=	-.001 ac-ft (.011% of Inflow Volume)

WARNING: Outflow hydrograph truncated on right side.

2-year



File.... H:\PPKW\RAINFALL\COLOSPGS.IDQ
Title...

JOB TITLE NOT SPECIFIED
Press Units & Storm button (main menu screen) to
enter title.

I-D-F DESIGN STORM SUMMARY

Storm Queue File,ID = COLOSPGS.IDQ Cos2yr

Storm Tag Name = 2yr
Description: 2yr I-D-F curve for Colo Spgs from areawide urban
manual

File: Type, ID = COS2YR.IDF: I-D-F Storm... IDF tbl 10
Storm Frequ. = 2 yr

File.... X:\2910000.ALL\2912810\HYDRO\2-YEAR.PPW

TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: User Defined

Segment #1 Time: .4700 hrs

Total Tc: .4700 hrs

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 2yr
File.... X:\2910000.ALL\2912810\HYDRO\2-YEAR.PPW
Storm... IDF tbl 10 Tag: 2yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
.0000	.000	.004	.027	.104	.220
.2500	.332	.509	.732	.951	1.205
.5000	1.485	1.760	2.045	2.324	2.588
.7500	2.832	3.045	3.215	3.357	3.468
1.0000	3.549	3.599	3.618	3.613	3.594
1.2500	3.576	3.559	3.541	3.524	3.507
1.5000	3.490	3.474	3.458	3.442	3.426
1.7500	3.411	3.395	3.380	3.366	3.351
2.0000	3.337	3.323	3.309	3.295	3.282
2.2500	3.269	3.256	3.243	3.231	3.218
2.5000	3.206	3.194	3.182	3.170	3.159
2.7500	3.147	3.137	3.125	3.115	3.104
3.0000	3.093	3.083	3.073	3.063	3.053
3.2500	3.043	3.034	3.024	3.015	3.005
3.5000	2.995	2.985	2.976	2.966	2.957
3.7500	2.947	2.938	2.929	2.920	2.911
4.0000	2.903	2.894	2.885	2.877	2.868
4.2500	2.860	2.852	2.843	2.835	2.827
4.5000	2.820	2.812	2.804	2.796	2.789
4.7500	2.781	2.774	2.767	2.760	2.753
5.0000	2.746	2.739	2.732	2.725	2.718
5.2500	2.711	2.705	2.698	2.692	2.685
5.5000	2.679	2.673	2.667	2.661	2.655
5.7500	2.648	2.643	2.637	2.631	2.625
6.0000	2.620	2.614	2.609	2.603	2.598
6.2500	2.592	2.587	2.582	2.577	2.572
6.5000	2.566	2.562	2.556	2.552	2.547
6.7500	2.542	2.537	2.533	2.528	2.523
7.0000	2.519	2.515	2.510	2.506	2.501
7.2500	2.497	2.492	2.488	2.484	2.480
7.5000	2.476	2.472	2.468	2.464	2.460
7.7500	2.457	2.453	2.449	2.445	2.441
8.0000	2.438	2.434	2.431	2.427	2.423
8.2500	2.420	2.417	2.413	2.410	2.406
8.5000	2.403	2.400	2.397	2.394	2.391
8.7500	2.387	2.384	2.381	2.378	2.375
9.0000	2.372	2.370	2.366	2.364	2.361
9.2500	2.358	2.355	2.353	2.350	2.347
9.5000	2.345	2.342	2.339	2.337	2.334
9.7500	2.332	2.329	2.327	2.324	2.322
10.0000	2.320	2.317	2.315	2.313	2.310
10.2500	2.308	2.306	2.304	2.302	2.299
10.5000	2.297	2.295	2.293	2.291	2.289
10.7500	2.287	2.285	2.283	2.281	2.279
11.0000	2.277	2.275	2.273	2.271	2.269

