CAMPUS PARK WEST PROJECT

APPENDIX L

VOLUME 2: PRELIMINARY HYDROMODIFICATION MANAGEMENT STUDY

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FINAL SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

June 18, 2014

PRELIMINARY HYDROMODIFICATION MANAGEMENT STUDY

Campus Park West

County of San Diego, CA

April 16, 2013

TM Tract 5424; GPA05-003; SPA05-001; REZ05-005; ER05-02-009

PROJECT DESIGN CONSULTANTS

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TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

1. INTRODUCTION

This Preliminary Hydromodification Management Study has been prepared in support of a Tentative Map submittal for the Campus Park West project, which is located in the Fallbrook Community within the County of San Diego, California. This report is a companion report to the following project technical studies:

- CEQA Preliminary Hydrology/Onsite Drainage Study, prepared by Project Design Consultants
- Preliminary Storm Water Management Plan, prepared by Project Design Consultants
- Project Downstream Channel SCCWRP Analysis, prepared by Chang Consultants, entitled "Hydromodification Screening for Campus Park West."
- Horse Ranch Creek Floodplain Study for Campus Park West, prepared by Project Design Consultants
- San Luis Rey Floodplain Study for Campus Park West, prepared by Chang Consultants

The purpose of this report is to document the project's compliance with the County's Final Hydromodification Management Plan (HMP). The stated purpose of the final hydromodification requirements is "...to manage increases in runoff discharge rates and durations from all Priority Development Projects, where such increased rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force" (County Final HMP, page ES-1). Flow duration control is the most common form of hydromodification management. Unless a project meets an exemption or is granted prior lawful approval, the County Hydromodification Management Plan (HMP) requires that all priority projects comply with the HMP. Since the County did not grant prior lawful approval status to the Campus Park West project, the project is required to address the applicability of Final HMP requirements.

2. PROJECT DESCRIPTION

The project is located in the County of San Diego within the Fallbrook Community Planning Area. The site is 116.6 acres in size and is located east of Interstate 15, with the majority of the site located north of State Route 76 (SR 76), adjacent to Interstate 15, and the remaining property is located south of SR 76 on either side of Pankey Road. The proposed project consists of building a mixed-use planned community comprised of multi-family residential, light industrial, and commercial components. The proposed northern development includes multi-family residential, light industrial, and commercial land uses, and two parcels in the southern development will be solely commercial, while the final southerly parcel will be undisturbed and will remain as open space. Project street improvements include, but are not limited, to the extension of Pankey Road north of SR 76. This extension includes replacement of the Pankey Road bridge over Horse Ranch Creek north of SR 76. Street improvements south of SR 76 consist of realigning Pankey Road and building a new intersection with Shearer Crossing.

The site currently consists of mostly undeveloped land. Slopes vary from flat to steep and cover is mostly brush with some areas of dense trees. There are five existing culverts underneath Interstate 15 that convey offsite runoff from areas west of Interstate 15 onto the property. The site area north of SR 76 generally slopes south and east towards Horse Ranch Creek. To the east of the site perimeter, Horse Ranch Creek drains to the south. Horse Ranch Creek is a densely vegetated ephemeral stream that flows from north to south. There are three existing bridges in the project vicinity that cross Horse Ranch Creek, including two Pankey Road bridges, and one SR 76 Caltrans bridge. Approximately 600 feet south of the South Pankey Road bridge, the creek confluences with the San Luis Rey River. See Figure 1 for the project vicinity map.

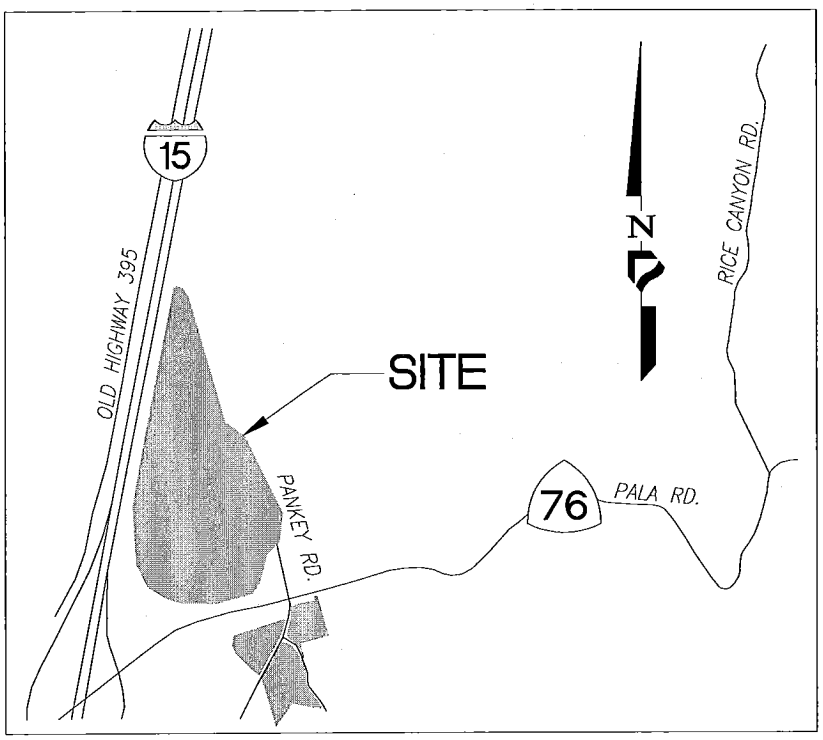


Figure 1: Project Vicinity Map

3. HYDROMODIFICATION MANAGEMENT APPROACH

The project will comply with final hydromodification requirements through flow control management for the portions of the project that require hydromodification mitigation. Each of the project discharge locations and their respective drainage areas were reviewed to determine the most appropriate hydromodification management approach on a drainage area by drainage area basis. The following is a summary of the major drainage discharge locations within the project.

The proposed grading for the project includes several pipe outfalls into the adjacent drainages. Due to the multiple discharge locations, there will be more than one point of compliance (POC) for the hydromodification analysis. Refer to Exhibit B for the locations of each outfall. In general terms, Pipe Outfall A includes the runoff from the northerly onsite drainage area that discharges to Horse Ranch Creek. Pipe Outfall B includes the runon from the offsite area west of I-15 and is routed through the project without commingling with onsite runoff. (For this

reason, Outfall B does not need to be analyzed from a hydromodification perspective). Outfall C includes the drainage from the proposed multi-family development east of North Pankey Road and west of Horse Ranch Creek. Outfall D includes the runoff from a small drainage area that includes North Pankey Road in between a high point in the road and SR 76. Outfall E includes the runoff from a large drainage area which includes the majority of the proposed commercial area west of North Pankey Road and east of I-15. Outfall F includes both onsite runoff and offsite runon discharging to a natural sump area located between the commercial area and SR-76. Outfall F drains a small portion of the proposed onsite commercial area along the southwest corner of the site. Outfall G is the existing 72-inch RCP underneath SR 76 that conveys excess runoff from the natural sump area to the south side of SR 76. This outfall includes discharge from Outfall F. Outfall H is the pipe that conveys runoff from the proposed realignment of South Pankey Road. Outfall I is the pipe that discharges runoff from the two proposed commercial pads south of SR 76.

In order to simplify the hydromodification model, the outfall locations described above were combined into four general drainage areas that correspond to four points of compliance (POCs). The four POCs include outfalls A, C, D/E (combined), and F/H (combined). Outfalls D and E were combined because both outfalls enter Horse Ranch Creek at approximately the same location along the creek and because the hydromodification basin at Outfall E will compensate for providing no mitigation at Outfall D. Providing mitigation at Outfall D is not practical because the discharge area is so small, so a basin at Outfall D is not warranted. Outfalls D and E taken together satisfy flow duration control requirements at the POC, even though Outfall D is a "bypass area," meaning that the discharge is not routed through a flow-duration control detention facility. In other words, the minor amount of net increase in impervious surface at Outfall D is adequately mitigated in the basin upstream of Outfall E such that the combined POC "D/E" is in compliance with the hydromodification requirements. Note that water quality treatment requirements still apply to Outfall D, and this is addressed in the project SWMP. The same concept of combining two outfalls into one POC was also applied to Outfalls F and H. Outfall H discharges to a hardened channel that discharges into Horse Ranch Creek, and therefore the Outfalls F and H can be combined into one POC. The other discharge locations (Outfalls B, G, and I) are not analyzed in this report and are therefore not assigned a POC. Outfall B drains

only offsite water, the onsite portion that drains to Outfall G is accounted for upstream at POC F/H, and Outfall I discharges directly to an exempt waterbody as further described in Section 3.1 below.

3.1 Direct Discharge Exemption

The two proposed development pads south of SR 76 (Tentative Map Lots 15 & 16) are exempt from flow duration control requirements because Outfall I qualifies for a direct discharge exemption. Based on Table 6-1 of the County HMP, direct discharges to the San Luis Rey River near the Campus Park West project are exempt from flow-duration control requirements because this reach of the San Luis Rey River is considered an HMP exempt waterbody. The proposed outfall qualifies as a direct discharge exemption because the proposed outfall location discharges to an HMP exempt waterbody and the invert elevation is lower than the 10-year San Luis Rey River water surface elevation. Refer to Appendix 3 of this report for documentation of the 10-year water surface elevation, as obtained from Chang's San Luis Rey floodplain model.

Due to the direct discharge exemption, flow-duration control is not required for the southerly storm drain outfall (Outfall I) and therefore no hydromodification mitigation is proposed for Tentative Map Lots 15 & 16. Therefore, hydromodification mitigation will only be provided for those project discharge locations that do not meet the direct discharge exemption criteria, which include POCs A, C, D/E, and F/H. Generally, this includes the drainage from all of the proposed onsite development pads north of SR 76.

3.2 Basin Modeling Assumptions

This study identifies one hydromodification management detention basin for hydromodification management for each major onsite drainage area for the portion of the proposed development north of SR 76. The current site plan proposes four hydromodification management detention basins as graded open basins. As the design of the project continues to evolve through final design, the basins may be reconfigured in size or shape to accommodate future site plan constraints. In addition, any of the proposed basins may be converted during future site planning

to a proposed underground vault or tank to accommodate above-ground parking lots or other features within the same footprint. It is possible that future site planning may reduce the size of the hydromodification mitigation facility (either basins or vaults) if other Low Impact Development techniques are incorporated into the site plan within the upstream drainage areas. This Preliminary Hydromodification Management Study identifies a conservative estimate for the basin sizes and the report will be revised and updated as the design of the project continues to evolve through final design. All hydromodification management facilities have been modeled conservatively with no infiltration into native soils. Note that during final engineering, the models may be updated to reflect more refined geotechnical assessment information since the onsite soils are categorized as Hydrologic Soil Type B with potential moderate infiltration rates. If this option is selected, the continuous simulation models will be updated to reflect the expected level of infiltration and the minimum basin volume requirements would decrease as a result.

3.3 Flow Duration Control

The proposed project will comply with the HMP flow control duration criteria at each point of compliance (A, C, D/E, and F/H) through the use of onsite hydromodification management facilities. The Final HMP requires that post-project runoff flows and durations comply with the following flow duration criteria:

- For flow rates between the pre-project low flow threshold and the pre-project 10-year event, the post-project discharge rates and durations may not deviate above the pre-project rates and durations by more than 10% over more than 10% of the length of the flow duration curve.

The low-flow threshold used in the analysis for Campus Park West is the 0.3Q2 low-flow threshold for POCs A, C, and D/E and the 0.5Q2 low-flow threshold for POC F/H, as determined by the project geomorphic channel assessment analysis performed by Chang Consultants. The San Diego Hydrology Model (SDHM, dated September 13, 2012) was used for the continuous simulation modeling to determine the minimum required hydromodification management volumes for each proposed hydromodification management basin.

3.4 Dual Purpose for Water Quality Treatment

It is anticipated that the hydromodification management basins may also fulfill water quality requirements. Therefore, the basins will be dual purpose to achieve the flow-duration requirements set forth in the County HMP, and will also address the stormwater quality treatment criteria set forth in the MS4 Permit as a regional post-construction treatment BMP for the developed area. For more information on the treatment control aspect of the proposed hydromodification/water quality basins, refer to the project Preliminary Storm Water Management Plan. As final design progresses, the developer may elect to utilize alternative treatment control BMPs in lieu of basins that better suit the constraints of each site plan. This report represents the maximum anticipated site area that would need to be set aside to meet both the County HMP and the MS4 Permit.

Note that all of the hydromodification management facilities will be private and will be maintained by the Home Owners Association/Building Owners Association for Campus Park West.

4. METHODOLOGY FOR HYDROMODIFICATION ANALYSIS

The hydromodification analysis includes continuous simulation of hourly rainfall, evaporation, infiltration, depression storage, and runoff for the entire continuous rainfall record using SDHM. Note that since the time step of the data is hourly, the calculated rainfall flow rates are extremely low and are not comparable to any sort of synthetic hydrology model such as the Rational Method. The rainfall gauge data selected for this project was the Fallbrook gauge, which represents the project appropriately based on isopluvial and precipitation zone characteristics and has hourly data for the period of record of 1951 to 2008. The Fallbrook rain gauge is the closest rain gauge to the site, and after reviewing the Fallbrook rain gauge data set, Project Design Consultants determined it to be the most appropriate data set to use for the project. Additionally, County staff accepted the use of the data for this project. SDHM uses the Hydrologic Simulation Program Fortran (HSPF) software as its computational engine to run rainfall-runoff algorithms. Input values into the model include the soil type, slope, land cover, drainage management areas, and rainfall data. Based on the output from the continuous simulation over the entire rainfall

record, the program computes a flow duration curve for each point of compliance (POC) and compares the pre-project and post-project flow duration curves to the criteria established in the HMP. The low-flow and upper-flow thresholds are determined internally by the SDHM program using partial duration statistics. Partial duration statistics are required to estimate the statistics appropriately, since statistics based on peak annual series are inappropriate for estimating values for frequent return intervals such as the 2-year return period. Table 1 below summarizes the input data for the continuous simulation model.

Table 1. Continuous Simulation Model Input Parameters

Total Drainage Area	23.33 acres POC A, 15.07 acres POC C, 49.91 acres POC D/E, 10.64 acres POC F/H
Pre-project land cover	Soil Type B, Slope ranges from Flat to Steep, Grass Cover with some impervious areas. For specifics, refer to tabular summary in Appendix 1 and Pre-project land cover exhibit
Post-project land cover	Soil Type B. Land cover varies. Refer to tabular summary in Appendix 1 and Post-project land cover exhibit
Rainfall Gage	Fallbrook
Low Flow Threshold	0.3Q2 for POCs A, C, and D/E and the 0.5Q2 low-flow threshold for POC F/H based on SCCWRP Analysis & SDHM partial duration statistics
Upper Flow Threshold	Q10 based on SDHM partial duration statistics

4.1 Soil Type Analysis

Based on the NRCS soil data maps in Appendix 3, the soils within the entire onsite project area are characterized as Hydrologic Soil Type B. Type B soils have moderate infiltration rates.

4.2 Land Cover and Slope Analysis

The input values for the SDHM model were developed by breaking the drainage area to the POC into discrete drainage management areas (DMAs). Since the project area drains to various discharge locations, multiple POCs and therefore multiple SDHM models are required. The areas draining to each POC were separated into discrete areas with uniform cover properties for modeling purposes within SDHM. All pervious areas were modeled with grass cover. All

pervious areas were categorized into slope categories of flat (0-5%), moderate (5-10%), or steep (greater than 10%). For the pre-project condition, a slope analysis was performed on the pre-project topography using GIS to separate the drainage areas into the various slope categories. For the post-project condition, the land cover analysis was performed by separating the impervious areas out and performing a slope analysis for all remaining areas. Due to the preliminary nature of the site plan, certain conservative assumptions were made for modeling purposes to estimate the limit of the impervious cover for the post-project condition. Each planning area was assigned an approximate limit of impervious area based on the expected impervious area of the proposed land-use. The polygon for the planning area was offset to represent the expected area of impervious area within the planning area. Therefore, the Land Cover Exhibit shows impervious areas within the middle of each of the major drainage areas with flat pervious areas around the outer edges. This was done only to approximate the average impervious condition of the proposed development envelope. The site planning and landscaping areas have not been designed yet, so the majority of the area was assumed to be impervious in order to provide a conservative estimate for the hydromodification analysis. Future refinements of the site plan during final engineering may warrant refinements to the input data used in the SDHM model.

The modeling elements used for this project and available in SDHM include the following options:

- Standard drainage basin: Used to model either impervious or pervious areas that drain directly to a hydromodification management facility or POC.
- Bypass drainage basin: Used to model either impervious or pervious areas that bypass a hydromodification management facility and drain directly to the POC.

Refer to the pre-project and post-project HMP Exhibits in Appendix 5 for the area and location of the DMAs. The DMAs that bypass the hydromodification management basins (those areas draining directly to the stream without detention, i.e., portions of the perimeter fill slopes and portions of street improvements) were modeled as bypass basins.

5. HYDROMODIFICATION ANALYSIS RESULTS

The SDHM models (CPW-A.whm, CPW-C.whm, CPW-DE.whm, and CPW-FH.whm), represent the proposed site plan for each of the POCs. Based on the selected basin outlet configurations and basin elevation-volume relationship, the flow-duration requirements are satisfied with the proposed design. During final engineering, further refinements to the design will be required to support the final construction drawings. For each SDHM model, the basins were modeled as rectangular vaults with no infiltration and a length to width ratio of 2:1. For the purposes of the entitlement application (since the basins need to conform to the lot lines), the bottom plan-view area of the basins shown on the Preliminary Grading Plan are at least as large as the modeled rectangular basins. This layout shows the conservative area and volume for the proposed basins.

Table 2. Summary of Proposed Hydromodification Management BMPs

Hydromodification Control	Location & Description	Modeled Size
Hydromodification/Water Quality Basin #1	Basin upstream of Outfall A near north end of project	94'x188'x5' (2.0 AF)
Hydromodification/Water Quality Basin #2	Basin upstream of Outfall C for multi-family area just upstream of North Pankey Road bridge	75'x150'x5' (1.3 AF)
Hydromodification/Water Quality Basin #3	Basin upstream of Outfall E (located upstream of SR 76 bridge) for commercial area	179'x358'x5' (7.4 AF)
Hydromodification/Water Quality Basin #4	Basin upstream of connection to Outfall F (discharging into natural sump area) for onsite commercial area	79'x158'x5' (1.4 AF)

5.1 Drawdown Calculations

Per Section 6.4.6 of the County HMP, the minimum drawdown time to comply with Department of Environmental Health (DEH) guidelines is 96 hours. This standard has been set to minimize mosquito habitat and reduce the public health risk for West Nile Virus. This project complies with the DEH guidelines and, therefore, a separate vector control maintenance plan is not required. The drawdown calculations are included in Appendix 3, and indicate that each of the drawdown times for each of the basins is less than the 96 hour time limit.

6. CONCLUSION

This Preliminary Hydromodification Management report documents how the proposed project design complies with the new requirements presented in the County's Final HMP. The report and analysis presented herein supports the preliminary design of the storm drain improvements and hydromodification management facilities for the Tentative Map for the Campus Park West project. The results indicate that the proposed hydromodification management facilities (four hydromodification/water quality basins) mitigate for increased flows and durations per the criteria set forth in the County HMP. In addition, the facilities satisfy the DEH drawdown guidelines for vector control.

APPENDIX 1

Input Summary Tables

PrePrjReport

Basin	Drainage Basin A	
	Type	Acres
	Flat	8.31
	Impervious	1.58
	Moderate	3.04
	Steep	10.41
Sum Acres	23.33	

Basin	Drainage Basin C	
	Type	Acres
	Flat	5.34
	Impervious	0.78
	Moderate	4.08
	Steep	4.86
Sum Acres	15.07	

Basin	Drainage Basin D&E	
	Type	Acres
	Flat	19.95
	Impervious	0.71
	Moderate	13.04
	Steep	16.21
Sum Acres	49.91	

Basin	Drainage Basin F&H	
	Type	Acres
	Flat	3.38
	Impervious	1.59
	Moderate	1.27
	Steep	4.41
Sum Acres	10.64	

Post Project

Basin:	Drainage Basin A	
	Type	Acres
	Flat	4.03
	Impervious	12.54
	Moderate	0.61
	Steep	4.28
Sum Acres		21.47
Basin:	Drainage Basin A-BYPASS	
	Type	Acres
	Impervious	0.76
	Steep	1.11
Sum Acres		1.86
Total Basin A		23.33
Basin:	Drainage Basin C	
	Type	Acres
	Flat	6.26
	Impervious	8.52
Sum Acres		14.78
Basin:	Drainage Basin C-BYPASS	
	Type	Acres
	Steep	0.28
Sum Acres		0.28
Total Basin C		15.06
Basin:	Drainage Basin D&E	
	Type	Acres
	Flat	5.8
	Impervious	40.05
	Steep	1.79
Sum Acres		47.64
Basin:	Drainage Basin D&E-BYPASS	
	Type	Acres
	Impervious	0.96
	Steep	1.31
Sum Acres		2.27
Total Basin D&E		49.91
Basin:	Drainage Basin F&H	
	Type	Acres
	Flat	0.9
	Impervious	5.04
Sum Acres		5.93
Basin:	Drainage Basin F&H-BYPASS	
	Type	Acres
	Impervious	3.31
	Steep	1.4
Sum Acres		4.71
Total Basin F&H		10.64

Input Data SDHM - Campus Park West - Preliminary Sizing - Fallbrook Gauge

Low Flow Threshold=0.3Q2 for POCs A, C, and D/E and the 0.5Q2 low-flow threshold for POC F/H per SCCWRP analysis
WQ 85th Percentile depth= 0.83 in

SDHM RESULTS

Results-Basin #1, Outfall A-(Northerly most basin)-modeled conservatively as underground vault

												From SDHM									
	Total Drainage Area to Basin (not including bypass) (ac)	Impervious Area Draining to Basin (ac)	C(WQ)	WQ Volume (AF)	Total Drainage Area (including bypass) (ac)	Vault Width, W (ft)	Vault Length, L (ft)	Vault depth, d (ft)	Area of Basin (ft^2)	Pond Area (acres)	% of Drainage Area	Hydromod Volume (CF)	Hydromod Volume (AF)	Bottom Orif size (in)	Second Orif size (in)	Second Orif height (in)	LFT (cfs)	Riser height to notch (ft)	Complete Drawdown (hours)	WQ Depth (ft)	WQ Volume Drawdown (hours)
#1, Drainage Basin A (0.3Q2)	21.46	12.55	0.63	0.93	23.33	94	188	5	17672	0.41	1.7%	88360	2.0	4	4	1.7	1.88	3.86	60	1.8	28

Results-Basin #2, Outfall C-(Multifamily area)-modeled conservatively as underground vault

												From SDHM									
	Total Drainage Area to Basin (not including bypass) (ac)	Impervious Area Draining to Basin (ac)	C(WQ)	WQ Volume (AF)	Total Drainage Area (including bypass) (ac)	Vault Width, W (ft)	Vault Length, L (ft)	Vault depth, d (ft)	Area of Basin (ft^2)	Pond Area (acres)	% of Drainage Area	Hydromod Volume (CF)	Hydromod Volume (AF)	Bottom Orif size (in)	Second Orif size (in)	Second Orif height (in)	LFT (cfs)	Riser height to notch (ft)	Complete Drawdown (hours)	WQ Depth (ft)	WQ Volume Drawdown (hours)
#2, Drainage Basin C (0.3Q2)	14.78	8.52	0.62	0.63	15.07	75	150	5	11250	0.26	1.7%	56250	1.3	3.2	4.4	1.9	1.17	3.9	54	1.9	29

Results-Basin #3, Outfall D/E-Large commercial area that drains to Horse Ranch Creek-modeled conservatively as underground vault

												From SDHM									
	Total Drainage Area to Basin (not including bypass) (ac)	Impervious Area Draining to Basin (ac)	C(WQ)	WQ Volume (AF)	Total Drainage Area (including bypass) (ac)	Vault Width, W (ft)	Vault Length, L (ft)	Vault depth, d (ft)	Area of Basin (ft^2)	Pond Area (acres)	% of Drainage Area	Hydromod Volume (CF)	Hydromod Volume (AF)	Bottom Orif size (in)	Second Orif size (in)	Second Orif height (in)	LFT (cfs)	Riser height to notch (ft)	Complete Drawdown (hours)	WQ Depth (ft)	WQ Volume Drawdown (hours)
#3, Basin D/E (0.3Q2)	47.64	40.05	0.86	2.82	49.91	179	358	5	64082	1.47	2.9%	320410	7.4	6.2	6	1.4	3.59	3.91	69	1.5	39

Results-Basin #4, Outfall F/H-Small Commercial drainage area that drains to natural sump area -modeled conservatively as underground vault

												From SDHM									
	Total Drainage Area to Basin (not including bypass) (ac)	Impervious Area Draining to Basin (ac)	C(WQ)	WQ Volume (AF)	Total Drainage Area (including bypass) (ac)	Vault Width, W (ft)	Vault Length, L (ft)	Vault depth, d (ft)	Area of Basin (ft^2)	Pond Area (acres)	% of Drainage Area	Hydromod Volume (CF)	Hydromod Volume (AF)	Bottom Orif size (in)	Second Orif size (in)	Second Orif height (in)	LFT (cfs)	Riser height to notch (ft)	Complete Drawdown (hours)	WQ Depth (ft)	WQ Volume Drawdown (hours)
#4, Basin F/H (0.5Q2)	5.93	5.04	0.86	0.35	10.64	79	158	5	12482	0.29	2.7%	62410	1.4	3.2	2.8	0.9	1.71	3.9	47	1.0	23

12482

SDHM

PROJECT REPORT

General Model Information

Project Name:	CPW-A
Site Name:	CPW-Outfall A
Site Address:	SR76&Pankey
City:	County of SD
Report Date:	10/12/2012
Gage:	FALLBROO
Data Start:	10/01/1959
Data End:	09/30/2004
Timestep:	Hourly
Precip Scale:	1.00
Version:	2012/09/13

POC Thresholds

Low Flow Threshold for POC1:	30 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data

Predeveloped Land Use

Outfall A

Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Grass,FLAT(0-5%)	8.38
B,Grass,MOD(5-10%)	2.6
B,Grass,STEEP(10-20	10.77
Pervious Total	21.75

Impervious Land Use	Acres
IMPERVIOUS-FLAT	1.58
Impervious Total	1.58
Basin Total	23.33

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin A to basin

Bypass:	No
GroundWater:	No

Pervious Land Use	Acres
B,Grass,FLAT(0-5%)	4.03
B,Grass,MOD(5-10%)	0.61
B,Grass,STEEP(10-20	4.27
Pervious Total	8.91

Impervious Land Use	Acres
IMPERVIOUS-FLAT	12.55
Impervious Total	12.55
Basin Total	21.46

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Basin A-bypass

Bypass:	Yes
GroundWater:	No

Pervious Land Use	Acres
B,Grass,STEEP(10-20	1.11
Pervious Total	1.11

Impervious Land Use	Acres
IMPERVIOUS-FLAT	0.76
Impervious Total	0.76
Basin Total	1.87

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Routing

Vault 1

Width: 94 ft.
Length: 188 ft.
Depth: 5 ft.
Discharge Structure
Riser Height: 4 ft.
Riser Diameter: 18 in.
Notch Type: Rectangular
Notch Width: 1.498 ft.
Notch Height: 0.135 ft.
Orifice 1 Diameter: 4 in. Elevation:0 ft.
Orifice 2 Diameter: 4 in. Elevation:1.7 ft.
Element Flows To:
Outlet 1 Outlet 2

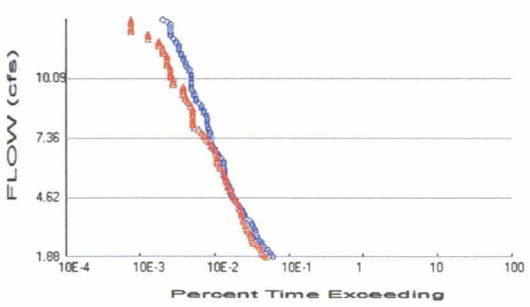
Vault Hydraulic Table

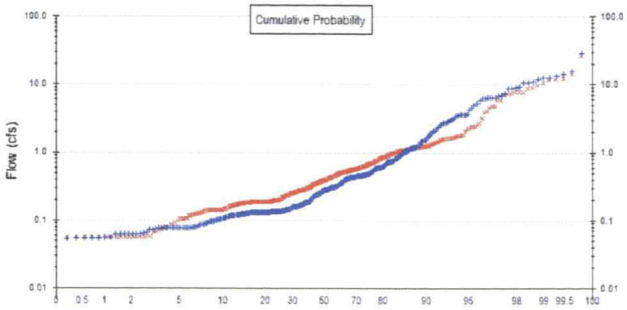
Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	0.405	0.000	0.000	0.000
0.0556	0.405	0.022	0.099	0.000
0.1111	0.405	0.045	0.140	0.000
0.1667	0.405	0.067	0.171	0.000
0.2222	0.405	0.090	0.198	0.000
0.2778	0.405	0.112	0.221	0.000
0.3333	0.405	0.135	0.242	0.000
0.3889	0.405	0.157	0.262	0.000
0.4444	0.405	0.180	0.280	0.000
0.5000	0.405	0.202	0.297	0.000
0.5556	0.405	0.225	0.313	0.000
0.6111	0.405	0.247	0.328	0.000
0.6667	0.405	0.270	0.343	0.000
0.7222	0.405	0.293	0.357	0.000
0.7778	0.405	0.315	0.370	0.000
0.8333	0.405	0.338	0.383	0.000
0.8889	0.405	0.360	0.396	0.000
0.9444	0.405	0.383	0.408	0.000
1.0000	0.405	0.405	0.420	0.000
1.0556	0.405	0.428	0.431	0.000
1.1111	0.405	0.450	0.443	0.000
1.1667	0.405	0.473	0.453	0.000
1.2222	0.405	0.495	0.464	0.000
1.2778	0.405	0.518	0.475	0.000
1.3333	0.405	0.540	0.485	0.000
1.3889	0.405	0.563	0.495	0.000
1.4444	0.405	0.586	0.505	0.000
1.5000	0.405	0.608	0.514	0.000
1.5556	0.405	0.631	0.524	0.000
1.6111	0.405	0.653	0.533	0.000
1.6667	0.405	0.676	0.542	0.000
1.7222	0.405	0.698	0.614	0.000
1.7778	0.405	0.721	0.677	0.000
1.8333	0.405	0.743	0.722	0.000
1.8889	0.405	0.766	0.760	0.000
1.9444	0.405	0.788	0.793	0.000

2.0000	0.405	0.811	0.824	0.000
2.0556	0.405	0.833	0.853	0.000
2.1111	0.405	0.856	0.880	0.000
2.1667	0.405	0.879	0.905	0.000
2.2222	0.405	0.901	0.930	0.000
2.2778	0.405	0.924	0.953	0.000
2.3333	0.405	0.946	0.976	0.000
2.3889	0.405	0.969	0.998	0.000
2.4444	0.405	0.991	1.019	0.000
2.5000	0.405	1.014	1.040	0.000
2.5556	0.405	1.036	1.060	0.000
2.6111	0.405	1.059	1.080	0.000
2.6667	0.405	1.081	1.099	0.000
2.7222	0.405	1.104	1.118	0.000
2.7778	0.405	1.126	1.136	0.000
2.8333	0.405	1.149	1.154	0.000
2.8889	0.405	1.172	1.172	0.000
2.9444	0.405	1.194	1.189	0.000
3.0000	0.405	1.217	1.207	0.000
3.0556	0.405	1.239	1.223	0.000
3.1111	0.405	1.262	1.240	0.000
3.1667	0.405	1.284	1.256	0.000
3.2222	0.405	1.307	1.272	0.000
3.2778	0.405	1.329	1.288	0.000
3.3333	0.405	1.352	1.304	0.000
3.3889	0.405	1.374	1.319	0.000
3.4444	0.405	1.397	1.334	0.000
3.5000	0.405	1.419	1.350	0.000
3.5556	0.405	1.442	1.364	0.000
3.6111	0.405	1.465	1.379	0.000
3.6667	0.405	1.487	1.394	0.000
3.7222	0.405	1.510	1.408	0.000
3.7778	0.405	1.532	1.422	0.000
3.8333	0.405	1.555	1.436	0.000
3.8889	0.405	1.577	1.469	0.000
3.9444	0.405	1.600	1.576	0.000
4.0000	0.405	1.622	1.725	0.000
4.0556	0.405	1.645	1.930	0.000
4.1111	0.405	1.667	2.293	0.000
4.1667	0.405	1.690	2.759	0.000
4.2222	0.405	1.712	3.309	0.000
4.2778	0.405	1.735	3.930	0.000
4.3333	0.405	1.758	4.616	0.000
4.3889	0.405	1.780	5.360	0.000
4.4444	0.405	1.803	6.158	0.000
4.5000	0.405	1.825	7.007	0.000
4.5556	0.405	1.848	7.904	0.000
4.6111	0.405	1.870	8.846	0.000
4.6667	0.405	1.893	9.831	0.000
4.7222	0.405	1.915	10.85	0.000
4.7778	0.405	1.938	11.92	0.000
4.8333	0.405	1.960	13.02	0.000
4.8889	0.405	1.983	14.17	0.000
4.9444	0.405	2.005	15.34	0.000
5.0000	0.405	2.028	16.56	0.000
5.0556	0.405	2.051	17.80	0.000
5.1111	0.000	0.000	19.08	0.000

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 24.35
Total Impervious Area: 1.58

Mitigated Landuse Totals for POC #1
Total Pervious Area: 10.63
Total Impervious Area: 13.31

Flow Frequency Method: Cunnane

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	6.267965
5 year	10.730328
10 year	12.830767
25 year	15.414509

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	3.227807
5 year	8.418128
10 year	11.572567
25 year	13.596988

Duration Flows
The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
1.8804	237	192	81	Pass
1.9910	227	179	78	Pass
2.1016	219	174	79	Pass
2.2122	201	166	82	Pass
2.3228	184	159	86	Pass
2.4334	172	148	86	Pass
2.5440	168	132	78	Pass
2.6547	159	126	79	Pass
2.7653	147	122	82	Pass
2.8759	144	121	84	Pass
2.9865	140	118	84	Pass
3.0971	139	111	79	Pass
3.2077	135	108	80	Pass
3.3183	128	104	81	Pass
3.4289	124	101	81	Pass
3.5395	116	97	83	Pass
3.6501	105	95	90	Pass
3.7608	100	91	91	Pass
3.8714	97	89	91	Pass
3.9820	94	89	94	Pass
4.0926	88	86	97	Pass
4.2032	84	84	100	Pass
4.3138	81	82	101	Pass
4.4244	76	79	103	Pass
4.5350	74	73	98	Pass
4.6456	67	69	102	Pass
4.7562	67	69	102	Pass
4.8669	66	64	96	Pass
4.9775	65	64	98	Pass
5.0881	62	60	96	Pass
5.1987	60	59	98	Pass
5.3093	57	58	101	Pass
5.4199	55	56	101	Pass
5.5305	54	56	103	Pass
5.6411	54	53	98	Pass
5.7517	54	51	94	Pass
5.8623	54	51	94	Pass
5.9730	52	47	90	Pass
6.0836	52	46	88	Pass
6.1942	52	43	82	Pass
6.3048	51	42	82	Pass
6.4154	48	42	87	Pass
6.5260	45	42	93	Pass
6.6366	43	41	95	Pass
6.7472	40	41	102	Pass
6.8578	39	38	97	Pass
6.9684	36	35	97	Pass
7.0791	35	35	100	Pass
7.1897	35	33	94	Pass
7.3003	35	31	88	Pass
7.4109	35	29	82	Pass
7.5215	34	28	82	Pass
7.6321	34	26	76	Pass

7.7427	33	24	72	Pass
7.8533	32	21	65	Pass
7.9639	31	20	64	Pass
8.0745	31	20	64	Pass
8.1852	31	20	64	Pass
8.2958	31	20	64	Pass
8.4064	30	20	66	Pass
8.5170	28	20	71	Pass
8.6276	28	20	71	Pass
8.7382	26	20	76	Pass
8.8488	26	19	73	Pass
8.9594	24	18	75	Pass
9.0700	22	17	77	Pass
9.1806	22	16	72	Pass
9.2913	21	16	76	Pass
9.4019	21	15	71	Pass
9.5125	20	15	75	Pass
9.6231	19	15	78	Pass
9.7337	19	15	78	Pass
9.8443	19	11	57	Pass
9.9549	19	11	57	Pass
10.0655	19	11	57	Pass
10.1761	19	10	52	Pass
10.2867	19	10	52	Pass
10.3973	18	10	55	Pass
10.5080	18	10	55	Pass
10.6186	17	10	58	Pass
10.7292	16	9	56	Pass
10.8398	16	9	56	Pass
10.9504	15	9	60	Pass
11.0610	15	9	60	Pass
11.1716	14	9	64	Pass
11.2822	14	8	57	Pass
11.3928	13	8	61	Pass
11.5034	13	8	61	Pass
11.6141	13	7	53	Pass
11.7247	12	7	58	Pass
11.8353	12	7	58	Pass
11.9459	11	5	45	Pass
12.0565	10	5	50	Pass
12.1671	10	5	50	Pass
12.2777	10	3	30	Pass
12.3883	10	3	30	Pass
12.4989	10	3	30	Pass
12.6095	10	3	30	Pass
12.7202	9	3	33	Pass
12.8308	8	3	37	Pass

Water Quality
Drawdown Time Results

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

No PERLND changes have been made.

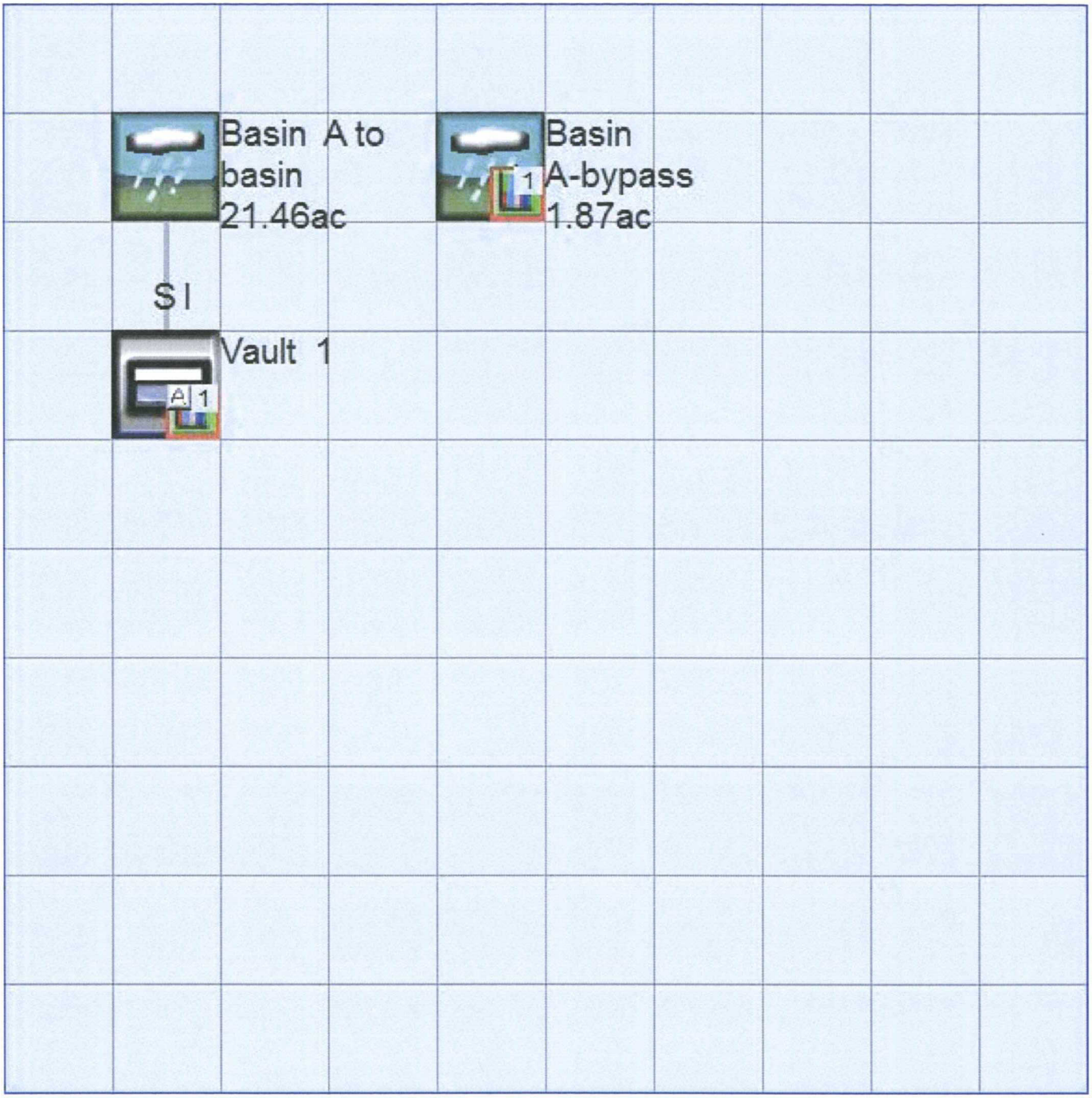
IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic

Outfall A
23.33ac

Mitigated Schematic



```
RUN

GLOBAL
  WWHM4 model simulation
  START       1959 10 01        END    2004 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>    <-----------File Name------------------------------>***
<-ID->                                                               ***
WDM         26   CPW-A.wdm
MESSU       25   PreCPW-A.MES
            27   PreCPW-A.L61
            28   PreCPW-A.L62
            30   POCCPW-A1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:60
      PERLND       10
      PERLND       11
      PERLND       12
      IMPLND        1
      COPY        501
      DISPLY        1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -   #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1         Outfall A                   MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -   #  NPT  NMN ***
    1          1    1
  501          1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #     # OPCD ***
  END OPCODE
  PARM
    #     #          K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -   #                         User  t-series Engl Metr ***
                                      in  out           ***
   10       B,Grass,FLAT(0-5%)      1    1    1    1   27    0
   11       B,Grass,MOD(5-10%)      1    1    1    1   27    0
   12       B,Grass,STEEP(10-20     1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -   # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   10          0    0    1    0    0    0    0    0    0    0    0    0
   11          0    0    1    0    0    0    0    0    0    0    0    0
   12          0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY
```

```
  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -   # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   10         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   11         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   12         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -   # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   10         0    1    1    1    0    0    0    0    1    1    0
   11         0    1    1    1    0    0    0    0    1    1    0
   12         0    1    1    1    0    0    0    0    1    1    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2          ***
    # -   # ***FOREST      LZSN     INFILT      LSUR      SLSUR      KVARY      AGWRC
   10               0         5       0.07       200       0.05          3       0.92
   11               0       4.7      0.055       200        0.1          3       0.92
   12               0       4.4       0.04       200       0.15          3       0.92
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3          ***
    # -   # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   10              35        30         2         2       0.4      0.05      0.05
   11              35        30         2         2       0.4      0.05      0.05
   12              35        30         2         2       0.4      0.05      0.05
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                                  ***
    # -   #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   10          0.08       0.6       0.2       1.5       0.7       0.5
   11          0.08       0.6       0.2       1.5       0.7       0.5
   12          0.08       0.6       0.2       1.5       0.7       0.5
  END PWAT-PARM4
  MON-LZETPARM
    <PLS >      PWATER input info: Part 3          ***
    # -   #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   10        0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
   11        0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
   12        0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
  END MON-LZETPARM
  MON-INTERCEP
    <PLS >      PWATER input info: Part 3          ***
    # -   #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   10        0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
   11        0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
   12        0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
  END MON-INTERCEP

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -   # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   10              0         0      0.15         0         4      0.05         0
   11              0         0      0.15         0         4      0.05         0
   12              0         0      0.15         0         4      0.05         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -   #                    User  t-series Engl Metr ***
                                    in   out           ***
```

```
    1      IMPERVIOUS-FLAT        1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    1
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1           100     0.035      0.05       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK    ***
<Name>   #                  <-factor->     <Name>   #   Tbl#    ***
Outfall A***
PERLND  10                       8.38     COPY   501     12
PERLND  10                       8.38     COPY   501     13
PERLND  11                        2.6     COPY   501     12
PERLND  11                        2.6     COPY   501     13
PERLND  12                      10.77     COPY   501     12
PERLND  12                      10.77     COPY   501     13
IMPLND   1                       1.58     COPY   501     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   12.1        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
```

```
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                        in  out                             ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                    ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *         ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN      DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                       ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    1              PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     12.1      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15
```

```
END MASS-LINK

END RUN
```