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 2yr
File.... X:\2910000.ALL\2912810\HYDRO\2-YEAR.PPW
Storm... IDF tbl 10 Tag: 2yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
11.2500	2.268	2.266	2.264	2.262	2.261
11.5000	2.259	2.257	2.255	2.254	2.252
11.7500	2.250	2.249	2.247	2.246	2.244
12.0000	2.243	2.241	2.239	2.238	2.236
12.2500	2.235	2.234	2.232	2.231	2.229
12.5000	2.228	2.226	2.225	2.224	2.222
12.7500	2.221	2.220	2.219	2.217	2.216
13.0000	2.215	2.213	2.212	2.211	2.210
13.2500	2.208	2.207	2.206	2.205	2.204
13.5000	2.203	2.201	2.200	2.199	2.198
13.7500	2.197	2.196	2.195	2.194	2.193
14.0000	2.192	2.191	2.190	2.189	2.188
14.2500	2.187	2.186	2.185	2.184	2.183
14.5000	2.182	2.181	2.180	2.179	2.178
14.7500	2.177	2.176	2.174	2.173	2.172
15.0000	2.171	2.170	2.169	2.168	2.167
15.2500	2.166	2.165	2.164	2.163	2.162
15.5000	2.161	2.160	2.159	2.158	2.157
15.7500	2.156	2.155	2.154	2.152	2.152
16.0000	2.151	2.149	2.148	2.147	2.146
16.2500	2.145	2.144	2.143	2.142	2.141
16.5000	2.140	2.139	2.138	2.137	2.136
16.7500	2.135	2.134	2.133	2.132	2.131
17.0000	2.130	2.129	2.127	2.127	2.126
17.2500	2.124	2.124	2.122	2.121	2.121
17.5000	2.119	2.118	2.117	2.116	2.115
17.7500	2.114	2.113	2.112	2.111	2.110
18.0000	2.109	2.108	2.107	2.106	2.105
18.2500	2.104	2.103	2.102	2.101	2.100
18.5000	2.099	2.098	2.097	2.096	2.095
18.7500	2.094	2.093	2.091	2.091	2.090
19.0000	2.088	2.088	2.087	2.085	2.085
19.2500	2.083	2.082	2.082	2.080	2.079
19.5000	2.078	2.077	2.076	2.075	2.074
19.7500	2.073	2.072	2.071	2.070	2.069
20.0000	2.068	2.067	2.066	2.065	2.064
20.2500	2.063	2.062	2.061	2.060	2.059
20.5000	2.058	2.057	2.056	2.055	2.054
20.7500	2.053	2.052	2.051	2.050	2.049
21.0000	2.048	2.047	2.046	2.045	2.044
21.2500	2.043	2.042	2.041	2.040	2.039
21.5000	2.038	2.037	2.036	2.035	2.034
21.7500	2.033	2.032	2.031	2.030	2.029
22.0000	2.028	2.027	2.026	2.025	2.024
22.2500	2.023	2.022	2.021	2.020	2.019
22.5000	2.018	2.017	2.016	2.015	2.014