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1959 10 01         END    2004 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   CPW-A.wdm
MESSU       25   MitCPW-A.MES
            27   MitCPW-A.L61
            28   MitCPW-A.L62
            30   POCCPW-A1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:60
      PERLND       10
      PERLND       11
      PERLND       12
      IMPLND        1
      RCHRES        1
      COPY          1
      COPY        501
      COPY        601
      DISPLY        1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -   #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1         Vault  1                   MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -   #  NPT  NMN ***
    1          1    1
  501          1    1
  601          1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #     # OPCD ***
  END OPCODE
  PARM
    #     #          K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -   #                         User  t-series Engl Metr ***
                                          in  out              ***
   10       B,Grass,FLAT(0-5%)      1     1    1    1   27     0
   11       B,Grass,MOD(5-10%)      1     1    1    1   27     0
   12       B,Grass,STEEP(10-20     1     1    1    1   27     0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -   # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
```

```
  10          0     0     1     0     0     0     0     0     0     0     0     0
  11          0     0     1     0     0     0     0     0     0     0     0     0
  12          0     0     1     0     0     0     0     0     0     0     0     0
END ACTIVITY

PRINT-INFO
  <PLS > ***************** Print-flags ***************************** PIVL  PYR
  # -   # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
 10          0     0     4     0     0     0     0     0     0     0     0     0     1     9
 11          0     0     4     0     0     0     0     0     0     0     0     0     1     9
 12          0     0     4     0     0     0     0     0     0     0     0     0     1     9
END PRINT-INFO

PWAT-PARM1
  <PLS >  PWATER variable monthly parameter value flags  ***
  # -   # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
 10          0     1     1     1     0     0     0     0     1     1     0
 11          0     1     1     1     0     0     0     0     1     1     0
 12          0     1     1     1     0     0     0     0     1     1     0
END PWAT-PARM1

PWAT-PARM2
  <PLS >       PWATER input info: Part 2          ***
  # -   # ***FOREST      LZSN    INFILT      LSUR      SLSUR      KVARY      AGWRC
 10               0         5      0.07       200       0.05          3       0.92
 11               0       4.7     0.055       200        0.1          3       0.92
 12               0       4.4      0.04       200       0.15          3       0.92
END PWAT-PARM2

PWAT-PARM3
  <PLS >       PWATER input info: Part 3          ***
  # -   # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
 10              35        30         2         2       0.4      0.05      0.05
 11              35        30         2         2       0.4      0.05      0.05
 12              35        30         2         2       0.4      0.05      0.05
END PWAT-PARM3
PWAT-PARM4
  <PLS >      PWATER input info: Part 4                                  ***
  # -   #      CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
 10            0.08       0.6       0.2       1.5       0.7       0.5
 11            0.08       0.6       0.2       1.5       0.7       0.5
 12            0.08       0.6       0.2       1.5       0.7       0.5
END PWAT-PARM4
MON-LZETPARM
  <PLS >       PWATER input info: Part 3          ***
  # -   #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
 10        0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
 11        0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
 12        0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
END MON-LZETPARM
MON-INTERCEP
  <PLS >       PWATER input info: Part 3          ***
  # -   #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
 10        0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
 11        0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
 12        0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
END MON-INTERCEP

PWAT-STATE1
  <PLS > *** Initial conditions at start of simulation
             ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
  # -   # ***  CEPS      SURS       UZS       IFWS       LZS       AGWS       GWVS
 10               0         0      0.15          0         4      0.05          0
 11               0         0      0.15          0         4      0.05          0
 12               0         0      0.15          0         4      0.05          0
END PWAT-STATE1

END PERLND

IMPLND
```

```
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                    in  out           ***
    1      IMPERVIOUS-FLAT        1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    ***
    1         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    1
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            100     0.035      0.05       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                 <--Area-->     <-Target->   MBLK   ***
<Name>   #                 <-factor->     <Name>   #   Tbl#   ***
Basin  A to basin***
PERLND  10                      4.03     RCHRES   1      2
PERLND  10                      4.03     RCHRES   1      3
PERLND  11                      0.61     RCHRES   1      2
PERLND  11                      0.61     RCHRES   1      3
PERLND  12                      4.27     RCHRES   1      2
PERLND  12                      4.27     RCHRES   1      3
IMPLND   1                     12.55     RCHRES   1      5
Basin  A-bypass***
PERLND  12                      1.11     COPY   501     12
PERLND  12                      1.11     COPY   601     12
PERLND  12                      1.11     COPY   501     13
PERLND  12                      1.11     COPY   601     13
IMPLND   1                      0.76     COPY   501     15
IMPLND   1                      0.76     COPY   601     15

******Routing******
PERLND  10                      4.03     COPY     1     12
PERLND  11                      0.61     COPY     1     12
PERLND  12                      4.27     COPY     1     12
IMPLND   1                     12.55     COPY     1     15
```

```
PERLND  10                         4.03     COPY     1      13
PERLND  11                         0.61     COPY     1      13
PERLND  12                         4.27     COPY     1      13
RCHRES   1                            1     COPY   501      16
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>    #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   12.1        DISPLY    1      INPUT  TIMSER 1


<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>    #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                  ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG             ***
                                          in  out                             ***
    1     Vault  1               1    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections *****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
    1        1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR   *********
    1        4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                       ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *        ***
    1        0  1  0  0    4  0  0  0  0       0  0  0  0  0       2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #     FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
    1            1      0.04        0.0       0.0       0.5       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                          ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
         *** ac-ft     for each possible exit        for each possible exit
  <------><-------->       <---><---><---><---><---> *** <---><---><---><---><--->
    1         0            4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE       1
   92    4
     Depth       Area     Volume  Outflow1 Velocity  Travel Time***
      (ft)    (acres)  (acre-ft)    (cfs)   (ft/sec)    (Minutes)***
  0.000000   0.405693   0.000000  0.000000
  0.055556   0.405693   0.022539  0.099047
  0.111111   0.405693   0.045077  0.140074
```

0.166667	0.405693	0.067616	0.171555
0.222222	0.405693	0.090154	0.198095
0.277778	0.405693	0.112693	0.221477
0.333333	0.405693	0.135231	0.242615
0.388889	0.405693	0.157770	0.262055
0.444444	0.405693	0.180308	0.280148
0.500000	0.405693	0.202847	0.297142
0.555556	0.405693	0.225385	0.313215
0.611111	0.405693	0.247924	0.328503
0.666667	0.405693	0.270462	0.343110
0.722222	0.405693	0.293001	0.357120
0.777778	0.405693	0.315539	0.370601
0.833333	0.405693	0.338078	0.383609
0.888889	0.405693	0.360616	0.396189
0.944444	0.405693	0.383155	0.408383
1.000000	0.405693	0.405693	0.420222
1.055556	0.405693	0.428232	0.431737
1.111111	0.405693	0.450770	0.442953
1.166667	0.405693	0.473309	0.453892
1.222222	0.405693	0.495847	0.464573
1.277778	0.405693	0.518386	0.475014
1.333333	0.405693	0.540924	0.485231
1.388889	0.405693	0.563463	0.495237
1.444444	0.405693	0.586001	0.505044
1.500000	0.405693	0.608540	0.514665
1.555556	0.405693	0.631078	0.524109
1.611111	0.405693	0.653617	0.533386
1.666667	0.405693	0.676155	0.542505
1.722222	0.405693	0.698694	0.614115
1.777778	0.405693	0.721233	0.677491
1.833333	0.405693	0.743771	0.722427
1.888889	0.405693	0.766310	0.760174
1.944444	0.405693	0.788848	0.793735
2.000000	0.405693	0.811387	0.824449
2.055556	0.405693	0.833925	0.853053
2.111111	0.405693	0.856464	0.880007
2.166667	0.405693	0.879002	0.905617
2.222222	0.405693	0.901541	0.930104
2.277778	0.405693	0.924079	0.953630
2.333333	0.405693	0.946618	0.976322
2.388889	0.405693	0.969156	0.998278
2.444444	0.405693	0.991695	1.019578
2.500000	0.405693	1.014233	1.040288
2.555556	0.405693	1.036772	1.060461
2.611111	0.405693	1.059310	1.080145
2.666667	0.405693	1.081849	1.099379
2.722222	0.405693	1.104387	1.118197
2.777778	0.405693	1.126926	1.136629
2.833333	0.405693	1.149464	1.154700
2.888889	0.405693	1.172003	1.172435
2.944444	0.405693	1.194541	1.189853
3.000000	0.405693	1.217080	1.206973
3.055556	0.405693	1.239618	1.223812
3.111111	0.405693	1.262157	1.240385
3.166667	0.405693	1.284695	1.256705
3.222222	0.405693	1.307234	1.272785
3.277778	0.405693	1.329772	1.288637
3.333333	0.405693	1.352311	1.304269
3.388889	0.405693	1.374850	1.319694
3.444444	0.405693	1.397388	1.334918
3.500000	0.405693	1.419927	1.349951
3.555556	0.405693	1.442465	1.364800
3.611111	0.405693	1.465004	1.379473
3.666667	0.405693	1.487542	1.393975
3.722222	0.405693	1.510081	1.408314
3.777778	0.405693	1.532619	1.422494
3.833333	0.405693	1.555158	1.436523
3.888889	0.405693	1.577696	1.469086
3.944444	0.405693	1.600235	1.576331
4.000000	0.405693	1.622773	1.725825

```
  4.055556  0.405693  1.645312  1.930584
  4.111111  0.405693  1.667850  2.293685
  4.166667  0.405693  1.690389  2.759824
  4.222222  0.405693  1.712927  3.309269
  4.277778  0.405693  1.735466  3.930614
  4.333333  0.405693  1.758004  4.616169
  4.388889  0.405693  1.780543  5.360285
  4.444444  0.405693  1.803081  6.158588
  4.500000  0.405693  1.825620  7.007558
  4.555556  0.405693  1.848158  7.904286
  4.611111  0.405693  1.870697  8.846311
  4.666667  0.405693  1.893235  9.831517
  4.722222  0.405693  1.915774  10.85806
  4.777778  0.405693  1.938312  11.92432
  4.833333  0.405693  1.960851  13.02884
  4.888889  0.405693  1.983389  14.17033
  4.944444  0.405693  2.005928  15.34760
  5.000000  0.405693  2.028466  16.55960
  5.055556  0.405693  2.051005  17.80533
  END FTABLE  1
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    1              PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              IMPLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              RCHRES   1     EXTNL  POTEV

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
RCHRES   1 HYDR   RO     1 1         1      WDM   1000 FLOW     ENGL       REPL
RCHRES   1 HYDR   STAGE  1 1         1      WDM   1001 STAG     ENGL       REPL
COPY     1 OUTPUT MEAN   1 1      12.1      WDM    701 FLOW     ENGL       REPL
COPY   501 OUTPUT MEAN   1 1      12.1      WDM    801 FLOW     ENGL       REPL
COPY   601 OUTPUT MEAN   1 1      12.1      WDM    901 FLOW     ENGL       REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>             <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK        2
PERLND     PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    2

  MASS-LINK        3
PERLND     PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    3

  MASS-LINK        5
IMPLND     IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    5