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 2yr
File.... X:\2910000.ALL\2912810\HYDRO\2-YEAR.PPW
Storm... IDF tbl 10 Tag: 2yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
22.7500	2.013	2.012	2.011	2.010	2.009
23.0000	2.008	2.007	2.006	2.005	2.004
23.2500	2.003	2.002	2.001	2.000	1.999
23.5000	1.998	1.997	1.996	1.995	1.994
23.7500	1.993	1.992	1.991	1.990	1.989
24.0000	1.988	1.987	1.986	1.985	1.984
24.2500	1.983	1.982	1.981	1.980	1.979
24.5000	1.978	1.977	1.976	1.975	1.974
24.7500	1.973	1.972	1.971	1.970	1.969
25.0000	1.968	1.967	1.966	1.965	1.964
25.2500	1.963	1.962	1.961	1.960	1.959
25.5000	1.958	1.957	1.957	1.955	1.954
25.7500	1.954	1.952	1.952	1.951	1.949
26.0000	1.949	1.948	1.946	1.946	1.945
26.2500	1.944	1.943	1.942	1.941	1.940
26.5000	1.939	1.938	1.937	1.936	1.935
26.7500	1.934	1.933	1.932	1.931	1.930
27.0000	1.929	1.928	1.927	1.926	1.925
27.2500	1.924	1.923	1.922	1.921	1.920
27.5000	1.919	1.918	1.917	1.916	1.915
27.7500	1.915	1.913	1.913	1.912	1.910
28.0000	1.910	1.909	1.908	1.907	1.906
28.2500	1.905	1.904	1.903	1.902	1.901
28.5000	1.900	1.899	1.898	1.897	1.896
28.7500	1.895	1.894	1.893	1.892	1.891
29.0000	1.890	1.889	1.888	1.887	1.887
29.2500	1.885	1.885	1.884	1.883	1.882
29.5000	1.881	1.880	1.879	1.878	1.877
29.7500	1.876	1.875	1.874	1.873	1.872
30.0000	1.871	1.870	1.869	1.868	1.867
30.2500	1.867	1.865	1.865	1.864	1.862
30.5000	1.862	1.861	1.860	1.859	1.858
30.7500	1.857	1.856	1.855	1.854	1.853
31.0000	1.852	1.851	1.850	1.849	1.848
31.2500	1.847	1.846	1.845	1.845	1.844
31.5000	1.843	1.842	1.841	1.840	1.839
31.7500	1.838	1.837	1.836	1.835	1.834
32.0000	1.833	1.832	1.831	1.830	1.829
32.2500	1.828	1.828	1.826	1.826	1.825
32.5000	1.824	1.823	1.822	1.821	1.820
32.7500	1.819	1.818	1.817	1.816	1.815
33.0000	1.814	1.814	1.812	1.812	1.811
33.2500	1.809	1.809	1.808	1.807	1.806
33.5000	1.805	1.804	1.803	1.802	1.801
33.7500	1.800	1.800	1.798	1.798	1.797
34.0000	1.795	1.795	1.794	1.793	1.792

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 2yr
File.... X:\2910000.ALL\2912810\HYDRO\2-YEAR.PPW
Storm... IDF tbl 10 Tag: 2yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
34.2500	1.791	1.790	1.789	1.788	1.787
34.5000	1.786	1.786	1.784	1.784	1.783
34.7500	1.782	1.781	1.780	1.779	1.778
35.0000	1.777	1.776	1.775	1.774	1.773
35.2500	1.772	1.772	1.770	1.770	1.769
35.5000	1.768	1.767	1.766	1.765	1.764
35.7500	1.763	1.762	1.761	1.761	1.759
36.0000	1.758	1.758	1.757	1.756	1.755
36.2500	1.754	1.753	1.752	1.751	1.750
36.5000	1.749	1.748	1.747	1.747	1.746
36.7500	1.745	1.744	1.743	1.742	1.741
37.0000	1.740	1.739	1.738	1.738	1.736
37.2500	1.736	1.735	1.734	1.733	1.732
37.5000	1.731	1.730	1.729	1.728	1.727
37.7500	1.727	1.725	1.725	1.724	1.723
38.0000	1.722	1.721	1.720	1.719	1.718
38.2500	1.717	1.716	1.716	1.715	1.714
38.5000	1.713	1.712	1.711	1.710	1.709
38.7500	1.708	1.707	1.706	1.705	1.705
39.0000	1.704	1.703	1.702	1.701	1.700
39.2500	1.699	1.698	1.697	1.697	1.696
39.5000	1.695	1.694	1.693	1.692	1.691
39.7500	1.690	1.689	1.688	1.688	1.686
40.0000	1.686	1.685	1.684	1.683	1.682
40.2500	1.681	1.680	1.679	1.678	1.677
40.5000	1.677	1.676	1.675	1.674	1.673
40.7500	1.672	1.671	1.670	1.669	1.669
41.0000	1.668	1.667	1.666	1.665	1.664
41.2500	1.663	1.662	1.661	1.661	1.660
41.5000	1.659	1.658	1.657	1.656	1.655
41.7500	1.654	1.653	1.652	1.652	1.651
42.0000	1.650	1.649	1.648	1.647	1.646
42.2500	1.645	1.644	1.644	1.643	1.642
42.5000	1.641	1.640	1.639	1.638	1.638
42.7500	1.636	1.636	1.635	1.634	1.633
43.0000	1.632	1.631	1.630	1.629	1.629
43.2500	1.628	1.627	1.626	1.625	1.624
43.5000	1.623	1.622	1.621	1.621	1.620
43.7500	1.619	1.618	1.617	1.616	1.615
44.0000	1.614	1.613	1.613	1.612	1.611
44.2500	1.610	1.609	1.608	1.607	1.607
44.5000	1.605	1.605	1.604	1.603	1.602
44.7500	1.601	1.600	1.599	1.599	1.598
45.0000	1.597	1.596	1.595	1.594	1.593
45.2500	1.592	1.592	1.591	1.590	1.589
45.5000	1.588	1.587	1.586	1.585	1.585