  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15
```

```
  MASS-LINK       16
RCHRES     ROFLOW                          COPY            INPUT   MEAN
  END MASS-LINK   16


END MASS-LINK

END RUN
```

ERROR/WARNING ID: 341 6

DATE/TIME: 1978/ 1/16 21: 0

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB(). To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows. This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS	V1	V2	VOL
92	8.8360E+04	8.9342E+04	1.0130E+05

ERROR/WARNING ID: 341 5

DATE/TIME: 1978/ 1/16 21: 0

RCHRES: 1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated. If extrapolation was small, no problem.
Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	3.5344E+04	-4.657E+05	13.175	13.175	2

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SDHM

PROJECT REPORT

General Model Information

Project Name:	CPW-C
Site Name:	CPW-Outfall C
Site Address:	SR76&Pankey
City:	County of SD
Report Date:	10/12/2012
Gage:	FALLBROO
Data Start:	10/01/1959
Data End:	09/30/2004
Timestep:	Hourly
Precip Scale:	1.00
Version:	2012/09/13

POC Thresholds

Low Flow Threshold for POC1:	30 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data
Predeveloped Land Use

Outfall C

Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Grass,FLAT(0-5%)	5.27
B,Grass,MOD(5-10%)	3.89
B,Grass,STEEP(10-20	5.13
Pervious Total	14.29

Impervious Land Use	Acres
IMPERVIOUS-FLAT	0.78
Impervious Total	0.78
Basin Total	15.07

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin C to basin

Bypass:	No
GroundWater:	No

Pervious Land Use	Acres
B,Grass,FLAT(0-5%)	6.26
Pervious Total	6.26

Impervious Land Use	Acres
IMPERVIOUS-FLAT	8.53
Impervious Total	8.53
Basin Total	14.79

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Basin C-bypass

Bypass:	Yes
GroundWater:	No

Pervious Land Use	Acres
B,Grass,STEEP(10-20	0.28
Pervious Total	0.28

Impervious Land Use	Acres
Impervious Total	0
Basin Total	0.28

Element Flows To:

Surface	Interflow	Groundwater

Routing Elements
Predeveloped Routing

Mitigated Routing

Vault 1

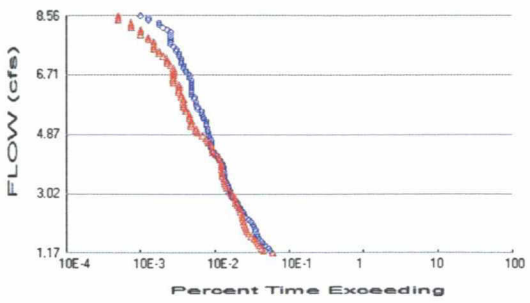
Width: 75 ft.
Length: 150 ft.
Depth: 5 ft.
Discharge Structure
Riser Height: 4 ft.
Riser Diameter: 18 in.
Notch Type: Rectangular
Notch Width: 1.498 ft.
Notch Height: 0.101 ft.
Orifice 1 Diameter: 3.2 in. Elevation:0 ft.
Orifice 2 Diameter: 4.4 in. Elevation:1.9 ft.
Element Flows To:
Outlet 1 Outlet 2

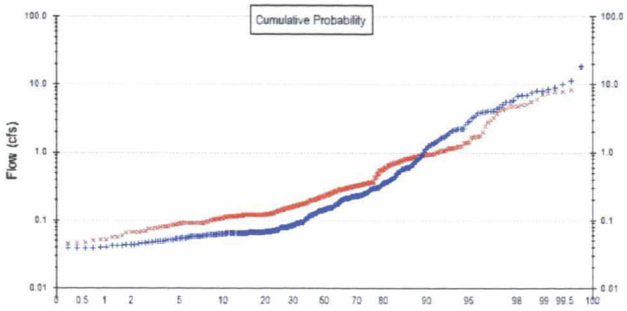
Vault Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	0.258	0.000	0.000	0.000
0.0556	0.258	0.014	0.063	0.000
0.1111	0.258	0.028	0.089	0.000
0.1667	0.258	0.043	0.109	0.000
0.2222	0.258	0.057	0.126	0.000
0.2778	0.258	0.071	0.141	0.000
0.3333	0.258	0.086	0.155	0.000
0.3889	0.258	0.100	0.167	0.000
0.4444	0.258	0.114	0.179	0.000
0.5000	0.258	0.129	0.190	0.000
0.5556	0.258	0.143	0.200	0.000
0.6111	0.258	0.157	0.210	0.000
0.6667	0.258	0.172	0.219	0.000
0.7222	0.258	0.186	0.228	0.000
0.7778	0.258	0.200	0.237	0.000
0.8333	0.258	0.215	0.245	0.000
0.8889	0.258	0.229	0.253	0.000
0.9444	0.258	0.243	0.261	0.000
1.0000	0.258	0.258	0.268	0.000
1.0556	0.258	0.272	0.276	0.000
1.1111	0.258	0.287	0.283	0.000
1.1667	0.258	0.301	0.290	0.000
1.2222	0.258	0.315	0.297	0.000
1.2778	0.258	0.330	0.304	0.000
1.3333	0.258	0.344	0.310	0.000
1.3889	0.258	0.358	0.317	0.000
1.4444	0.258	0.373	0.323	0.000
1.5000	0.258	0.387	0.329	0.000
1.5556	0.258	0.401	0.335	0.000
1.6111	0.258	0.416	0.341	0.000
1.6667	0.258	0.430	0.347	0.000
1.7222	0.258	0.444	0.352	0.000
1.7778	0.258	0.459	0.358	0.000
1.8333	0.258	0.473	0.364	0.000
1.8889	0.258	0.487	0.369	0.000
1.9444	0.258	0.502	0.482	0.000

2.0000	0.258	0.516	0.541	0.000
2.0556	0.258	0.530	0.586	0.000
2.1111	0.258	0.545	0.624	0.000
2.1667	0.258	0.559	0.658	0.000
2.2222	0.258	0.573	0.689	0.000
2.2778	0.258	0.588	0.718	0.000
2.3333	0.258	0.602	0.745	0.000
2.3889	0.258	0.617	0.771	0.000
2.4444	0.258	0.631	0.795	0.000
2.5000	0.258	0.645	0.819	0.000
2.5556	0.258	0.660	0.841	0.000
2.6111	0.258	0.674	0.863	0.000
2.6667	0.258	0.688	0.884	0.000
2.7222	0.258	0.703	0.904	0.000
2.7778	0.258	0.717	0.924	0.000
2.8333	0.258	0.731	0.943	0.000
2.8889	0.258	0.746	0.962	0.000
2.9444	0.258	0.760	0.981	0.000
3.0000	0.258	0.774	0.999	0.000
3.0556	0.258	0.789	1.016	0.000
3.1111	0.258	0.803	1.033	0.000
3.1667	0.258	0.817	1.050	0.000
3.2222	0.258	0.832	1.067	0.000
3.2778	0.258	0.846	1.083	0.000
3.3333	0.258	0.860	1.099	0.000
3.3889	0.258	0.875	1.115	0.000
3.4444	0.258	0.889	1.131	0.000
3.5000	0.258	0.903	1.146	0.000
3.5556	0.258	0.918	1.161	0.000
3.6111	0.258	0.932	1.176	0.000
3.6667	0.258	0.947	1.190	0.000
3.7222	0.258	0.961	1.205	0.000
3.7778	0.258	0.975	1.219	0.000
3.8333	0.258	0.990	1.233	0.000
3.8889	0.258	1.004	1.247	0.000
3.9444	0.258	1.018	1.308	0.000
4.0000	0.258	1.033	1.434	0.000
4.0556	0.258	1.047	1.638	0.000
4.1111	0.258	1.061	2.001	0.000
4.1667	0.258	1.076	2.467	0.000
4.2222	0.258	1.090	3.017	0.000
4.2778	0.258	1.104	3.638	0.000
4.3333	0.258	1.119	4.323	0.000
4.3889	0.258	1.133	5.067	0.000
4.4444	0.258	1.147	5.865	0.000
4.5000	0.258	1.162	6.714	0.000
4.5556	0.258	1.176	7.611	0.000
4.6111	0.258	1.190	8.552	0.000
4.6667	0.258	1.205	9.537	0.000
4.7222	0.258	1.219	10.56	0.000
4.7778	0.258	1.233	11.63	0.000
4.8333	0.258	1.248	12.73	0.000
4.8889	0.258	1.262	13.87	0.000
4.9444	0.258	1.277	15.05	0.000
5.0000	0.258	1.291	16.26	0.000
5.0556	0.258	1.305	17.51	0.000
5.1111	0.000	0.000	18.78	0.000

Analysis Results
POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 18.18
Total Impervious Area: 0.78

Mitigated Landuse Totals for POC #1
Total Pervious Area: 6.54
Total Impervious Area: 8.53

Flow Frequency Method: Cunnane

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	3.9062
5 year	6.959224
10 year	8.559088
25 year	10.970754

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	1.759453
5 year	5.111485
10 year	7.504925
25 year	8.243528

Duration Flows
The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
1.1719	231	237	102	Pass
1.2465	220	179	81	Pass
1.3211	210	169	80	Pass
1.3957	187	156	83	Pass
1.4703	174	148	85	Pass
1.5450	165	143	86	Pass
1.6196	156	133	85	Pass
1.6942	148	124	83	Pass
1.7688	143	113	79	Pass
1.8434	139	108	77	Pass
1.9180	139	105	75	Pass
1.9927	132	103	78	Pass
2.0673	127	98	77	Pass
2.1419	122	96	78	Pass
2.2165	112	95	84	Pass
2.2911	103	93	90	Pass
2.3658	98	92	93	Pass
2.4404	96	86	89	Pass
2.5150	89	86	96	Pass
2.5896	86	84	97	Pass
2.6642	81	80	98	Pass
2.7388	80	76	95	Pass
2.8135	74	75	101	Pass
2.8881	68	72	105	Pass
2.9627	66	71	107	Pass
3.0373	65	66	101	Pass
3.1119	64	62	96	Pass
3.1866	61	58	95	Pass
3.2612	60	56	93	Pass
3.3358	58	54	93	Pass
3.4104	56	53	94	Pass
3.4850	54	52	96	Pass
3.5597	53	49	92	Pass
3.6343	53	49	92	Pass
3.7089	53	49	92	Pass
3.7835	52	48	92	Pass
3.8581	51	48	94	Pass
3.9327	50	48	96	Pass
4.0074	48	48	100	Pass
4.0820	46	46	100	Pass
4.1566	43	45	104	Pass
4.2312	40	40	100	Pass
4.3058	38	37	97	Pass
4.3805	36	36	100	Pass
4.4551	35	36	102	Pass
4.5297	35	35	100	Pass
4.6043	35	32	91	Pass
4.6789	35	31	88	Pass
4.7535	34	30	88	Pass
4.8282	33	27	81	Pass
4.9028	32	23	71	Pass
4.9774	31	22	70	Pass
5.0520	31	22	70	Pass

5.1266	30	19	63	Pass
5.2013	30	19	63	Pass
5.2759	30	19	63	Pass
5.3505	28	18	64	Pass
5.4251	27	18	66	Pass
5.4997	26	18	69	Pass
5.5743	26	16	61	Pass
5.6490	23	16	69	Pass
5.7236	23	15	65	Pass
5.7982	22	15	68	Pass
5.8728	22	15	68	Pass
5.9474	21	15	71	Pass
6.0221	21	14	66	Pass
6.0967	19	14	73	Pass
6.1713	19	13	68	Pass
6.2459	19	13	68	Pass
6.3205	19	13	68	Pass
6.3952	19	13	68	Pass
6.4698	19	11	57	Pass
6.5444	19	11	57	Pass
6.6190	18	11	61	Pass
6.6936	18	11	61	Pass
6.7682	17	11	64	Pass
6.8429	16	11	68	Pass
6.9175	15	11	73	Pass
6.9921	15	10	66	Pass
7.0667	14	9	64	Pass
7.1413	14	9	64	Pass
7.2160	14	9	64	Pass
7.2906	13	8	61	Pass
7.3652	13	7	53	Pass
7.4398	12	7	58	Pass
7.5144	12	6	50	Pass
7.5890	11	6	54	Pass
7.6637	10	6	60	Pass
7.7383	10	6	60	Pass
7.8129	10	5	50	Pass
7.8875	10	5	50	Pass
7.9621	10	4	40	Pass
8.0368	10	4	40	Pass
8.1114	9	4	44	Pass
8.1860	8	3	37	Pass
8.2606	7	3	42	Pass
8.3352	7	3	42	Pass
8.4099	5	2	40	Pass
8.4845	5	2	40	Pass
8.5591	4	2	50	Pass

Water Quality
Drawdown Time Results

Model Default Modifications

Total of 0 changes have been made.

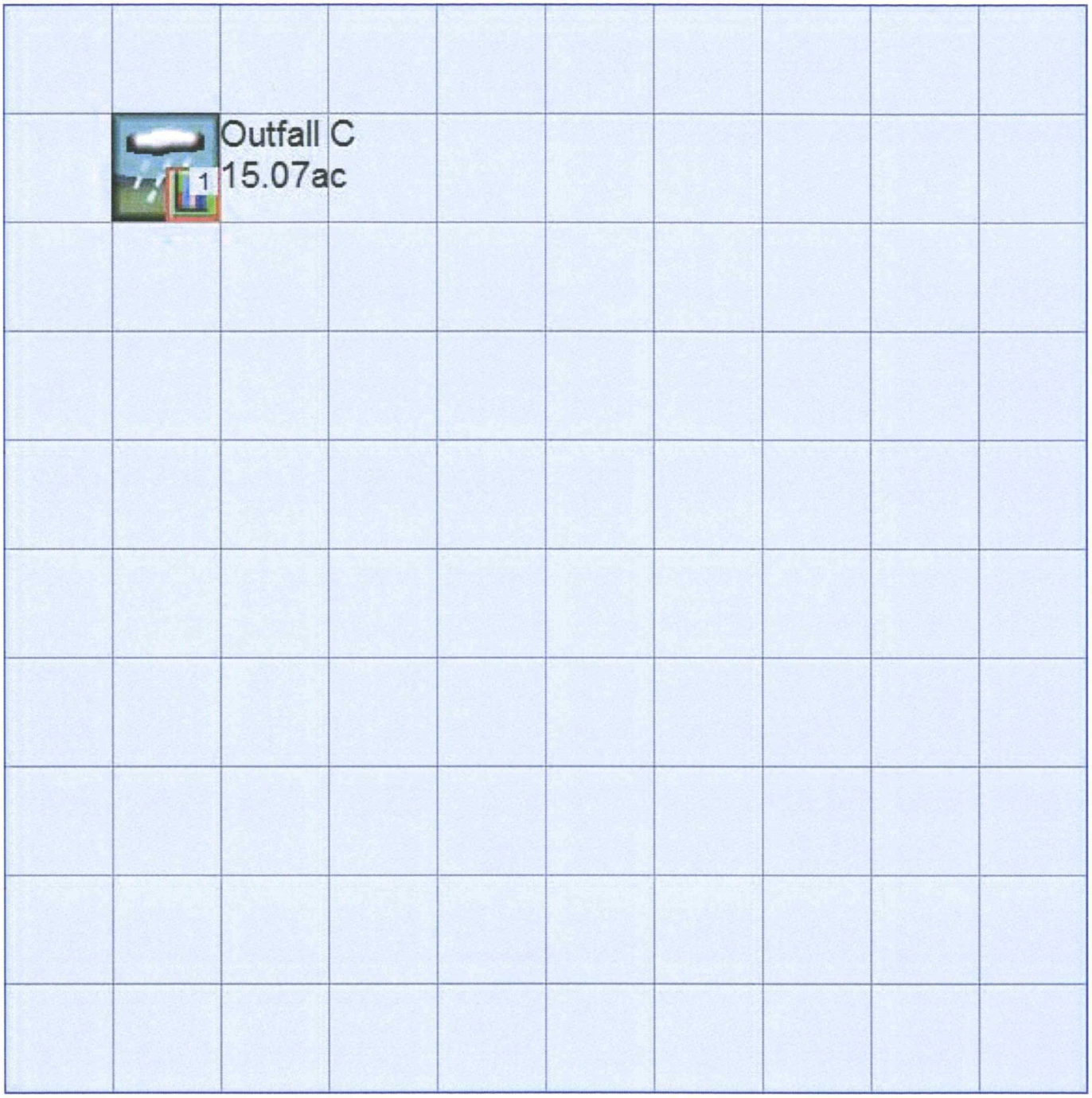
PERLND Changes

No PERLND changes have been made.

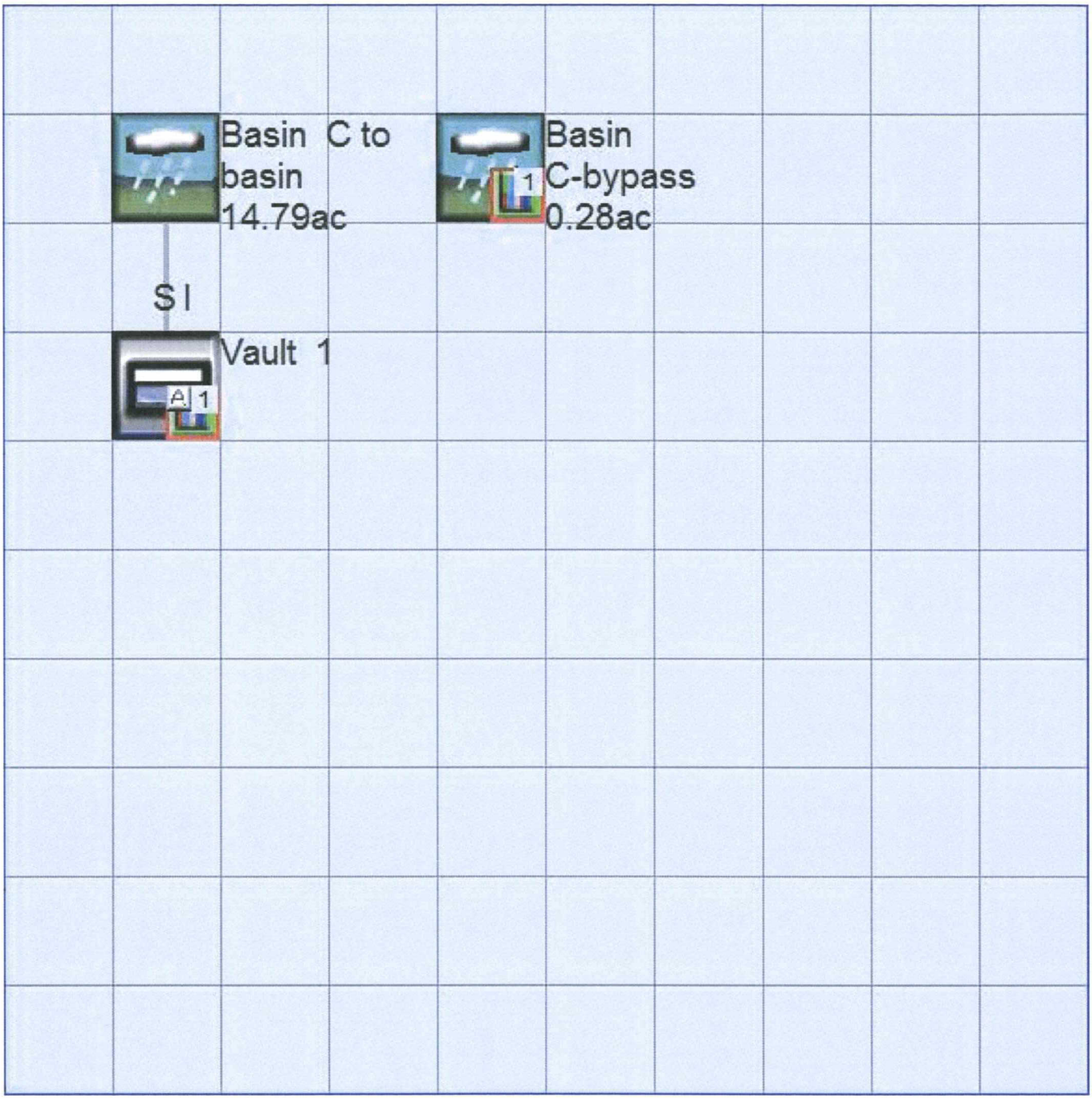
IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic



Mitigated Schematic



```
RUN

GLOBAL
  WWHM4 model simulation
  START       1959 10 01        END    2004 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   CPW-C.wdm
MESSU       25   PreCPW-C.MES
            27   PreCPW-C.L61
            28   PreCPW-C.L62
            30   POCCPW-C1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:60
      PERLND       10
      PERLND       11
      PERLND       12
      IMPLND        1
      COPY        501
      DISPLY        1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Outfall C                   MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                       in  out           ***
   10      B,Grass,FLAT(0-5%)      1    1    1    1   27    0
   11      B,Grass,MOD(5-10%)      1    1    1    1   27    0
   12      B,Grass,STEEP(10-20     1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   10         0    0    1    0    0    0    0    0    0    0    0    0
   11         0    0    1    0    0    0    0    0    0    0    0    0
   12         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY
```

```
  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -   # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   10         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   11         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   12         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -   # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   10         0    1    1    1    0    0    0    0    1    1    0
   11         0    1    1    1    0    0    0    0    1    1    0
   12         0    1    1    1    0    0    0    0    1    1    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2          ***
    # -   # ***FOREST      LZSN     INFILT      LSUR     SLSUR     KVARY     AGWRC
   10               0         5       0.07       200      0.05         3      0.92
   11               0       4.7      0.055       200       0.1         3      0.92
   12               0       4.4       0.04       200      0.15         3      0.92
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3          ***
    # -   # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   10              35        30         2         2       0.4      0.05      0.05
   11              35        30         2         2       0.4      0.05      0.05
   12              35        30         2         2       0.4      0.05      0.05
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -   #      CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   10           0.08       0.6       0.2       1.5       0.7       0.5
   11           0.08       0.6       0.2       1.5       0.7       0.5
   12           0.08       0.6       0.2       1.5       0.7       0.5
  END PWAT-PARM4
  MON-LZETPARM
    <PLS >      PWATER input info: Part 3          ***
    # -   #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   10        0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
   11        0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
   12        0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
  END MON-LZETPARM
  MON-INTERCEP
    <PLS >      PWATER input info: Part 3          ***
    # -   #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   10        0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
   11        0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
   12        0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
  END MON-INTERCEP

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
             ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -   # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   10              0         0      0.15         0         4      0.05         0
   11              0         0      0.15         0         4      0.05         0
   12              0         0      0.15         0         4      0.05         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -   #                    User  t-series Engl Metr ***
                                    in   out           ***
```

```
    1      IMPERVIOUS-FLAT        1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -   # ATMP SNOW IWAT  SLD  IWG IQAL    ***
    1         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -   # ATMP SNOW IWAT  SLD  IWG IQAL     *********
    1         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -   # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    1
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >       IWATER input info: Part 2          ***
    # -   # ***  LSUR      SLSUR      NSUR      RETSC
    1            100      0.035      0.05        0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >       IWATER input info: Part 3          ***
    # -   # ***PETMAX    PETMIN
    1              0          0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -   # ***  RETS       SURS
    1              0          0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK    ***
<Name>   #                  <-factor->     <Name>   #   Tbl#    ***
Outfall C***
PERLND  10                       5.27     COPY   501     12
PERLND  10                       5.27     COPY   501     13
PERLND  11                       3.89     COPY   501     12
PERLND  11                       3.89     COPY   501     13
PERLND  12                       5.13     COPY   501     12
PERLND  12                       5.13     COPY   501     13
IMPLND   1                       0.78     COPY   501     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   12.1        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
```

```
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                  ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *        ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN      DELTH     STCOR        KS       DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                     ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><---
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    1              PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     12.1      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15
```

```
END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1959 10 01         END    2004 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>    <-----------File Name------------------------------>***
<-ID->                                                               ***
WDM         26   CPW-C.wdm
MESSU       25   MitCPW-C.MES
            27   MitCPW-C.L61
            28   MitCPW-C.L62
            30   POCCPW-C1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:60
      PERLND       10
      IMPLND        1
      PERLND       12
      RCHRES        1
      COPY          1
      COPY        501
      COPY        601
      DISPLY        1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Vault  1                    MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1          1    1
  501          1    1
  601          1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #          K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out             ***
   10       B,Grass,FLAT(0-5%)      1    1    1    1   27    0
   12       B,Grass,STEEP(10-20     1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   10         0    0    1    0    0    0    0    0    0    0    0    0
   12         0    0    1    0    0    0    0    0    0    0    0    0
```

```
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -   # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   10         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   12         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -   # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   10         0    1    1    1    0    0    0    0    1    1    0
   12         0    1    1    1    0    0    0    0    1    1    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2          ***
    # -   # ***FOREST      LZSN     INFILT      LSUR      SLSUR      KVARY      AGWRC
   10              0         5       0.07       200       0.05          3       0.92
   12              0       4.4       0.04       200       0.15          3       0.92
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3          ***
    # -   # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   10             35        30         2         2       0.4      0.05      0.05
   12             35        30         2         2       0.4      0.05      0.05
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                                  ***
    # -   #     CEPSC      UZSN      NSUR      INTFW       IRC      LZETP ***
   10          0.08       0.6       0.2       1.5         0.7        0.5
   12          0.08       0.6       0.2       1.5         0.7        0.5
  END PWAT-PARM4
  MON-LZETPARM
    <PLS >      PWATER input info: Part 3          ***
    # -   #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   10       0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
   12       0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
  END MON-LZETPARM
  MON-INTERCEP
    <PLS >      PWATER input info: Part 3          ***
    # -   #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   10       0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
   12       0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
  END MON-INTERCEP

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
             ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -   # ***  CEPS      SURS       UZS       IFWS       LZS       AGWS       GWVS
   10             0         0      0.15          0         4       0.05          0
   12             0         0      0.15          0         4       0.05          0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -   #                     User  t-series Engl Metr ***
                                      in  out             ***
    1      IMPERVIOUS-FLAT        1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -   # ATMP SNOW IWAT  SLD  IWG IQAL   ***
```

```
    1         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    1
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1          100     0.035      0.05       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1             0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1             0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin  C to basin***
PERLND  10                        6.26     RCHRES   1      2
PERLND  10                        6.26     RCHRES   1      3
IMPLND   1                        8.53     RCHRES   1      5
Basin  C-bypass***
PERLND  12                        0.28     COPY   501     12
PERLND  12                        0.28     COPY   601     12
PERLND  12                        0.28     COPY   501     13
PERLND  12                        0.28     COPY   601     13

******Routing******
PERLND  10                        6.26     COPY     1     12
IMPLND   1                        8.53     COPY     1     15
PERLND  10                        6.26     COPY     1     13
RCHRES   1                           1     COPY   501     16
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   12.1        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
```

```
                                              in  out                          ***
    1     Vault  1            1    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections *****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
    1         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1         4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                         ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each      FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit       possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *          ***
    1        0  1  0  0    4  0  0  0  0       0  0  0  0  0       2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50         ***
  <------><--------><--------><--------><--------><--------><-------->         ***
    1             1      0.03       0.0       0.0       0.5       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                           ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit      for each possible exit
  <------><-------->      <---><---><---><---><---> *** <---><---><---><---><--->
    1         0            4.0  0.0  0.0  0.0  0.0        0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE       1
   92   4
     Depth      Area    Volume  Outflow1 Velocity  Travel Time***
      (ft)   (acres) (acre-ft)     (cfs) (ft/sec)    (Minutes)***
  0.000000  0.258264  0.000000  0.000000
  0.055556  0.258264  0.014348  0.063390
  0.111111  0.258264  0.028696  0.089647
  0.166667  0.258264  0.043044  0.109795
  0.222222  0.258264  0.057392  0.126781
  0.277778  0.258264  0.071740  0.141745
  0.333333  0.258264  0.086088  0.155274
  0.388889  0.258264  0.100436  0.167715
  0.444444  0.258264  0.114784  0.179295
  0.500000  0.258264  0.129132  0.190171
  0.555556  0.258264  0.143480  0.200458
  0.611111  0.258264  0.157828  0.210242
  0.666667  0.258264  0.172176  0.219590
  0.722222  0.258264  0.186524  0.228557
  0.777778  0.258264  0.200872  0.237185
  0.833333  0.258264  0.215220  0.245510
  0.888889  0.258264  0.229568  0.253561
  0.944444  0.258264  0.243916  0.261365
  1.000000  0.258264  0.258264  0.268942
  1.055556  0.258264  0.272612  0.276312
  1.111111  0.258264  0.286961  0.283490
  1.166667  0.258264  0.301309  0.290491
  1.222222  0.258264  0.315657  0.297327
  1.277778  0.258264  0.330005  0.304009
```

```
  1.333333  0.258264  0.344353  0.310548
  1.388889  0.258264  0.358701  0.316951
  1.444444  0.258264  0.373049  0.323228
  1.500000  0.258264  0.387397  0.329386
  1.555556  0.258264  0.401745  0.335430
  1.611111  0.258264  0.416093  0.341367
  1.666667  0.258264  0.430441  0.347203
  1.722222  0.258264  0.444789  0.352942
  1.777778  0.258264  0.459137  0.358590
  1.833333  0.258264  0.473485  0.364149
  1.888889  0.258264  0.487833  0.369626
  1.944444  0.258264  0.502181  0.482217
  2.000000  0.258264  0.516529  0.541134
  2.055556  0.258264  0.530877  0.586131
  2.111111  0.258264  0.545225  0.624389
  2.166667  0.258264  0.559573  0.658444
  2.222222  0.258264  0.573921  0.689546
  2.277778  0.258264  0.588269  0.718419
  2.333333  0.258264  0.602617  0.745531
  2.388889  0.258264  0.616965  0.771202
  2.444444  0.258264  0.631313  0.795665
  2.500000  0.258264  0.645661  0.819093
  2.555556  0.258264  0.660009  0.841623
  2.611111  0.258264  0.674357  0.863361
  2.666667  0.258264  0.688705  0.884394
  2.722222  0.258264  0.703053  0.904794
  2.777778  0.258264  0.717401  0.924620
  2.833333  0.258264  0.731749  0.943925
  2.888889  0.258264  0.746097  0.962750
  2.944444  0.258264  0.760445  0.981134
  3.000000  0.258264  0.774793  0.999108
  3.055556  0.258264  0.789141  1.016703
  3.111111  0.258264  0.803489  1.033942
  3.166667  0.258264  0.817837  1.050849
  3.222222  0.258264  0.832185  1.067444
  3.277778  0.258264  0.846534  1.083745
  3.333333  0.258264  0.860882  1.099768
  3.388889  0.258264  0.875230  1.115528
  3.444444  0.258264  0.889578  1.131039
  3.500000  0.258264  0.903926  1.146313
  3.555556  0.258264  0.918274  1.161361
  3.611111  0.258264  0.932622  1.176194
  3.666667  0.258264  0.946970  1.190822
  3.722222  0.258264  0.961318  1.205253
  3.777778  0.258264  0.975666  1.219495
  3.833333  0.258264  0.990014  1.233557
  3.888889  0.258264  1.004362  1.247445
  3.944444  0.258264  1.018710  1.308915
  4.000000  0.258264  1.033058  1.433994
  4.055556  0.258264  1.047406  1.638691
  4.111111  0.258264  1.061754  2.001710
  4.166667  0.258264  1.076102  2.467749
  4.222222  0.258264  1.090450  3.017075
  4.277778  0.258264  1.104798  3.638286
  4.333333  0.258264  1.119146  4.323691
  4.388889  0.258264  1.133494  5.067642
  4.444444  0.258264  1.147842  5.865767
  4.500000  0.258264  1.162190  6.714546
  4.555556  0.258264  1.176538  7.611071
  4.611111  0.258264  1.190886  8.552880
  4.666667  0.258264  1.205234  9.537861
  4.722222  0.258264  1.219582  10.56417
  4.777778  0.258264  1.233930  11.63018
  4.833333  0.258264  1.248278  12.73445
  4.888889  0.258264  1.262626  13.87567
  4.944444  0.258264  1.276974  15.05268
  5.000000  0.258264  1.291322  16.26439
  5.055556  0.258264  1.305670  17.50984
  END FTABLE  1
END FTABLES
```