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 2yr
File.... X:\2910000.ALL\2912810\HYDRO\2-YEAR.PPW
Storm... IDF tbl 10 Tag: 2yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
45.7500	1.584	1.583	1.582	1.581	1.580
46.0000	1.580	1.578	1.578	1.577	1.576
46.2500	1.575	1.574	1.573	1.572	1.572
46.5000	1.571	1.570	1.569	1.568	1.567
46.7500	1.566	1.566	1.565	1.564	1.563
47.0000	1.562	1.561	1.560	1.559	1.558
47.2500	1.558	1.557	1.556	1.555	1.554
47.5000	1.553	1.553	1.552	1.551	1.550
47.7500	1.549	1.548	1.547	1.547	1.546
48.0000	1.545	1.544	1.543	1.542	1.541
48.2500	1.541	1.539	1.539	1.538	1.537
48.5000	1.536	1.535	1.534	1.534	1.533
48.7500	1.532	1.531	1.530	1.529	1.528
49.0000	1.528	1.527	1.526	1.525	1.524
49.2500	1.523	1.522	1.522	1.521	1.520
49.5000	1.519	1.518	1.517	1.517	1.516
49.7500	1.515	1.514	1.513	1.512	1.511
50.0000	1.511	1.510	1.509	1.508	1.507
50.2500	1.506	1.506	1.505	1.504	1.503
50.5000	1.502	1.501	1.500	1.500	1.499
50.7500	1.498	1.497	1.496	1.495	1.495
51.0000	1.494	1.493	1.492	1.491	1.490
51.2500	1.489	1.489	1.488	1.487	1.486
51.5000	1.485	1.484	1.484	1.483	1.482
51.7500	1.481	1.480	1.479	1.478	1.478
52.0000	1.477	1.476	1.475	1.474	1.473
52.2500	1.473	1.472	1.471	1.470	1.469
52.5000	1.468	1.468	1.467	1.466	1.465
52.7500	1.464	1.463	1.462	1.462	1.461
53.0000	1.460	1.459	1.458	1.457	1.457
53.2500	1.456	1.455	1.454	1.453	1.452
53.5000	1.452	1.451	1.450	1.449	1.448
53.7500	1.448	1.446	1.446	1.445	1.444
54.0000	1.443	1.443	1.442	1.441	1.440
54.2500	1.439	1.438	1.438	1.437	1.436
54.5000	1.435	1.434	1.433	1.432	1.432
54.7500	1.431	1.430	1.429	1.428	1.427
55.0000	1.426	1.425	1.425	1.424	1.423
55.2500	1.422	1.421	1.420	1.419	1.418
55.5000	1.417	1.417	1.415	1.414	1.414
55.7500	1.413	1.412	1.411	1.410	1.409
56.0000	1.408	1.407	1.406	1.406	1.405
56.2500	1.404	1.403	1.402	1.401	1.400
56.5000	1.399	1.398	1.398	1.397	1.396
56.7500	1.395	1.394	1.393	1.392	1.391
57.0000	1.390	1.390	1.388	1.388	1.387