```
EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>    # <Name> # tem strg<-factor->strg <Name>    #   #        <Name> # #  ***
WDM       2 PREC     ENGL    1              PERLND    1 999 EXTNL  PREC
WDM       2 PREC     ENGL    1              IMPLND    1 999 EXTNL  PREC
WDM       1 EVAP     ENGL    1              PERLND    1 999 EXTNL  PETINP
WDM       1 EVAP     ENGL    1              IMPLND    1 999 EXTNL  PETINP
WDM       1 EVAP     ENGL    1              RCHRES    1     EXTNL  POTEV

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>    #       <Name> # #<-factor->strg <Name>    # <Name>    tem strg strg***
RCHRES    1 HYDR  RO     1 1         1     WDM   1000 FLOW     ENGL       REPL
RCHRES    1 HYDR  STAGE  1 1         1     WDM   1001 STAG     ENGL       REPL
COPY      1 OUTPUT MEAN  1 1      12.1     WDM    701 FLOW     ENGL       REPL
COPY    501 OUTPUT MEAN  1 1      12.1     WDM    801 FLOW     ENGL       REPL
COPY    601 OUTPUT MEAN  1 1      12.1     WDM    901 FLOW     ENGL       REPL
END EXT TARGETS

MASS-LINK
<Volume>    <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>             <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK         2
PERLND      PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK     2

  MASS-LINK         3
PERLND      PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK     3

  MASS-LINK         5
IMPLND      IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK     5

  MASS-LINK        12
PERLND      PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK    12

  MASS-LINK        13
PERLND      PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK    13

  MASS-LINK        15
IMPLND      IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK    15

  MASS-LINK        16
RCHRES      ROFLOW                          COPY           INPUT  MEAN
  END MASS-LINK    16


END MASS-LINK

END RUN
```

ERROR/WARNING ID: 341 6

DATE/TIME: 1978/ 1/16 21: 0

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB(). To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows. This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS	V1	V2	VOL
92	5.6250E+04	5.6875E+04	5.9970E+04

ERROR/WARNING ID: 341 5

DATE/TIME: 1978/ 1/16 21: 0

RCHRES: 1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated. If extrapolation was small, no problem.
Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	2.2500E+04	-1.339E+05	5.9523	5.9523	2

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SDHM

PROJECT REPORT

General Model Information

Project Name:	CPW-DE
Site Name:	CPW-Outfall D/E
Site Address:	SR76&Pankey
City:	County of SD
Report Date:	10/12/2012
Gage:	FALLBROO
Data Start:	10/01/1959
Data End:	09/30/2004
Timestep:	Hourly
Precip Scale:	1.00
Version:	2012/09/13

POC Thresholds

Low Flow Threshold for POC1:	30 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data

Predeveloped Land Use

Outfall D/E

Bypass:	No
GroundWater:	No

Pervious Land Use	Acres
B,Grass,FLAT(0-5%)	20.01
B,Grass,MOD(5-10%)	12.56
B,Grass,STEEP(10-20	16.63
Pervious Total	49.2

Impervious Land Use	Acres
IMPERVIOUS-FLAT	0.71
Impervious Total	0.71
Basin Total	49.91

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin D/E to basin

Bypass:	No
GroundWater:	No

Pervious Land Use	Acres
B,Grass,FLAT(0-5%)	5.8
B,Grass,STEEP(10-20	1.79
Pervious Total	7.59

Impervious Land Use	Acres
IMPERVIOUS-FLAT	40.05
Impervious Total	40.05
Basin Total	47.64

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Basin D/E-bypass

Bypass:	Yes
GroundWater:	No

Pervious Land Use	Acres
B,Grass,STEEP(10-20	1.31
Pervious Total	1.31

Impervious Land Use	Acres
IMPERVIOUS-FLAT	0.96
Impervious Total	0.96
Basin Total	2.27

Element Flows To:

Surface	Interflow	Groundwater

Routing Elements
Predeveloped Routing

Mitigated Routing

Vault 1

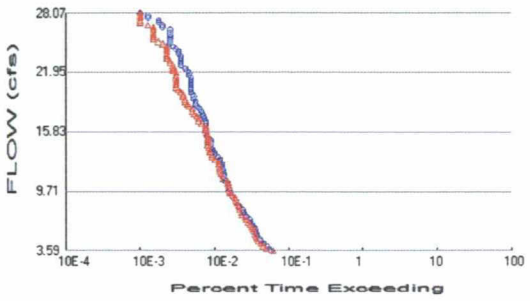
Width: 179 ft.
Length: 358 ft.
Depth: 5 ft.
Discharge Structure
Riser Height: 4 ft.
Riser Diameter: 54 in.
Notch Type: Rectangular
Notch Width: 4.500 ft.
Notch Height: 0.087 ft.
Orifice 1 Diameter: 6.2 in. Elevation:0 ft.
Orifice 2 Diameter: 6 in. Elevation:1.4 ft.
Element Flows To:
Outlet 1 Outlet 2

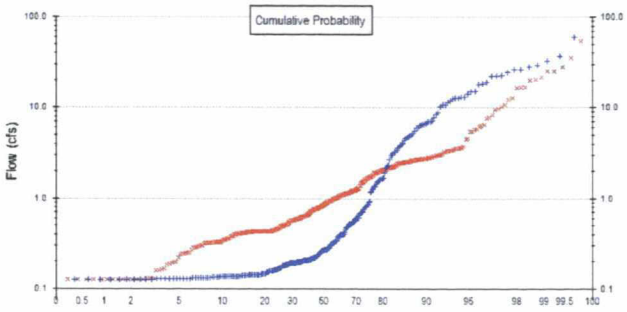
Vault Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	1.471	0.000	0.000	0.000
0.0556	1.471	0.081	0.238	0.000
0.1111	1.471	0.163	0.336	0.000
0.1667	1.471	0.245	0.412	0.000
0.2222	1.471	0.326	0.475	0.000
0.2778	1.471	0.408	0.532	0.000
0.3333	1.471	0.490	0.582	0.000
0.3889	1.471	0.572	0.629	0.000
0.4444	1.471	0.653	0.673	0.000
0.5000	1.471	0.735	0.713	0.000
0.5556	1.471	0.817	0.752	0.000
0.6111	1.471	0.899	0.789	0.000
0.6667	1.471	0.980	0.824	0.000
0.7222	1.471	1.062	0.858	0.000
0.7778	1.471	1.144	0.890	0.000
0.8333	1.471	1.225	0.921	0.000
0.8889	1.471	1.307	0.951	0.000
0.9444	1.471	1.389	0.981	0.000
1.0000	1.471	1.471	1.009	0.000
1.0556	1.471	1.552	1.037	0.000
1.1111	1.471	1.634	1.064	0.000
1.1667	1.471	1.716	1.090	0.000
1.2222	1.471	1.798	1.116	0.000
1.2778	1.471	1.879	1.141	0.000
1.3333	1.471	1.961	1.165	0.000
1.3889	1.471	2.043	1.189	0.000
1.4444	1.471	2.125	1.412	0.000
1.5000	1.471	2.206	1.535	0.000
1.5556	1.471	2.288	1.632	0.000
1.6111	1.471	2.370	1.715	0.000
1.6667	1.471	2.451	1.791	0.000
1.7222	1.471	2.533	1.861	0.000
1.7778	1.471	2.615	1.927	0.000
1.8333	1.471	2.697	1.989	0.000
1.8889	1.471	2.778	2.048	0.000
1.9444	1.471	2.860	2.105	0.000

2.0000	1.471	2.942	2.160	0.000
2.0556	1.471	3.024	2.213	0.000
2.1111	1.471	3.105	2.264	0.000
2.1667	1.471	3.187	2.313	0.000
2.2222	1.471	3.269	2.362	0.000
2.2778	1.471	3.350	2.409	0.000
2.3333	1.471	3.432	2.455	0.000
2.3889	1.471	3.514	2.500	0.000
2.4444	1.471	3.596	2.544	0.000
2.5000	1.471	3.677	2.587	0.000
2.5556	1.471	3.759	2.630	0.000
2.6111	1.471	3.841	2.671	0.000
2.6667	1.471	3.923	2.712	0.000
2.7222	1.471	4.004	2.752	0.000
2.7778	1.471	4.086	2.792	0.000
2.8333	1.471	4.168	2.831	0.000
2.8889	1.471	4.249	2.869	0.000
2.9444	1.471	4.331	2.907	0.000
3.0000	1.471	4.413	2.944	0.000
3.0556	1.471	4.495	2.981	0.000
3.1111	1.471	4.576	3.017	0.000
3.1667	1.471	4.658	3.053	0.000
3.2222	1.471	4.740	3.088	0.000
3.2778	1.471	4.822	3.123	0.000
3.3333	1.471	4.903	3.157	0.000
3.3889	1.471	4.985	3.192	0.000
3.4444	1.471	5.067	3.225	0.000
3.5000	1.471	5.148	3.258	0.000
3.5556	1.471	5.230	3.291	0.000
3.6111	1.471	5.312	3.324	0.000
3.6667	1.471	5.394	3.356	0.000
3.7222	1.471	5.475	3.388	0.000
3.7778	1.471	5.557	3.420	0.000
3.8333	1.471	5.639	3.451	0.000
3.8889	1.471	5.721	3.482	0.000
3.9444	1.471	5.802	3.597	0.000
4.0000	1.471	5.884	3.929	0.000
4.0556	1.471	5.966	4.533	0.000
4.1111	1.471	6.047	5.612	0.000
4.1667	1.471	6.129	7.000	0.000
4.2222	1.471	6.211	8.639	0.000
4.2778	1.471	6.293	10.49	0.000
4.3333	1.471	6.374	12.54	0.000
4.3889	1.471	6.456	14.76	0.000
4.4444	1.471	6.538	17.14	0.000
4.5000	1.471	6.620	19.68	0.000
4.5556	1.471	6.701	22.36	0.000
4.6111	1.471	6.783	25.18	0.000
4.6667	1.471	6.865	28.13	0.000
4.7222	1.471	6.947	31.20	0.000
4.7778	1.471	7.028	34.39	0.000
4.8333	1.471	7.110	37.69	0.000
4.8889	1.471	7.192	41.11	0.000
4.9444	1.471	7.273	44.63	0.000
5.0000	1.471	7.355	48.26	0.000
5.0556	1.471	7.437	51.99	0.000
5.1111	0.000	0.000	55.81	0.000

Analysis Results
POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 61.76
Total Impervious Area: 0.71

Mitigated Landuse Totals for POC #1
Total Pervious Area: 8.9
Total Impervious Area: 41.01

Flow Frequency Method: Cunnane

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	11.975471
5 year	22.459341
10 year	28.070077
25 year	35.705509

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	6.208007
5 year	16.797752
10 year	25.084789
25 year	33.171611

Duration Flows
The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
3.5926	224	242	108	Pass
3.8399	214	196	91	Pass
4.0871	199	178	89	Pass
4.3344	180	167	92	Pass
4.5816	167	154	92	Pass
4.8289	159	149	93	Pass
5.0761	149	144	96	Pass
5.3234	146	140	95	Pass
5.5706	141	134	95	Pass
5.8179	139	132	94	Pass
6.0651	133	127	95	Pass
6.3124	128	121	94	Pass
6.5596	122	114	93	Pass
6.8069	116	106	91	Pass
7.0541	108	102	94	Pass
7.3013	101	94	93	Pass
7.5486	98	91	92	Pass
7.7958	95	87	91	Pass
8.0431	86	85	98	Pass
8.2903	82	83	101	Pass
8.5376	78	80	102	Pass
8.7848	77	77	100	Pass
9.0321	70	75	107	Pass
9.2793	67	69	102	Pass
9.5266	66	64	96	Pass
9.7738	63	63	100	Pass
10.0211	62	62	100	Pass
10.2683	61	62	101	Pass
10.5156	60	59	98	Pass
10.7628	55	59	107	Pass
11.0100	53	52	98	Pass
11.2573	53	51	96	Pass
11.5045	53	48	90	Pass
11.7518	52	47	90	Pass
11.9990	51	47	92	Pass
12.2463	50	46	92	Pass
12.4935	50	45	90	Pass
12.7408	47	45	95	Pass
12.9880	47	40	85	Pass
13.2353	44	37	84	Pass
13.4825	40	36	90	Pass
13.7298	39	34	87	Pass
13.9770	37	34	91	Pass
14.2243	35	33	94	Pass
14.4715	35	32	91	Pass
14.7187	35	32	91	Pass
14.9660	35	32	91	Pass
15.2132	33	32	96	Pass
15.4605	31	32	103	Pass
15.7077	31	31	100	Pass
15.9550	30	30	100	Pass
16.2022	30	30	100	Pass
16.4495	30	30	100	Pass

16.6967	30	27	90	Pass
16.9440	30	24	80	Pass
17.1912	29	24	82	Pass
17.4385	28	23	82	Pass
17.6857	27	21	77	Pass
17.9330	26	20	76	Pass
18.1802	25	20	80	Pass
18.4275	23	18	78	Pass
18.6747	22	17	77	Pass
18.9219	22	16	72	Pass
19.1692	21	16	76	Pass
19.4164	21	15	71	Pass
19.6637	20	15	75	Pass
19.9109	19	14	73	Pass
20.1582	19	13	68	Pass
20.4054	19	12	63	Pass
20.6527	19	12	63	Pass
20.8999	19	12	63	Pass
21.1472	19	12	63	Pass
21.3944	19	12	63	Pass
21.6417	18	12	66	Pass
21.8889	18	12	66	Pass
22.1362	17	11	64	Pass
22.3834	16	11	68	Pass
22.6306	14	11	78	Pass
22.8779	14	10	71	Pass
23.1251	14	10	71	Pass
23.3724	14	9	64	Pass
23.6196	14	9	64	Pass
23.8669	13	9	69	Pass
24.1141	13	9	69	Pass
24.3614	12	9	75	Pass
24.6086	11	9	81	Pass
24.8559	10	8	80	Pass
25.1031	10	7	70	Pass
25.3504	10	6	60	Pass
25.5976	10	6	60	Pass
25.8449	10	6	60	Pass
26.0921	10	6	60	Pass
26.3393	10	6	60	Pass
26.5866	8	6	75	Pass
26.8338	8	5	62	Pass
27.0811	7	4	57	Pass
27.3283	7	4	57	Pass
27.5756	5	4	80	Pass
27.8228	5	4	80	Pass
28.0701	4	4	100	Pass

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

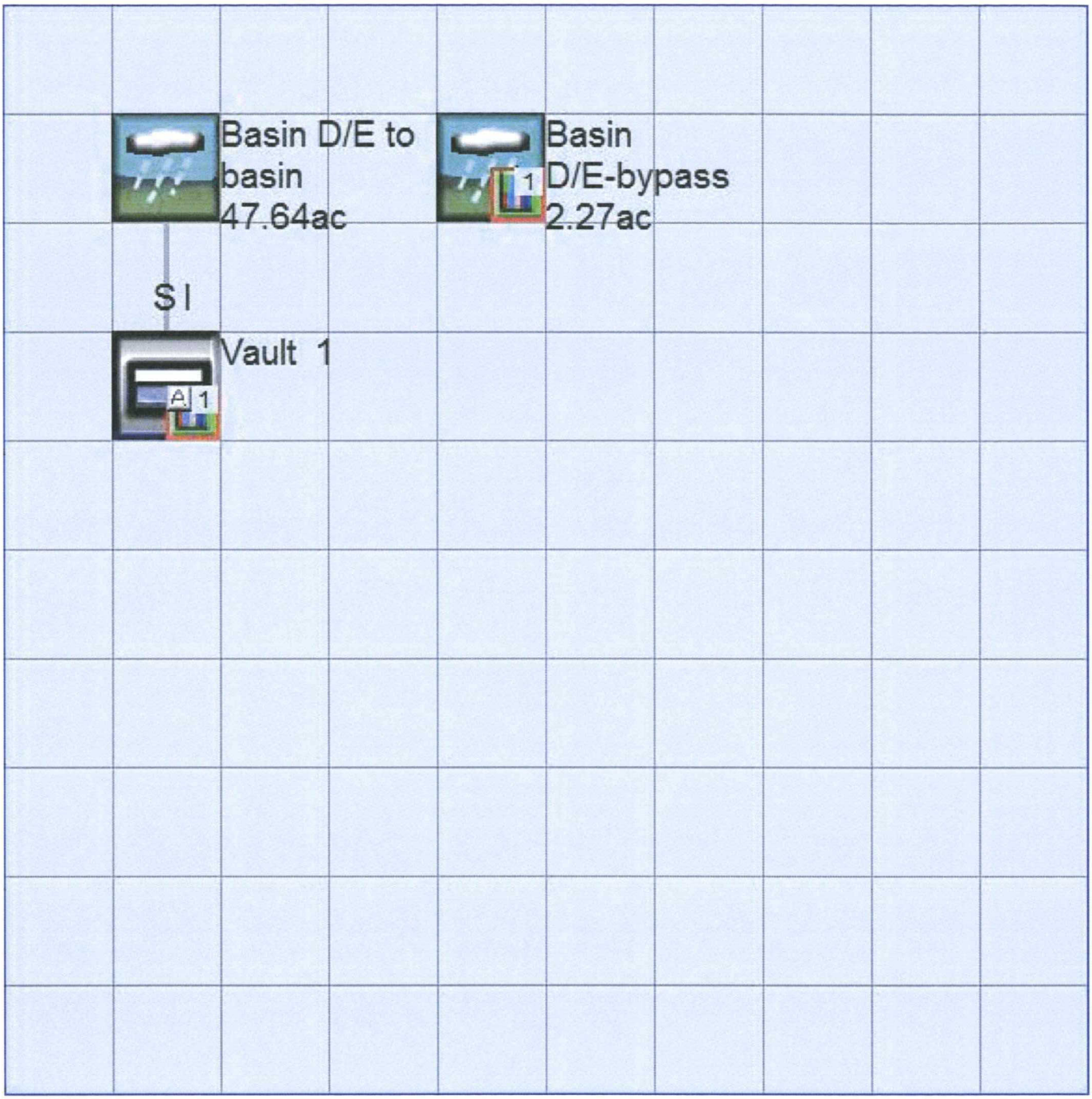
No PERLND changes have been made.

IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic

Mitigated Schematic



```
RUN

GLOBAL
  WWHM4 model simulation
  START       1959 10 01         END    2004 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   CPW-DE.wdm
MESSU       25   PreCPW-DE.MES
            27   PreCPW-DE.L61
            28   PreCPW-DE.L62
            30   POCCPW-DE1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:60
      PERLND       10
      PERLND       11
      PERLND       12
      IMPLND        1
      COPY        501
      DISPLY        1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -   #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1         Outfall D/E                 MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -   #  NPT  NMN ***
    1          1    1
  501          1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #     # OPCD ***
  END OPCODE
  PARM
    #     #          K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -   #                          User  t-series Engl Metr ***
                                        in  out           ***
   10       B,Grass,FLAT(0-5%)      1    1    1    1   27    0
   11       B,Grass,MOD(5-10%)      1    1    1    1   27    0
   12       B,Grass,STEEP(10-20     1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -   # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   10          0    0    1    0    0    0    0    0    0    0    0    0
   11          0    0    1    0    0    0    0    0    0    0    0    0
   12          0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY
```

```
  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -   # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   10         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   11         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   12         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -   # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   10         0    1    1    1    0    0    0    0    1    1    0
   11         0    1    1    1    0    0    0    0    1    1    0
   12         0    1    1    1    0    0    0    0    1    1    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2          ***
    # -   # ***FOREST      LZSN     INFILT      LSUR      SLSUR      KVARY      AGWRC
   10              0         5       0.07       200       0.05          3       0.92
   11              0       4.7      0.055       200        0.1          3       0.92
   12              0       4.4       0.04       200       0.15          3       0.92
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3          ***
    # -   # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   10             35        30         2         2       0.4      0.05      0.05
   11             35        30         2         2       0.4      0.05      0.05
   12             35        30         2         2       0.4      0.05      0.05
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                                  ***
    # -   #      CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   10           0.08       0.6       0.2       1.5       0.7       0.5
   11           0.08       0.6       0.2       1.5       0.7       0.5
   12           0.08       0.6       0.2       1.5       0.7       0.5
  END PWAT-PARM4
  MON-LZETPARM
    <PLS >      PWATER input info: Part 3          ***
    # -   #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   10        0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
   11        0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
   12        0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
  END MON-LZETPARM
  MON-INTERCEP
    <PLS >      PWATER input info: Part 3          ***
    # -   #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   10        0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
   11        0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
   12        0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
  END MON-INTERCEP

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -   # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   10              0         0      0.15         0         4      0.05         0
   11              0         0      0.15         0         4      0.05         0
   12              0         0      0.15         0         4      0.05         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -   #                    User  t-series Engl Metr ***
                                    in   out            ***
```

```
    1      IMPERVIOUS-FLAT        1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    1
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1           100     0.035      0.05       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                 <--Area-->     <-Target->   MBLK    ***
<Name>   #                 <-factor->     <Name>   #   Tbl#    ***
Outfall D/E***
PERLND  10                      20.01     COPY   501     12
PERLND  10                      20.01     COPY   501     13
PERLND  11                      12.56     COPY   501     12
PERLND  11                      12.56     COPY   501     13
PERLND  12                      16.63     COPY   501     12
PERLND  12                      16.63     COPY   501     13
IMPLND   1                       0.71     COPY   501     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   12.1        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
```

```
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                   ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *        ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN      DELTH     STCOR       KS       DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                      ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><---
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    1              PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     12.1      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15
```

```
END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1959 10 01         END    2004 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>    <-----------File Name------------------------------>***
<-ID->                                                               ***
WDM         26   CPW-DE.wdm
MESSU       25   MitCPW-DE.MES
            27   MitCPW-DE.L61
            28   MitCPW-DE.L62
            30   POCCPW-DE1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:60
      PERLND       10
      PERLND       12
      IMPLND        1
      RCHRES        1
      COPY          1
      COPY        501
      COPY        601
      DISPLY        1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Vault  1                    MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1          1    1
  501          1    1
  601          1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #          K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                       in  out              ***
   10       B,Grass,FLAT(0-5%)      1    1    1    1   27    0
   12       B,Grass,STEEP(10-20     1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   10         0    0    1    0    0    0    0    0    0    0    0    0
   12         0    0    1    0    0    0    0    0    0    0    0    0
```

```
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -   # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   10         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   12         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -   # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   10         0    1    1    1    0    0    0    0    1    1    0
   12         0    1    1    1    0    0    0    0    1    1    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2          ***
    # -   # ***FOREST      LZSN     INFILT      LSUR      SLSUR      KVARY      AGWRC
   10              0         5       0.07       200       0.05          3       0.92
   12              0       4.4       0.04       200       0.15          3       0.92
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3          ***
    # -   # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   10             35        30         2         2       0.4      0.05      0.05
   12             35        30         2         2       0.4      0.05      0.05
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                                  ***
    # -   #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   10          0.08       0.6       0.2       1.5       0.7       0.5
   12          0.08       0.6       0.2       1.5       0.7       0.5
  END PWAT-PARM4
  MON-LZETPARM
    <PLS >      PWATER input info: Part 3          ***
    # -   #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   10       0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
   12       0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
  END MON-LZETPARM
  MON-INTERCEP
    <PLS >      PWATER input info: Part 3          ***
    # -   #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   10       0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
   12       0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
  END MON-INTERCEP

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
             ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -   # ***  CEPS      SURS       UZS       IFWS       LZS       AGWS       GWVS
   10            0         0      0.15          0         4       0.05          0
   12            0         0      0.15          0         4       0.05          0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -   #                    User  t-series Engl Metr ***
                                    in  out           ***
    1      IMPERVIOUS-FLAT        1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -   # ATMP SNOW IWAT  SLD  IWG IQAL   ***
```

```
    1         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL     *********
    1         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    1
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1           100     0.035      0.05       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin D/E to basin***
PERLND  10                       5.8      RCHRES   1      2
PERLND  10                       5.8      RCHRES   1      3
PERLND  12                      1.79      RCHRES   1      2
PERLND  12                      1.79      RCHRES   1      3
IMPLND   1                     40.05      RCHRES   1      5
Basin  D/E-bypass***
PERLND  12                      1.31      COPY   501     12
PERLND  12                      1.31      COPY   601     12
PERLND  12                      1.31      COPY   501     13
PERLND  12                      1.31      COPY   601     13
IMPLND   1                      0.96      COPY   501     15
IMPLND   1                      0.96      COPY   601     15

******Routing******
PERLND  10                       5.8      COPY     1     12
PERLND  12                      1.79      COPY     1     12
IMPLND   1                     40.05      COPY     1     15
PERLND  10                       5.8      COPY     1     13
PERLND  12                      1.79      COPY     1     13
RCHRES   1                         1      COPY   501     16
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   12.1        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
```

```
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name         Nexits   Unit Systems   Printer                  ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG             ***
                                        in  out                               ***
    1     Vault  1                1    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
    1         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1         4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                       ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
          FG FG FG FG  possible  exit  *** possible  exit       possible  exit
           *  *  *  *    *  *  *  *  *       *  *  *  *  *          ***
    1      0  1  0  0    4  0  0  0  0       0  0  0  0  0          2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN      DELTH     STCOR      KS       DB50       ***
  <------><--------><--------><--------><--------><--------><--------><--------> ***
    1               1      0.07        0.0        0.0       0.5        0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                          ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
    1         0            4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE      1
   92    4
     Depth      Area    Volume  Outflow1 Velocity  Travel Time***
      (ft)    (acres) (acre-ft)   (cfs)   (ft/sec)    (Minutes)***
  0.000000  1.471120  0.000000  0.000000
  0.055556  1.471120  0.081729  0.237961
  0.111111  1.471120  0.163458  0.336528
  0.166667  1.471120  0.245187  0.412161
  0.222222  1.471120  0.326916  0.475922
  0.277778  1.471120  0.408645  0.532097
  0.333333  1.471120  0.490373  0.582884
  0.388889  1.471120  0.572102  0.629586
  0.444444  1.471120  0.653831  0.673056
  0.500000  1.471120  0.735560  0.713884
  0.555556  1.471120  0.817289  0.752499
  0.611111  1.471120  0.899018  0.789228
  0.666667  1.471120  0.980747  0.824322
  0.722222  1.471120  1.062476  0.857981
  0.777778  1.471120  1.144205  0.890369
  0.833333  1.471120  1.225934  0.921620
  0.888889  1.471120  1.307662  0.951845
  0.944444  1.471120  1.389391  0.981139
```

1.000000	1.471120	1.471120	1.009584
1.055556	1.471120	1.552849	1.037249
1.111111	1.471120	1.634578	1.064195
1.166667	1.471120	1.716307	1.090475
1.222222	1.471120	1.798036	1.116137
1.277778	1.471120	1.879765	1.141222
1.333333	1.471120	1.961494	1.165767
1.388889	1.471120	2.043223	1.189806
1.444444	1.471120	2.124952	1.412698
1.500000	1.471120	2.206680	1.535476
1.555556	1.471120	2.288409	1.632083
1.611111	1.471120	2.370138	1.715888
1.666667	1.471120	2.451867	1.791621
1.722222	1.471120	2.533596	1.861621
1.777778	1.471120	2.615325	1.927250
1.833333	1.471120	2.697054	1.989387
1.888889	1.471120	2.778783	2.048640
1.944444	1.471120	2.860512	2.105449
2.000000	1.471120	2.942241	2.160148
2.055556	1.471120	3.023969	2.212999
2.111111	1.471120	3.105698	2.264207
2.166667	1.471120	3.187427	2.313942
2.222222	1.471120	3.269156	2.362345
2.277778	1.471120	3.350885	2.409532
2.333333	1.471120	3.432614	2.455605
2.388889	1.471120	3.514343	2.500649
2.444444	1.471120	3.596072	2.544739
2.500000	1.471120	3.677801	2.587941
2.555556	1.471120	3.759530	2.630313
2.611111	1.471120	3.841259	2.671907
2.666667	1.471120	3.922987	2.712769
2.722222	1.471120	4.004716	2.752939
2.777778	1.471120	4.086445	2.792456
2.833333	1.471120	4.168174	2.831353
2.888889	1.471120	4.249903	2.869662
2.944444	1.471120	4.331632	2.907410
3.000000	1.471120	4.413361	2.944624
3.055556	1.471120	4.495090	2.981327
3.111111	1.471120	4.576819	3.017542
3.166667	1.471120	4.658548	3.053289
3.222222	1.471120	4.740277	3.088586
3.277778	1.471120	4.822005	3.123453
3.333333	1.471120	4.903734	3.157904
3.388889	1.471120	4.985463	3.191956
3.444444	1.471120	5.067192	3.225623
3.500000	1.471120	5.148921	3.258918
3.555556	1.471120	5.230650	3.291855
3.611111	1.471120	5.312379	3.324445
3.666667	1.471120	5.394108	3.356699
3.722222	1.471120	5.475837	3.388629
3.777778	1.471120	5.557566	3.420244
3.833333	1.471120	5.639294	3.451553
3.888889	1.471120	5.721023	3.482567
3.944444	1.471120	5.802752	3.597261
4.000000	1.471120	5.884481	3.928961
4.055556	1.471120	5.966210	4.533013
4.111111	1.471120	6.047939	5.612216
4.166667	1.471120	6.129668	7.000651
4.222222	1.471120	6.211397	8.639117
4.277778	1.471120	6.293126	10.49340
4.333333	1.471120	6.374855	12.54041
4.388889	1.471120	6.456584	14.76322
4.444444	1.471120	6.538312	17.14868
4.500000	1.471120	6.620041	19.68625
4.555556	1.471120	6.701770	22.36718
4.611111	1.471120	6.783499	25.18409
4.666667	1.471120	6.865228	28.13064
4.722222	1.471120	6.946957	31.20129
4.777778	1.471120	7.028686	34.39116
4.833333	1.471120	7.110415	37.69590

```
  4.888889  1.471120  7.192144  41.11162
  4.944444  1.471120  7.273873  44.63478
  5.000000  1.471120  7.355601  48.26218
  5.055556  1.471120  7.437330  51.99086
  END FTABLE  1
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>    # <Name> # tem strg<-factor->strg <Name>    #   #        <Name> # #  ***
WDM       2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM       2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM       1 EVAP     ENGL    1              PERLND   1 999 EXTNL  PETINP
WDM       1 EVAP     ENGL    1              IMPLND   1 999 EXTNL  PETINP
WDM       1 EVAP     ENGL    1              RCHRES   1     EXTNL  POTEV

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>    #       <Name> # #<-factor->strg <Name>    # <Name>    tem strg strg***
RCHRES    1 HYDR  RO     1 1        1      WDM   1000 FLOW     ENGL      REPL
RCHRES    1 HYDR  STAGE  1 1        1      WDM   1001 STAG     ENGL      REPL
COPY      1 OUTPUT MEAN  1 1     12.1      WDM    701 FLOW     ENGL      REPL
COPY    501 OUTPUT MEAN  1 1     12.1      WDM    801 FLOW     ENGL      REPL
COPY    601 OUTPUT MEAN  1 1     12.1      WDM    901 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>    <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>             <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK         2
PERLND      PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK     2

  MASS-LINK         3
PERLND      PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK     3

  MASS-LINK         5
IMPLND      IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK     5

  MASS-LINK        12
PERLND      PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK    12

  MASS-LINK        13
PERLND      PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK    13

  MASS-LINK        15
IMPLND      IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK    15