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 2yr
File.... X:\2910000.ALL\2912810\HYDRO\2-YEAR.PPW
Storm... IDF tbl 10 Tag: 2yr
Event: 2 yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
57.2500	1.386	1.385	1.384	1.383	1.382
57.5000	1.381	1.380	1.380	1.379	1.378
57.7500	1.377	1.376	1.375	1.374	1.373
58.0000	1.373	1.372	1.371	1.370	1.369
58.2500	1.368	1.367	1.366	1.365	1.365
58.5000	1.364	1.363	1.362	1.361	1.360
58.7500	1.359	1.358	1.358	1.357	1.356
59.0000	1.355	1.354	1.353	1.352	1.351
59.2500	1.350	1.350	1.349	1.348	1.347
59.5000	1.346	1.345	1.344	1.343	1.343
59.7500	1.342	1.341	1.340	1.339	1.338
60.0000	1.337	1.336	1.336	1.335	1.334
60.2500	1.333	1.332	1.331	1.331	1.329
60.5000	1.329	1.328	1.327	1.326	1.325
60.7500	1.324	1.324	1.323	1.321	1.321
61.0000	1.320	1.319	1.318	1.317	1.317
61.2500	1.316	1.315	1.314	1.313	1.312
61.5000	1.311	1.310	1.310	1.309	1.308
61.7500	1.307	1.306	1.305	1.304	1.303
62.0000	1.303	1.302	1.301	1.300	1.299
62.2500	1.298	1.298	1.297	1.296	1.295
62.5000	1.294	1.293	1.292	1.291	1.291
62.7500	1.290	1.289	1.288	1.287	1.286
63.0000	1.285	1.284	1.284	1.283	1.282
63.2500	1.281	1.280	1.280	1.279	1.278
63.5000	1.277	1.276	1.275	1.274	1.273
63.7500	1.273	1.272	1.271	1.270	1.269
64.0000	1.269	1.267	1.267	1.266	1.265
64.2500	1.264	1.263	1.262	1.262	1.261
64.5000	1.260	1.259	1.258	1.257	1.256
64.7500	1.256	1.255	1.254	1.253	1.252
65.0000	1.251	1.251	1.250	1.249	1.248
65.2500	1.247	1.246	1.245	1.245	1.244
65.5000	1.243	1.242	1.241	1.241	1.240
65.7500	1.239	1.238	1.237	1.236	1.235
66.0000	1.234	1.234	1.233	1.232	1.231
66.2500	1.230	1.230	1.229	1.228	1.227
66.5000	1.226	1.226	1.224	1.224	1.223
66.7500	1.222	1.221	1.220	1.220	1.219
67.0000	1.218	1.217	1.216	1.215	1.215
67.2500	1.214	1.213	1.212	1.211	1.210
67.5000	1.209	1.209	1.208	1.207	1.206
67.7500	1.205	1.205	1.204	1.203	1.202
68.0000	1.201	1.200	1.199	1.199	1.198
68.2500	1.197	1.196	1.195	1.195	1.194
68.5000	1.193	1.192	1.191	1.191	1.190