  MASS-LINK        16
RCHRES      ROFLOW                          COPY           INPUT  MEAN
  END MASS-LINK    16


END MASS-LINK

END RUN
```

ERROR/WARNING ID: 341 6

DATE/TIME: 1978/ 1/16 21: 0

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB(). To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows. This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS	V1	V2	VOL
92	3.2041E+05	3.2397E+05	3.4573E+05

ERROR/WARNING ID: 341 5

DATE/TIME: 1978/ 1/16 21: 0

RCHRES: 1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated. If extrapolation was small, no problem.
Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	1.2816E+05	-9.115E+05	7.1118	7.1118	2

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SDHM

PROJECT REPORT

General Model Information

Project Name:	CPW-FH
Site Name:	CPW-Outfall F/H
Site Address:	SR76&Pankey
City:	County of SD
Report Date:	3/27/2013
Gage:	FALLBROO
Data Start:	10/01/1959
Data End:	09/30/2004
Timestep:	Hourly
Precip Scale:	1.00
Version:	2012/09/13

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data

Predeveloped Land Use

Outfall F/H

Bypass:	No
GroundWater:	No

Pervious Land Use	Acres
B,Grass,FLAT(0-5%)	0.9
Pervious Total	0.9

Impervious Land Use	Acres
IMPERVIOUS-FLAT	5.04
Impervious Total	5.04
Basin Total	5.94

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin F/H to basin

Bypass:	No
GroundWater:	No

Pervious Land Use	Acres
B,Grass,FLAT(0-5%)	0.9
Pervious Total	0.9

Impervious Land Use	Acres
IMPERVIOUS-FLAT	5.04
Impervious Total	5.04
Basin Total	5.94

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Basin F/H-bypass

Bypass:	Yes
GroundWater:	No

Pervious Land Use	Acres
B,Grass,STEEP(10-20	1.4
Pervious Total	1.4

Impervious Land Use	Acres
IMPERVIOUS-FLAT	3.31
Impervious Total	3.31
Basin Total	4.71

Element Flows To:

Surface	Interflow	Groundwater

Routing Elements
Predeveloped Routing

Mitigated Routing

Vault 1

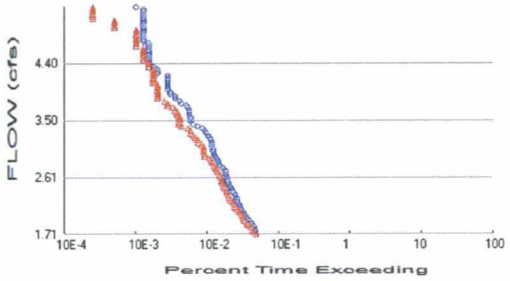
Width: 79 ft.
Length: 158 ft.
Depth: 5 ft.
Discharge Structure
Riser Height: 4 ft.
Riser Diameter: 18 in.
Notch Type: Rectangular
Notch Width: 1.496 ft.
Notch Height: 0.036 ft.
Orifice 1 Diameter: 3.2 in. Elevation:0 ft.
Orifice 2 Diameter: 2.8 in. Elevation:0.9 ft.
Element Flows To:
Outlet 1 Outlet 2

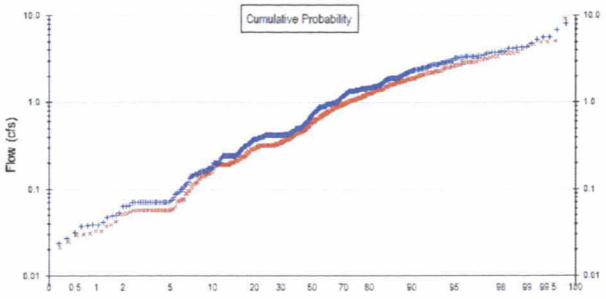
Vault Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	0.286	0.000	0.000	0.000
0.0556	0.286	0.015	0.063	0.000
0.1111	0.286	0.031	0.089	0.000
0.1667	0.286	0.047	0.109	0.000
0.2222	0.286	0.063	0.126	0.000
0.2778	0.286	0.079	0.141	0.000
0.3333	0.286	0.095	0.155	0.000
0.3889	0.286	0.111	0.167	0.000
0.4444	0.286	0.127	0.179	0.000
0.5000	0.286	0.143	0.190	0.000
0.5556	0.286	0.159	0.200	0.000
0.6111	0.286	0.175	0.210	0.000
0.6667	0.286	0.191	0.219	0.000
0.7222	0.286	0.207	0.228	0.000
0.7778	0.286	0.222	0.237	0.000
0.8333	0.286	0.238	0.245	0.000
0.8889	0.286	0.254	0.253	0.000
0.9444	0.286	0.270	0.304	0.000
1.0000	0.286	0.286	0.334	0.000
1.0556	0.286	0.302	0.357	0.000
1.1111	0.286	0.318	0.378	0.000
1.1667	0.286	0.334	0.396	0.000
1.2222	0.286	0.350	0.414	0.000
1.2778	0.286	0.366	0.430	0.000
1.3333	0.286	0.382	0.446	0.000
1.3889	0.286	0.398	0.460	0.000
1.4444	0.286	0.413	0.475	0.000
1.5000	0.286	0.429	0.488	0.000
1.5556	0.286	0.445	0.502	0.000
1.6111	0.286	0.461	0.515	0.000
1.6667	0.286	0.477	0.527	0.000
1.7222	0.286	0.493	0.539	0.000
1.7778	0.286	0.509	0.551	0.000
1.8333	0.286	0.525	0.563	0.000
1.8889	0.286	0.541	0.574	0.000
1.9444	0.286	0.557	0.585	0.000

2.0000	0.286	0.573	0.596	0.000
2.0556	0.286	0.589	0.606	0.000
2.1111	0.286	0.604	0.617	0.000
2.1667	0.286	0.620	0.627	0.000
2.2222	0.286	0.636	0.637	0.000
2.2778	0.286	0.652	0.647	0.000
2.3333	0.286	0.668	0.657	0.000
2.3889	0.286	0.684	0.666	0.000
2.4444	0.286	0.700	0.676	0.000
2.5000	0.286	0.716	0.685	0.000
2.5556	0.286	0.732	0.694	0.000
2.6111	0.286	0.748	0.703	0.000
2.6667	0.286	0.764	0.712	0.000
2.7222	0.286	0.780	0.721	0.000
2.7778	0.286	0.796	0.730	0.000
2.8333	0.286	0.811	0.739	0.000
2.8889	0.286	0.827	0.747	0.000
2.9444	0.286	0.843	0.755	0.000
3.0000	0.286	0.859	0.764	0.000
3.0556	0.286	0.875	0.772	0.000
3.1111	0.286	0.891	0.780	0.000
3.1667	0.286	0.907	0.788	0.000
3.2222	0.286	0.923	0.796	0.000
3.2778	0.286	0.939	0.804	0.000
3.3333	0.286	0.955	0.812	0.000
3.3889	0.286	0.971	0.819	0.000
3.4444	0.286	0.987	0.827	0.000
3.5000	0.286	1.002	0.835	0.000
3.5556	0.286	1.018	0.842	0.000
3.6111	0.286	1.034	0.850	0.000
3.6667	0.286	1.050	0.857	0.000
3.7222	0.286	1.066	0.864	0.000
3.7778	0.286	1.082	0.872	0.000
3.8333	0.286	1.098	0.879	0.000
3.8889	0.286	1.114	0.886	0.000
3.9444	0.286	1.130	0.893	0.000
4.0000	0.286	1.146	0.934	0.000
4.0556	0.286	1.162	1.132	0.000
4.1111	0.286	1.178	1.489	0.000
4.1667	0.286	1.193	1.948	0.000
4.2222	0.286	1.209	2.492	0.000
4.2778	0.286	1.225	3.107	0.000
4.3333	0.286	1.241	3.786	0.000
4.3889	0.286	1.257	4.524	0.000
4.4444	0.286	1.273	5.316	0.000
4.5000	0.286	1.289	6.159	0.000
4.5556	0.286	1.305	7.050	0.000
4.6111	0.286	1.321	7.986	0.000
4.6667	0.286	1.337	8.966	0.000
4.7222	0.286	1.353	9.987	0.000
4.7778	0.286	1.369	11.04	0.000
4.8333	0.286	1.385	12.14	0.000
4.8889	0.286	1.400	13.28	0.000
4.9444	0.286	1.416	14.45	0.000
5.0000	0.286	1.432	15.66	0.000
5.0556	0.286	1.448	16.90	0.000
5.1111	0.000	0.000	18.17	0.000

Analysis Results
POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 0.9
Total Impervious Area: 5.04

Mitigated Landuse Totals for POC #1
Total Pervious Area: 2.3
Total Impervious Area: 8.35

Flow Frequency Method: Cunnane

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	3.418619
5 year	4.242076
10 year	5.298946
25 year	6.510587

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	2.917925
5 year	3.717004
10 year	4.696266
25 year	5.057677

Duration Flows
The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
1.7093	191	191	100	Pass
1.7456	186	176	94	Pass
1.7818	182	172	94	Pass
1.8181	177	158	89	Pass
1.8543	171	147	85	Pass
1.8906	162	141	87	Pass
1.9269	152	131	86	Pass
1.9631	141	128	90	Pass
1.9994	134	123	91	Pass
2.0356	127	117	92	Pass
2.0719	122	111	90	Pass
2.1082	117	104	88	Pass
2.1444	113	97	85	Pass
2.1807	110	95	86	Pass
2.2169	104	90	86	Pass
2.2532	102	84	82	Pass
2.2895	101	81	80	Pass
2.3257	97	78	80	Pass
2.3620	92	74	80	Pass
2.3982	89	74	83	Pass
2.4345	85	71	83	Pass
2.4707	82	68	82	Pass
2.5070	79	65	82	Pass
2.5433	76	64	84	Pass
2.5795	74	63	85	Pass
2.6158	74	61	82	Pass
2.6520	73	59	80	Pass
2.6883	72	56	77	Pass
2.7246	69	54	78	Pass
2.7608	65	52	80	Pass
2.7971	60	49	81	Pass
2.8333	58	47	81	Pass
2.8696	56	45	80	Pass
2.9059	53	43	81	Pass
2.9421	51	37	72	Pass
2.9784	49	37	75	Pass
3.0146	48	35	72	Pass
3.0509	48	35	72	Pass
3.0871	46	35	76	Pass
3.1234	46	33	71	Pass
3.1597	46	30	65	Pass
3.1959	45	29	64	Pass
3.2322	43	27	62	Pass
3.2684	41	25	60	Pass
3.3047	38	23	60	Pass
3.3410	36	23	63	Pass
3.3772	34	21	61	Pass
3.4135	29	17	58	Pass
3.4497	25	16	64	Pass
3.4860	23	16	69	Pass
3.5223	23	16	69	Pass
3.5585	23	16	69	Pass
3.5948	22	15	68	Pass

3.6310	22	15	68	Pass
3.6673	22	14	63	Pass
3.7036	21	13	61	Pass
3.7398	20	11	55	Pass
3.7761	17	11	64	Pass
3.8123	16	10	62	Pass
3.8486	14	8	57	Pass
3.8848	14	8	57	Pass
3.9211	12	8	66	Pass
3.9574	12	8	66	Pass
3.9936	11	8	72	Pass
4.0299	11	8	72	Pass
4.0661	11	8	72	Pass
4.1024	11	7	63	Pass
4.1387	11	7	63	Pass
4.1749	11	7	63	Pass
4.2112	11	7	63	Pass
4.2474	8	7	87	Pass
4.2837	8	7	87	Pass
4.3200	8	7	87	Pass
4.3562	7	6	85	Pass
4.3925	6	6	100	Pass
4.4287	6	6	100	Pass
4.4650	6	5	83	Pass
4.5012	6	5	83	Pass
4.5375	6	5	83	Pass
4.5738	6	5	83	Pass
4.6100	6	5	83	Pass
4.6463	6	5	83	Pass
4.6825	6	4	66	Pass
4.7188	6	4	66	Pass
4.7551	5	4	80	Pass
4.7913	5	4	80	Pass
4.8276	5	4	80	Pass
4.8638	5	4	80	Pass
4.9001	5	4	80	Pass
4.9364	5	4	80	Pass
4.9726	5	2	40	Pass
5.0089	5	2	40	Pass
5.0451	5	2	40	Pass
5.0814	5	2	40	Pass
5.1177	5	1	20	Pass
5.1539	5	1	20	Pass
5.1902	5	1	20	Pass
5.2264	5	1	20	Pass
5.2627	5	1	20	Pass
5.2989	4	1	25	Pass

Water Quality
Drawdown Time Results

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

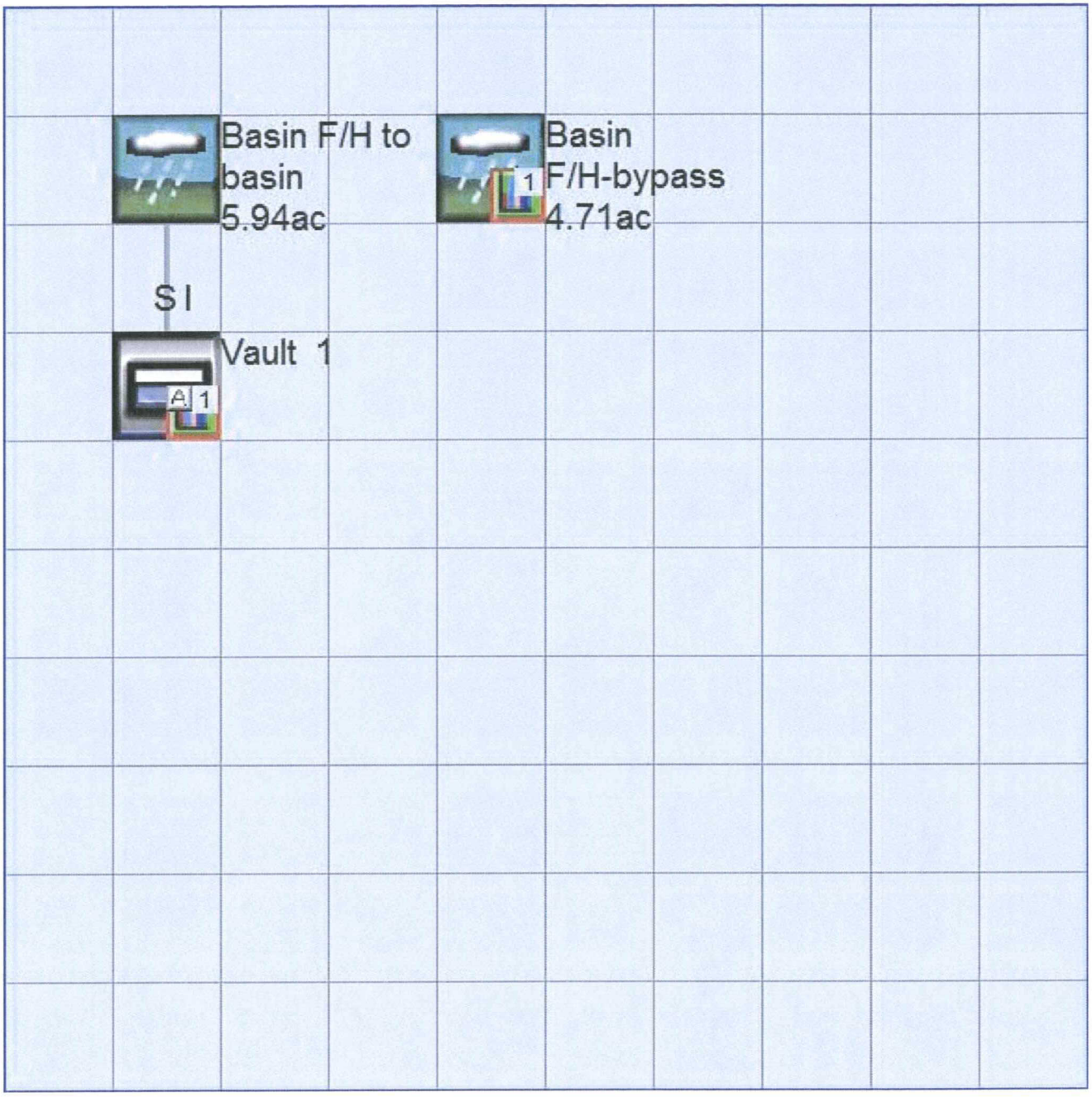
No PERLND changes have been made.

IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic

Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1959 10 01         END    2004 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   CPW-FH.wdm
MESSU       25   PreCPW-FH.MES
            27   PreCPW-FH.L61
            28   PreCPW-FH.L62
            30   POCCPW-FH1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:60
      PERLND      10
      IMPLND       1
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Outfall F/H                 MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #          K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                        User  t-series Engl Metr ***
                                    in  out           ***
   10      B,Grass,FLAT(0-5%)     1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   10         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   10         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO
```

```
  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   10         0    1    1    1    0    0    0    0    1    1    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2          ***
    # -  # ***FOREST      LZSN     INFILT      LSUR     SLSUR      KVARY      AGWRC
   10              0         5       0.07       200      0.05          3       0.92
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3          ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   10             35        30         2         2       0.4      0.05      0.05
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                                  ***
    # -  #      CEPSC      UZSN      NSUR     INTFW       IRC      LZETP ***
   10            0.08       0.6       0.2       1.5       0.7        0.5
  END PWAT-PARM4
  MON-LZETPARM
    <PLS >      PWATER input info: Part 3          ***
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   10       0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
  END MON-LZETPARM
  MON-INTERCEP
    <PLS >      PWATER input info: Part 3          ***
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   10       0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
  END MON-INTERCEP

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS       GWVS
   10             0         0      0.15         0         4      0.05          0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                      in  out           ***
    1      IMPERVIOUS-FLAT        1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    1
  END IWAT-PARM1
```

```
  IWAT-PARM2
    <PLS >       IWATER input info: Part 2          ***
    # -  # ***  LSUR      SLSUR       NSUR      RETSC
    1             100      0.035       0.05        0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >       IWATER input info: Part 3          ***
    # -  # ***PETMAX     PETMIN
    1               0          0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS       SURS
    1               0          0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->      <-Target->   MBLK    ***
<Name>   #                  <-factor->      <Name>   #   Tbl#    ***
Outfall F/H***
PERLND  10                        0.9       COPY   501     12
PERLND  10                        0.9       COPY   501     13
IMPLND   1                       5.04       COPY   501     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   12.1        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                    ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *         ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN      DELTH      STCOR        KS       DB50       ***
    <------><--------><--------><--------><--------><--------><--------><--------> ***
```

```
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                    ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><--------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    1              PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     12.1      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1959 10 01         END    2004 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   CPW-FH.wdm
MESSU       25   MitCPW-FH.MES
            27   MitCPW-FH.L61
            28   MitCPW-FH.L62
            30   POCCPW-FH1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:60
      PERLND      10
      IMPLND       1
      PERLND      12
      RCHRES       1
      COPY         1
      COPY       501
      COPY       601
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Vault  1                    MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1          1    1
  501          1    1
  601          1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #          K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out             ***
   10      B,Grass,FLAT(0-5%)      1    1    1    1   27    0
   12      B,Grass,STEEP(10-20     1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   10          0    0    1    0    0    0    0    0    0    0    0    0
   12          0    0    1    0    0    0    0    0    0    0    0    0
```

```
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL   PYR
    # -   # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   10         0    0    4    0    0    0    0    0    0    0    0    0    1     9
   12         0    0    4    0    0    0    0    0    0    0    0    0    1     9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -   # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   10         0    1    1    1    0    0    0    0    1    1    0
   12         0    1    1    1    0    0    0    0    1    1    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >       PWATER input info: Part 2          ***
    # -   # ***FOREST      LZSN     INFILT      LSUR      SLSUR      KVARY      AGWRC
   10               0         5       0.07       200       0.05          3       0.92
   12               0       4.4       0.04       200       0.15          3       0.92
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >       PWATER input info: Part 3          ***
    # -   # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   10              35        30         2         2       0.4      0.05      0.05
   12              35        30         2         2       0.4      0.05      0.05
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >      PWATER input info: Part 4                                  ***
    # -   #      CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   10            0.08       0.6       0.2       1.5       0.7       0.5
   12            0.08       0.6       0.2       1.5       0.7       0.5
  END PWAT-PARM4
  MON-LZETPARM
    <PLS >       PWATER input info: Part 3          ***
    # -   #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   10        0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
   12        0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
  END MON-LZETPARM
  MON-INTERCEP
    <PLS >       PWATER input info: Part 3          ***
    # -   #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   10        0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
   12        0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
  END MON-INTERCEP

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -   # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   10              0         0      0.15         0         4      0.05         0
   12              0         0      0.15         0         4      0.05         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -   #                    User  t-series Engl Metr ***
                                    in  out             ***
    1      IMPERVIOUS-FLAT        1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -   # ATMP SNOW IWAT  SLD  IWG IQAL   ***
```

```
    1         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    1
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >       IWATER input info: Part 2          ***
    # -  # ***  LSUR      SLSUR      NSUR      RETSC
    1            100      0.035      0.05        0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >       IWATER input info: Part 3          ***
    # -  # ***PETMAX    PETMIN
    1              0          0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS       SURS
    1              0          0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin F/H to basin***
PERLND  10                        0.9     RCHRES   1      2
PERLND  10                        0.9     RCHRES   1      3
IMPLND   1                       5.04     RCHRES   1      5
Basin  F/H-bypass***
PERLND  12                        1.4     COPY   501     12
PERLND  12                        1.4     COPY   601     12
PERLND  12                        1.4     COPY   501     13
PERLND  12                        1.4     COPY   601     13
IMPLND   1                       3.31     COPY   501     15
IMPLND   1                       3.31     COPY   601     15

******Routing******
PERLND  10                        0.9     COPY     1     12
IMPLND   1                       5.04     COPY     1     15
PERLND  10                        0.9     COPY     1     13
RCHRES   1                          1     COPY   501     16
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   12.1        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
```

```
  RCHRES       Name        Nexits   Unit Systems   Printer              ***
  # -  #<------------------><---> User T-series  Engl Metr LKFG         ***
                                          in  out                       ***
  1     Vault  1               1    1    1    1   28    0    1
END GEN-INFO
*** Section RCHRES***

ACTIVITY
  <PLS > ************* Active Sections *****************************
  # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  1        1    0    0    0    0    0    0    0    0    0
END ACTIVITY

PRINT-INFO
  <PLS > ***************** Print-flags ****************** PIVL  PYR
  # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  1        4    0    0    0    0    0    0    0    0    0    1    9
END PRINT-INFO

HYDR-PARM1
  RCHRES  Flags for each HYDR Section                                   ***
  # -  #   VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
           FG FG FG FG  possible  exit  *** possible  exit      possible  exit
            *  *  *  *    *  *  *  *  *        *  *  *  *  *         ***
  1         0  1  0  0    4  0  0  0  0        0  0  0  0  0      2  2  2  2  2
END HYDR-PARM1

HYDR-PARM2
  # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50        ***
<------><--------><--------><--------><--------><--------><-------->        ***
  1             1      0.03       0.0       0.0       0.5       0.0
END HYDR-PARM2
HYDR-INIT
  RCHRES  Initial conditions for each HYDR section                      ***
  # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
        *** ac-ft    for each possible exit       for each possible exit
<------><-------->      <---><---><---><---><---> *** <---><---><---><---><--->
  1          0          4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE       1
   92    4
     Depth      Area    Volume  Outflow1 Velocity  Travel Time***
      (ft)   (acres) (acre-ft)     (cfs)  (ft/sec)     (Minutes)***
  0.000000  0.286547  0.000000  0.000000
  0.055556  0.286547  0.015919  0.063390
  0.111111  0.286547  0.031839  0.089647
  0.166667  0.286547  0.047758  0.109795
  0.222222  0.286547  0.063677  0.126781
  0.277778  0.286547  0.079596  0.141745
  0.333333  0.286547  0.095516  0.155274
  0.388889  0.286547  0.111435  0.167715
  0.444444  0.286547  0.127354  0.179295
  0.500000  0.286547  0.143274  0.190171
  0.555556  0.286547  0.159193  0.200458
  0.611111  0.286547  0.175112  0.210242
  0.666667  0.286547  0.191032  0.219590
  0.722222  0.286547  0.206951  0.228557
  0.777778  0.286547  0.222870  0.237185
  0.833333  0.286547  0.238789  0.245510
  0.888889  0.286547  0.254709  0.253561
  0.944444  0.286547  0.270628  0.304774
  1.000000  0.286547  0.286547  0.334056
  1.055556  0.286547  0.302467  0.357523
  1.111111  0.286547  0.318386  0.378099
  1.166667  0.286547  0.334305  0.396822
```

1.222222	0.286547	0.350224	0.414210
1.277778	0.286547	0.366144	0.430568
1.333333	0.286547	0.382063	0.446094
1.388889	0.286547	0.397982	0.460924
1.444444	0.286547	0.413902	0.475161
1.500000	0.286547	0.429821	0.488882
1.555556	0.286547	0.445740	0.502147
1.611111	0.286547	0.461660	0.515005
1.666667	0.286547	0.477579	0.527496
1.722222	0.286547	0.493498	0.539653
1.777778	0.286547	0.509417	0.551505
1.833333	0.286547	0.525337	0.563076
1.888889	0.286547	0.541256	0.574387
1.944444	0.286547	0.557175	0.585457
2.000000	0.286547	0.573095	0.596301
2.055556	0.286547	0.589014	0.606933
2.111111	0.286547	0.604933	0.617368
2.166667	0.286547	0.620852	0.627615
2.222222	0.286547	0.636772	0.637686
2.277778	0.286547	0.652691	0.647589
2.333333	0.286547	0.668610	0.657334
2.388889	0.286547	0.684530	0.666928
2.444444	0.286547	0.700449	0.676378
2.500000	0.286547	0.716368	0.685691
2.555556	0.286547	0.732288	0.694874
2.611111	0.286547	0.748207	0.703930
2.666667	0.286547	0.764126	0.712867
2.722222	0.286547	0.780045	0.721688
2.777778	0.286547	0.795965	0.730398
2.833333	0.286547	0.811884	0.739002
2.888889	0.286547	0.827803	0.747503
2.944444	0.286547	0.843723	0.755905
3.000000	0.286547	0.859642	0.764212
3.055556	0.286547	0.875561	0.772426
3.111111	0.286547	0.891480	0.780552
3.166667	0.286547	0.907400	0.788591
3.222222	0.286547	0.923319	0.796547
3.277778	0.286547	0.939238	0.804422
3.333333	0.286547	0.955158	0.812219
3.388889	0.286547	0.971077	0.819940
3.444444	0.286547	0.986996	0.827587
3.500000	0.286547	1.002916	0.835163
3.555556	0.286547	1.018835	0.842669
3.611111	0.286547	1.034754	0.850107
3.666667	0.286547	1.050673	0.857480
3.722222	0.286547	1.066593	0.864788
3.777778	0.286547	1.082512	0.872034
3.833333	0.286547	1.098431	0.879219
3.888889	0.286547	1.114351	0.886345
3.944444	0.286547	1.130270	0.893413
4.000000	0.286547	1.146189	0.934175
4.055556	0.286547	1.162108	1.132424
4.111111	0.286547	1.178028	1.489090
4.166667	0.286547	1.193947	1.948867
4.222222	0.286547	1.209866	2.492020
4.277778	0.286547	1.225786	3.107142
4.333333	0.286547	1.241705	3.786539
4.388889	0.286547	1.257624	4.524562
4.444444	0.286547	1.273544	5.316833
4.500000	0.286547	1.289463	6.159833
4.555556	0.286547	1.305382	7.050647
4.611111	0.286547	1.321301	7.986814
4.666667	0.286547	1.337221	8.966218
4.722222	0.286547	1.353140	9.987014
4.777778	0.286547	1.369059	11.04757
4.833333	0.286547	1.384979	12.14645
4.888889	0.286547	1.400898	13.28234
4.944444	0.286547	1.416817	14.45407
5.000000	0.286547	1.432736	15.66056
5.055556	0.286547	1.448656	16.90083

```
  END FTABLE  1
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    1              PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              IMPLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              RCHRES   1     EXTNL  POTEV

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
RCHRES   1 HYDR   RO     1 1        1      WDM   1000 FLOW     ENGL      REPL
RCHRES   1 HYDR   STAGE  1 1        1      WDM   1001 STAG     ENGL      REPL
COPY     1 OUTPUT MEAN   1 1     12.1      WDM    701 FLOW     ENGL      REPL
COPY   501 OUTPUT MEAN   1 1     12.1      WDM    801 FLOW     ENGL      REPL
COPY   601 OUTPUT MEAN   1 1     12.1      WDM    901 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>    <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>             <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK         2
PERLND      PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK     2

  MASS-LINK         3
PERLND      PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK     3

  MASS-LINK         5
IMPLND      IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK     5

  MASS-LINK        12
PERLND      PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK    12

  MASS-LINK        13
PERLND      PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK    13

  MASS-LINK        15
IMPLND      IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK    15

  MASS-LINK        16
RCHRES      ROFLOW                          COPY           INPUT  MEAN
  END MASS-LINK    16


END MASS-LINK

END RUN
```

Disclaimer

Legal Notice

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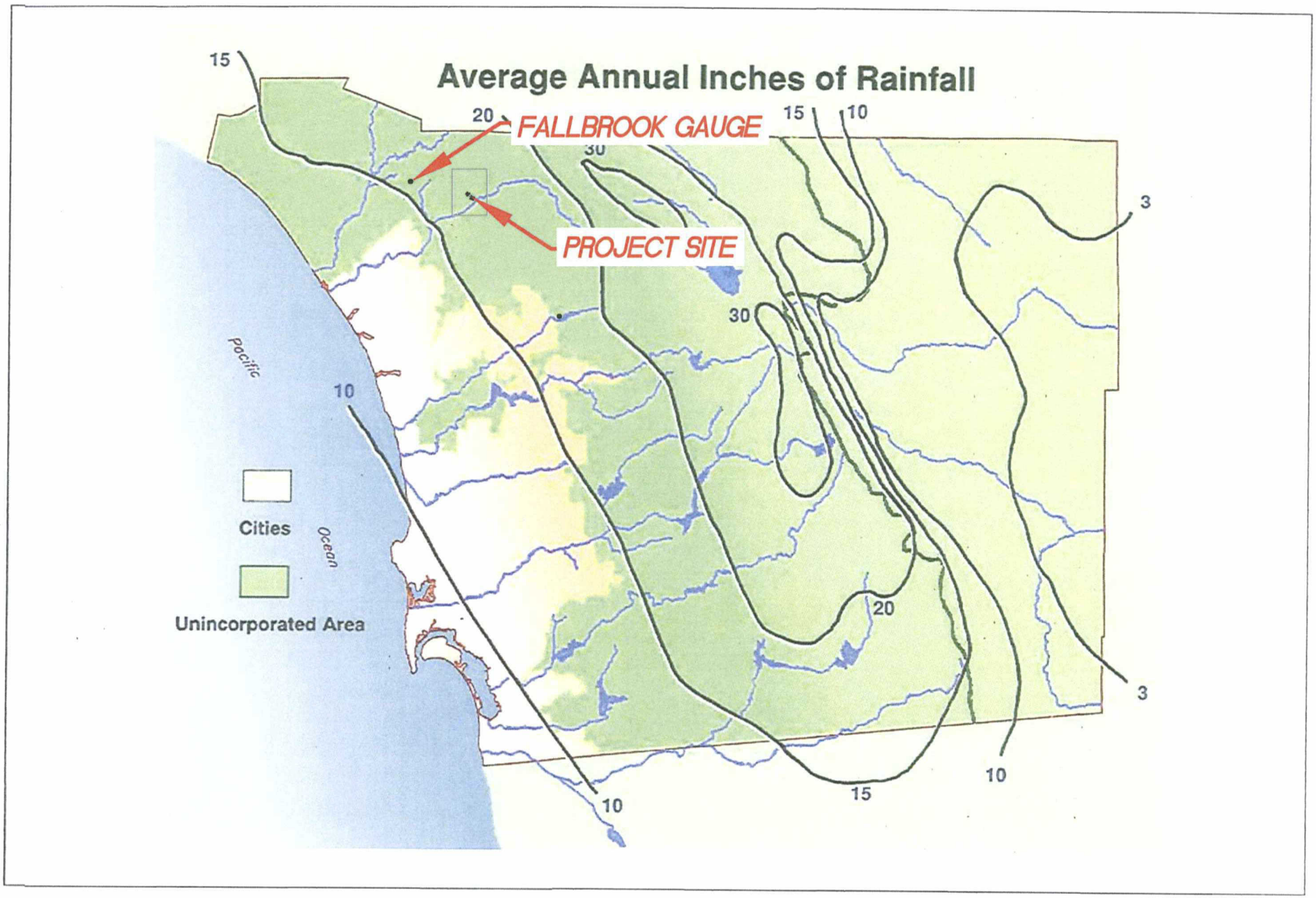
APPENDIX 3