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 2yr
File.... X:\2910000.ALL\2912810\HYDRO\2-YEAR.PPW
Storm... IDF tbl 10 Tag: 2yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
68.7500	1.189	1.188	1.187	1.186	1.185
69.0000	1.185	1.184	1.183	1.182	1.181
69.2500	1.181	1.180	1.179	1.178	1.177
69.5000	1.177	1.176	1.175	1.174	1.173
69.7500	1.173	1.172	1.171	1.170	1.169
70.0000	1.168	1.168	1.167	1.166	1.165
70.2500	1.164	1.164	1.163	1.162	1.161
70.5000	1.160	1.160	1.159	1.158	1.157
70.7500	1.156	1.155	1.154	1.154	1.153
71.0000	1.152	1.151	1.150	1.150	1.149
71.2500	1.148	1.147	1.146	1.146	1.145
71.5000	1.144	1.143	1.143	1.142	1.141
71.7500	1.140	1.139	1.139	1.138	1.137
72.0000	1.136	1.135	1.134	1.133	1.133
72.2500	1.132	1.131	1.130	1.130	1.129
72.5000	1.128	1.127	1.126	1.126	1.125
72.7500	1.124	1.123	1.122	1.122	1.121
73.0000	1.120	1.119	1.118	1.118	1.117
73.2500	1.116	1.115	1.114	1.113	1.113
73.5000	1.112	1.111	1.110	1.110	1.109
73.7500	1.108	1.107	1.106	1.106	1.105
74.0000	1.104	1.103	1.102	1.102	1.101
74.2500	1.100	1.099	1.099	1.098	1.097
74.5000	1.096	1.095	1.095	1.094	1.093
74.7500	1.092	1.092	1.091	1.090	1.089
75.0000	1.088	1.087	1.086	1.086	1.085
75.2500	1.084	1.083	1.083	1.082	1.081
75.5000	1.080	1.079	1.079	1.078	1.077
75.7500	1.076	1.076	1.075	1.074	1.073
76.0000	1.072	1.072	1.071	1.070	1.069
76.2500	1.069	1.068	1.067	1.066	1.066
76.5000	1.065	1.064	1.063	1.062	1.062
76.7500	1.061	1.060	1.059	1.059	1.058
77.0000	1.057	1.056	1.055	1.055	1.054
77.2500	1.053	1.052	1.052	1.051	1.050
77.5000	1.049	1.049	1.048	1.047	1.046
77.7500	1.045	1.044	1.044	1.043	1.042
78.0000	1.041	1.040	1.040	1.039	1.038
78.2500	1.037	1.037	1.036	1.035	1.034
78.5000	1.034	1.033	1.032	1.031	1.031
78.7500	1.030	1.029	1.028	1.027	1.027
79.0000	1.026	1.025	1.024	1.024	1.023
79.2500	1.022	1.021	1.021	1.020	1.019
79.5000	1.018	1.018	1.017	1.016	1.015
79.7500	1.014	1.014	1.013	1.012	1.011
80.0000	1.011	1.010	1.009	1.008	1.008

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
80.2500	1.007	1.006	1.005	1.005	1.004
80.5000	1.003	1.002	1.002	1.001	1.000
80.7500	.999	.998	.998	.997	.996
81.0000	.995	.995	.994	.993	.992
81.2500	.992	.991	.990	.989	.989
81.5000	.988	.987	.986	.986	.985
81.7500	.984	.983	.983	.982	.981
82.0000	.980	.980	.979	.978	.977
82.2500	.977	.976	.975	.975	.974
82.5000	.973	.972	.972	.971	.970
82.7500	.969	.969	.968	.967	.966
83.0000	.966	.965	.964	.963	.963
83.2500	.962	.961	.960	.960	.959
83.5000	.958	.957	.957	.956	.955
83.7500	.954	.954	.953	.952	.951
84.0000	.951	.950	.949	.948	.948
84.2500	.947	.946	.945	.945	.944
84.5000	.943	.942	.942	.941	.940
84.7500	.939	.939	.938	.937	.936
85.0000	.936	.935	.934	.933	.933
85.2500	.932	.932	.931	.930	.929
85.5000	.929	.928	.927	.926	.926
85.7500	.925	.924	.923	.923	.922
86.0000	.921	.920	.920	.919	.918
86.2500	.918	.917	.916	.915	.915
86.5000	.914	.913	.912	.912	.911
86.7500	.910	.909	.909	.908	.907
87.0000	.907	.906	.905	.905	.904
87.2500	.903	.902	.902	.901	.900
87.5000	.899	.899	.898	.897	.896
87.7500	.896	.895	.894	.894	.893
88.0000	.892	.891	.891	.890	.889
88.2500	.888	.888	.887	.886	.886
88.5000	.885	.884	.884	.883	.882
88.7500	.881	.881	.880	.879	.879
89.0000	.878	.877	.876	.876	.875
89.2500	.874	.873	.873	.872	.871
89.5000	.870	.870	.869	.868	.868
89.7500	.867	.866	.866	.865	.864
90.0000	.864	.863	.862	.861	.861
90.2500	.860	.859	.858	.858	.857
90.5000	.856	.856	.855	.854	.853
90.7500	.853	.852	.852	.851	.850
91.0000	.849	.849	.848	.847	.847
91.2500	.846	.845	.844	.844	.843
91.5000	.842	.841	.841	.840	.839

Type.... Time vs. Volume
Name.... P 10 OUT Tag: 2yr
File.... X:\2910000.ALL\2912810\HYDRO\2-YEAR.PPW
Storm... IDF tbl 10 Tag: 2yr

Event: 2 yr

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
91.7500	.839	.838	.837	.837	.836
92.0000	.835	.835	.834	.833	.832
92.2500	.832	.831	.830	.830	.829
92.5000	.828	.827	.827	.826	.825
92.7500	.825	.824	.823	.823	.822
93.0000	.821	.821	.820	.819	.818
93.2500	.818	.817	.816	.816	.815
93.5000	.814	.813	.813	.812	.812
93.7500	.811	.810	.809	.809	.808
94.0000	.807	.807	.806	.805	.804
94.2500	.804	.803	.802	.802	.801
94.5000	.801	.800	.799	.798	.798
94.7500	.797	.796	.796	.795	.794
95.0000	.793	.793	.792	.791	.791
95.2500	.790	.790	.789	.788	.787
95.5000	.787	.786	.785	.785	.784
95.7500	.783	.782	.782	.781	.780
96.0000	.780	.779	.779	.778	.777
96.2500	.776	.776	.775	.774	.774
96.5000	.773	.772	.772	.771	.770
96.7500	.770	.769	.768	.768	.767
97.0000	.766	.766	.765	.764	.763
97.2500	.763	.762	.761	.761	.760
97.5000	.760	.759	.758	.757	.757
97.7500	.756	.755	.755	.754	.753
98.0000	.753	.752	.751	.751	.750
98.2500	.749	.749	.748	.747	.747
98.5000	.746	.745	.744	.744	.743
98.7500	.742	.742	.741	.740	.739
99.0000	.739	.738	.737	.736	.735
99.2500	.734	.734	.733	.732	.731
99.5000	.731	.730	.729	.728	.727
99.7500	.726	.726	.725	.724	.723
100.0000	.722				

File.... X:\2910000.ALL\2912810\HYDRO\2-YEAR.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 6724.50 ft
Increment = 1.00 ft
Max. Elev.= 6738.00 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	12	--->	TW	6728.500	6738.000
Inlet Box	IB	--->	TW	6735.500	6738.000
Culvert-Circular	2	--->	TW	6724.500	6738.000

TW SETUP, DS Channel

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OUTLET STRUCTURE INPUT DATA

Structure ID	=	12	
Structure Type	=	Culvert-Circular	
No. Barrels	=	1	
Barrel Diameter	=	1.0000	ft
Upstream Invert	=	6728.50	ft
Dnstream Invert	=	6724.00	ft
Horiz. Length	=	1.00	ft
Barrel Length	=	4.61	ft
Barrel Slope	=	4.50000	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.5000	(forward entrance loss)
Kb	=	.031274	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0045
Inlet Control M	=	2.0000
Inlet Control c	=	.03170
Inlet Control Y	=	.6900
T1 ratio (HW/D)	=	-1.155
T2 ratio (HW/D)	=	-1.053
Slope Factor	=	-.500

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 = 6727.35 ft ---> Flow = 2.75 cfs
At T2 Elev = 6727.45 ft ---> Flow = 3.14 cfs

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OUTLET STRUCTURE INPUT DATA

Structure ID	= IB	
Structure Type	= Inlet Box	
# of Openings	= 1	
Invert Elev.	= 6735.50	ft
Orifice Area	= 1.0000	sq.ft
Orifice Coeff.	= .600	
Weir Length	= 4.00	ft
Weir Coeff.	= 3.400	
Transition Elev.	= 6736.90	ft
Transition Ht.	= .00	ft
Crossover Elev.	= 6735.50	ft (weir = orifice)
K, Submerged	= .000	
K, Reverse	= 1.000	
Kb,Barrel	= .000000	(per ft of full flow)
Barrel Length	= .00	ft
Mannings n	= .0000	

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OUTLET STRUCTURE INPUT DATA

Structure ID	=	2	
Structure Type	=	Culvert-Circular	
No. Barrels	=	1	
Barrel Diameter	=	.1667	ft
Upstream Invert	=	6724.50	ft
Dnstream Invert	=	6724.00	ft
Horiz. Length	=	1.00	ft
Barrel Length	=	1.12	ft
Barrel Slope	=	.50000	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.5000	(forward entrance loss)
Kb	=	.340877	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0045
Inlet Control M	=	2.0000
Inlet Control c	=	.03170
Inlet Control Y	=	.6900
T1 ratio (HW/D)	=	.803
T2 ratio (HW/D)	=	.947
Slope Factor	=	-.500

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 = 6724.63 ft ---> Flow = .03 cfs
At T2 Elev = 6724.66 ft ---> Flow = .04 cfs

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

Type.... Composite Rating Curve
Name.... PR 10

File.... X:\2910000.ALL\2912810\HYDRO\2-YEAR.PPW

***** COMPOSITE OUTFLOW SUMMARY ****

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
6724.50	.00	Free Outfall		None contributing
6725.50	.12	Free Outfall		2
6726.50	.17	Free Outfall		2
6727.50	.21	Free Outfall		2
6728.50	.24	Free Outfall		2
6729.50	2.33	Free Outfall		12 +2
6730.50	5.45	Free Outfall		12 +2
6731.50	7.59	Free Outfall		12 +2
6732.50	9.26	Free Outfall		12 +2
6733.50	10.65	Free Outfall		12 +2
6734.50	11.89	Free Outfall		12 +2
6735.50	13.01	Free Outfall		12 +IB +2
6736.50	18.85	Free Outfall		12 +IB +2
6737.50	21.58	Free Outfall		12 +IB +2
6738.00	22.73	Free Outfall		12 +IB +2

Type.... Pond Routing Summary
Name.... P 10 OUT Tag: 2yr
File.... X:\2910000.ALL\2912810\HYDRO\2-YEAR.PPW
Storm... IDF tbl 10 Tag: 2yr

LEVEL POOL ROUTING SUMMARY

HYG Dir = X:\2910000.ALL\2912810\HYDRO\
Inflow HYG file = NONE STORED - P 10 IN 2yr
Outflow HYG file = NONE STORED - P 10 OUT 2yr

Pond Node Data = P 10
Pond Volume Data = P 10
Pond Outlet Data = PR 10

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	= 6724.50	ft
Starting Volume	= .000	ac-ft
Starting Outflow	= .00	cfs
Starting Infiltr.	= .00	cfs
Starting Total Qout	= .00	cfs
Time Increment	= .0500	hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	= 68.30	cfs	at	.5000 hrs
Peak Outflow	= 4.43	cfs	at	1.1000 hrs
Peak Elevation	= 6730.17	ft		
Peak Storage	= 3.618	ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	3.760
- Infiltration	=	.000
- HYG Vol OUT	=	3.035
- Retained Vol	=	.722
Unrouted Vol	=	-.003 ac-ft (.074% of Inflow Volume)

WARNING: Inflow hydrograph truncated on right side.
WARNING: Outflow hydrograph truncated on right side.

DRAINAGE MAPS