Supplemental Information

Rain Gage Location Map

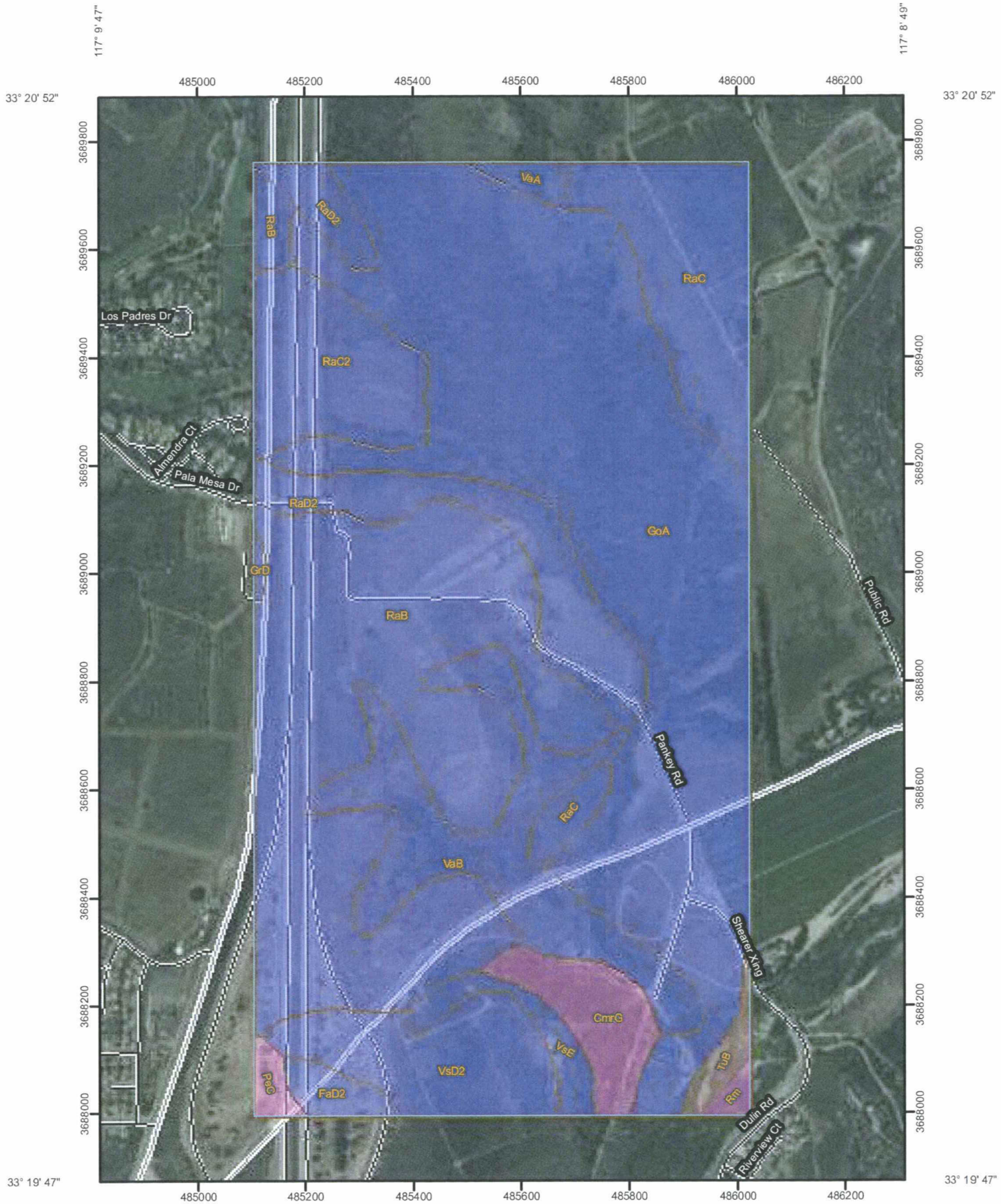


Average Annual Inches of Rainfall in San Diego
(not to be used for design calculations)

FIGURE
1-2

Hydrologic Soil Group Map

Hydrologic Soil Group—San Diego County Area, California
(Campus Park West - Vicinity)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:9,580 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Diego County Area, California
Survey Area Data: Version 6, Dec 17, 2007

Date(s) aerial images were photographed: 6/7/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — San Diego County Area, California (CA638)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CmrG	Cieneba very rocky coarse sandy loam, 30 to 75 percent slopes	D	10.8	2.7%
FaD2	Fallbrook sandy loam, 9 to 15 percent slopes, eroded	B	3.8	0.9%
GoA	Grangeville fine sandy loam, 0 to 2 percent slopes	B	142.6	35.6%
GrD	Greenfield sandy loam, 9 to 15 percent slopes	B	0.6	0.2%
PeC	Placentia sandy loam, 2 to 9 percent slopes	D	2.1	0.5%
RaB	Ramona sandy loam, 2 to 5 percent slopes	B	98.4	24.6%
RaC	Ramona sandy loam, 5 to 9 percent slopes	B	29.7	7.4%
RaC2	Ramona sandy loam, 5 to 9 percent slopes, eroded	B	21.4	5.3%
RaD2	Ramona sandy loam, 9 to 15 percent slopes, eroded	B	25.0	6.2%
Rm	Riverwash	D	1.3	0.3%
TuB	Tujunga sand, 0 to 5 percent slopes	A	3.1	0.8%
VaA	Visalia sandy loam, 0 to 2 percent slopes	B	2.1	0.5%
VaB	Visalia sandy loam, 2 to 5 percent slopes	B	33.2	8.3%
VsD2	Vista coarse sandy loam, 9 to 15 percent slopes, eroded	B	20.5	5.1%
VsE	Vista coarse sandy loam, 15 to 30 percent slopes	B	5.9	1.5%
Totals for Area of Interest			**400.5**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

10-year Water Surface Elevation Calculations for Direct Discharge Hydromodification Exemption for Discharge I

- Ran both models and examined the difference between the resulting hydrographs (the hydromodification). A couple of different pre- and post-development models were generated to analyze the differences on a per unit area basis.
- Using the "difference hydrograph" created from the model simulations, progressively added development and recomputed the flow duration statistics.
- Examined the modified flow duration statistics and determined at what level of increased development the statistics became noticeably altered.

Results showed that increasing levels of development, in excess of 1,000 acres assumed to occur at the same location as the stream gauge station, would produce a very minor influence on the river's flow duration curve. These results demonstrated that certain portions of the San Diego River could be exempt from hydromodification requirements. Such HMP exemptions would only be granted for projects discharging runoff directly to the exempt river reach. Each municipality must define "direct discharge" based on the project site conditions. To qualify for the potential exemption, the outlet elevation must be between the river bottom elevation and the 100-year floodplain elevation and properly designed energy dissipation must be provided The supporting HSPF continuous modeling analysis results are summarized in a Technical Memo in Appendix F.

All exempt river reaches, which are presented in Table 6-1, have drainage areas in excess of 100 square miles and 100-year flow rates in excess of 20,000 cfs. In addition, all proposed river reaches are subject to significant upstream reservoir flow regulation, have wide floodplain or stabilized channel areas, and low gradients. This combination of factors, in association with field observations and years of historical perspective from the TAC members, justifies exemptions for direct discharges to the exempt river reaches provided that properly sized energy dissipation is provided at the outfall location.

Table 6-1. Summary of Exempt River Reaches in San Diego County

River	Downstream Limit	Upstream Limit
Otay River	Outfall to San Diego Bay	Lower Otay Reservoir Dam
San Diego River	Outfall to Pacific Ocean	Confluence with San Vicente Creek
San Dieguito River	Outfall to Pacific Ocean	Lake Hodges Dam
San Luis Rey River	Outfall to Pacific Ocean	Upstream river limit of Basin Plan subwatershed 903.1 upstream of Bonsall and near Interstate 15
Sweetwater River	Outfall to San Diego Bay	Sweetwater Reservoir Dam

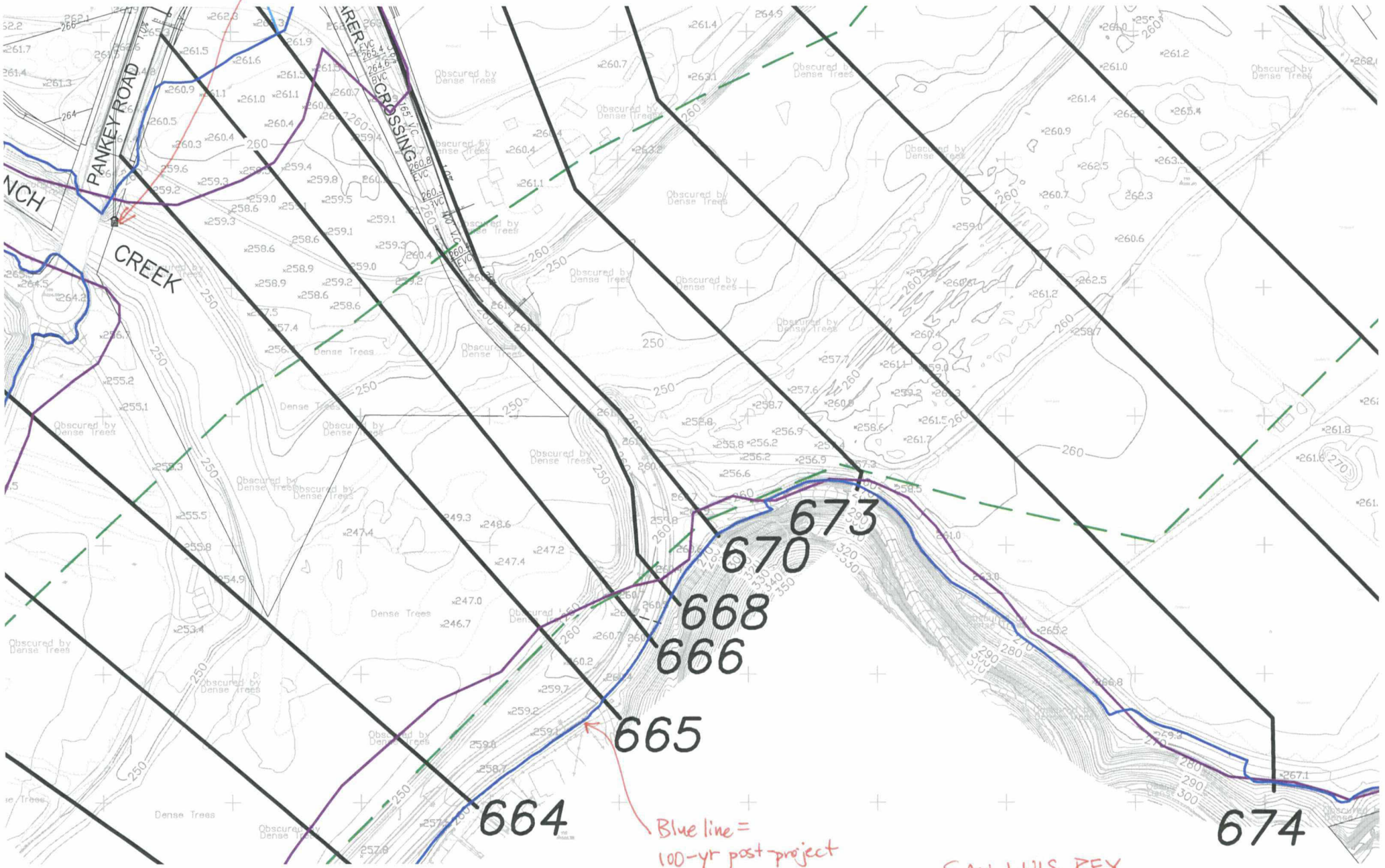
Table 6-2 provides a summary of exempt reservoirs in San Diego County. Large reservoirs can be exempt systems from a hydromodification standpoint since reservoir storm water inflow velocities are naturally mitigated by the significant tailwater condition in the reservoir. HMP exemptions would only be granted for projects discharging runoff directly to the exempt reservoirs. Each municipality must define "direct discharge" based on the project site conditions. To qualify for the potential exemption, the outlet elevation of the conveyance system must be within (or below) the normal operating water surface elevations of the reservoir and properly designed energy dissipation must be provided.

10-yr HEC RAS Results
From Chang's San Luis Rey model
(April 2013 version)

HEC-RAS Plan: 10-Year River: RIVER-1 Reach: Reach-1 Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	677.8	PF 1	4000.00	250.77	260.50		260.70	0.009795	3.6	1122.72	290.57	0.32
Reach-1	677.2	PF 1	4000.00	249.80	258.80		258.87	0.002936	2.2	1827.42	406.09	0.18
Reach-1	676.7	PF 1	4000.00	249.20	257.70		257.83	0.005195	2.8	1410.19	325.39	0.24
Reach-1	676	PF 1	4000.00	248.70	256.83		256.91	0.002481	2.2	1813.43	351.08	0.17
Reach-1	674	PF 1	4000.00	247.70	256.08		256.16	0.003598	2.4	1698.32	393.08	0.20
Reach-1	673	PF 1	4000.00	247.50	255.52		255.59	0.002503	2.2	1849.79	371.10	0.17
Reach-1	670	PF 1	4000.00	247.30	254.21	251.52	254.62	0.012894	5.1	777.57	142.99	0.39
Reach-1	669		Bridge									
Reach-1	668	PF 1	4000.00	245.92	253.34		253.97	0.024973	6.3	630.51	139.14	0.53
Reach-1	666	PF 1	4000.00	247.20	252.61		252.70	0.004228	2.4	1661.36	421.50	0.21
Reach-1	665	PF 1	4000.00	246.20	252.17		252.23	0.002625	1.9	2051.87	499.36	0.17
Reach-1	664	PF 1	4000.00	245.40	251.42		251.48	0.002242	2.1	1924.95	377.97	0.16
Reach-1	663	PF 1	4000.00	245.00	250.82		250.91	0.003625	2.4	1676.83	384.39	0.20
Reach-1	662	PF 1	4000.00	244.30	250.26	246.70	250.33	0.002663	2.2	1853.79	391.58	0.17

10 yr water surface elevation near Outfall 'I' is greater than Outfall 'I' invert, therefore, discharge location is exempt from hydromodification requirements.



SAN LUIS REY
FLOODPLAIN EXHIBIT
FROM CHANG'S REPORT
(APRIL 2013)

Basin Drawdown Calculations

Drawdown-Basin #1

Project Summary	
Title	CPW Basin Drawdown calculations
Engineer	PDC
Company	PDC
Date	10/11/2011

Notes

Table of Contents

Drawdown-Basin #1

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
CM-1	EX10	0	0.000	0.000	0.00

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
O-1	EX10	0	1.566	0.000	1.56

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
1 (IN)	EX10	0	0.000	0.000	0.00	(N/A)	(N/A)
1 (OUT)	EX10	0	1.566	0.000	1.56	3.83	1.555

Drawdown-Basin #1

Subsection: Outlet Input Data
Label: Outlet#1

Return Event: 100 years
Storm Event:

Requested Pond Water Surface Elevations	
Minimum (Headwater)	0.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	5.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	TW	0.00	5.00
Orifice-Circular	Orifice - 2	Forward	TW	1.70	5.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Drawdown-Basin #1

Subsection: Outlet Input Data
Label: Outlet#1

Return Event: 100 years
Storm Event:

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	0.00 ft
Orifice Diameter	4.0 in
Orifice Coefficient	0.670

Structure ID: Orifice - 2 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	1.70 ft
Orifice Diameter	4.0 in
Orifice Coefficient	0.670

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft^3/s
Flow Tolerance (Maximum)	10.000 ft^3/s

Drawdown-Basin #1

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 100 years
Storm Event:

Peak Discharge	1.56 ft³/s
Time to Peak	0.000 min
Hydrograph Volume	1.565 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.000	1.56	1.55	1.55	1.54	1.53
25.000	1.52	1.52	1.51	1.50	1.49
50.000	1.49	1.48	1.47	1.46	1.46
75.000	1.45	1.44	1.43	1.42	1.42
100.000	1.41	1.40	1.39	1.38	1.38
125.000	1.37	1.36	1.35	1.35	1.34
150.000	1.33	1.32	1.31	1.31	1.30
175.000	1.29	1.28	1.28	1.27	1.26
200.000	1.25	1.24	1.23	1.23	1.22
225.000	1.21	1.20	1.19	1.18	1.18
250.000	1.17	1.16	1.15	1.15	1.14
275.000	1.13	1.12	1.11	1.11	1.10
300.000	1.09	1.08	1.07	1.06	1.05
325.000	1.04	1.03	1.02	1.00	0.99
350.000	0.98	0.97	0.96	0.95	0.94
375.000	0.93	0.92	0.91	0.90	0.89
400.000	0.88	0.87	0.86	0.86	0.85
425.000	0.84	0.83	0.82	0.81	0.80
450.000	0.79	0.78	0.78	0.77	0.76
475.000	0.75	0.74	0.74	0.73	0.72
500.000	0.71	0.70	0.70	0.69	0.68
525.000	0.67	0.67	0.66	0.65	0.64
550.000	0.64	0.63	0.62	0.62	0.61
575.000	0.60	0.60	0.59	0.58	0.58
600.000	0.58	0.58	0.57	0.57	0.57
625.000	0.57	0.57	0.56	0.56	0.56
650.000	0.56	0.56	0.56	0.55	0.55
675.000	0.55	0.55	0.55	0.54	0.54
700.000	0.54	0.54	0.54	0.53	0.53
725.000	0.53	0.53	0.53	0.52	0.52
750.000	0.52	0.52	0.52	0.51	0.51
775.000	0.51	0.51	0.51	0.50	0.50
800.000	0.50	0.50	0.50	0.49	0.49
825.000	0.49	0.49	0.49	0.49	0.48
850.000	0.48	0.48	0.48	0.48	0.47
875.000	0.47	0.47	0.47	0.47	0.47
900.000	0.46	0.46	0.46	0.46	0.46

Drawdown-Basin #1

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 100 years
Storm Event:

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
925.000	0.45	0.45	0.45	0.45	0.45
950.000	0.45	0.44	0.44	0.44	0.44
975.000	0.44	0.44	0.43	0.43	0.43
1,000.000	0.43	0.43	0.42	0.42	0.42
1,025.000	0.42	0.42	0.41	0.41	0.41
1,050.000	0.41	0.40	0.40	0.40	0.40
1,075.000	0.40	0.39	0.39	0.39	0.39
1,100.000	0.39	0.38	0.38	0.38	0.38
1,125.000	0.38	0.37	0.37	0.37	0.37
1,150.000	0.37	0.36	0.36	0.36	0.36
1,175.000	0.36	0.35	0.35	0.35	0.35
1,200.000	0.35	0.34	0.34	0.34	0.34
1,225.000	0.34	0.34	0.33	0.33	0.33
1,250.000	0.33	0.33	0.33	0.32	0.32
1,275.000	0.32	0.32	0.32	0.32	0.31
1,300.000	0.31	0.31	0.31	0.31	0.31
1,325.000	0.30	0.30	0.30	0.30	0.30
1,350.000	0.30	0.29	0.29	0.29	0.29
1,375.000	0.29	0.29	0.28	0.28	0.28
1,400.000	0.28	0.28	0.28	0.28	0.27
1,425.000	0.27	0.27	0.27	0.27	0.26
1,450.000	0.26	0.26	0.26	0.25	0.25
1,475.000	0.25	0.25	0.25	0.24	0.24
1,500.000	0.24	0.24	0.23	0.23	0.23
1,525.000	0.23	0.23	0.22	0.22	0.22
1,550.000	0.22	0.22	0.21	0.21	0.21
1,575.000	0.21	0.21	0.20	0.20	0.20
1,600.000	0.20	0.20	0.20	0.19	0.19
1,625.000	0.19	0.19	0.19	0.18	0.18
1,650.000	0.18	0.18	0.18	0.18	0.17
1,675.000	0.17	0.17	0.17	0.17	0.17
1,700.000	0.17	0.16	0.16	0.16	0.16
1,725.000	0.16	0.16	0.16	0.15	0.15
1,750.000	0.15	0.15	0.15	0.15	0.15
1,775.000	0.14	0.14	0.14	0.14	0.14
1,800.000	0.14	0.14	0.14	0.13	0.13
1,825.000	0.13	0.13	0.13	0.13	0.13
1,850.000	0.13	0.12	0.12	0.12	0.12
1,875.000	0.12	0.12	0.12	0.12	0.12
1,900.000	0.11	0.11	0.11	0.11	0.11
1,925.000	0.11	0.11	0.11	0.11	0.11
1,950.000	0.10	0.10	0.10	0.10	0.10

Drawdown-Basin #1

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 100 years
Storm Event:

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,975.000	0.10	0.10	0.10	0.10	0.10
2,000.000	0.10	0.09	0.09	0.09	0.09
2,025.000	0.09	0.09	0.09	0.09	0.09
2,050.000	0.09	0.09	0.09	0.08	0.08
2,075.000	0.08	0.08	0.08	0.08	0.08
2,100.000	0.08	0.08	0.08	0.08	0.08
2,125.000	0.08	0.07	0.07	0.07	0.07
2,150.000	0.07	0.07	0.07	0.07	0.07
2,175.000	0.07	0.07	0.07	0.07	0.07
2,200.000	0.07	0.07	0.06	0.06	0.06
2,225.000	0.06	0.06	0.06	0.06	0.06
2,250.000	0.06	0.06	0.06	0.06	0.06
2,275.000	0.06	0.06	0.06	0.06	0.06
2,300.000	0.05	0.05	0.05	0.05	0.05
2,325.000	0.05	0.05	0.05	0.05	0.05
2,350.000	0.05	0.05	0.05	0.05	0.05
2,375.000	0.05	0.05	0.05	0.05	0.05
2,400.000	0.05	0.05	0.04	0.04	0.04
2,425.000	0.04	0.04	0.04	0.04	0.04
2,450.000	0.04	0.04	0.04	0.04	0.04
2,475.000	0.04	0.04	0.04	0.04	0.04
2,500.000	0.04	0.04	0.04	0.04	0.04
2,525.000	0.04	0.04	0.04	0.04	0.03
2,550.000	0.03	0.03	0.03	0.03	0.03
2,575.000	0.03	0.03	0.03	0.03	0.03
2,600.000	0.03	0.03	0.03	0.03	0.03
2,625.000	0.03	0.03	0.03	0.03	0.03
2,650.000	0.03	0.03	0.03	0.03	0.03
2,675.000	0.03	0.03	0.03	0.03	0.03
2,700.000	0.03	0.03	0.03	0.03	0.03
2,725.000	0.03	0.02	0.02	0.02	0.02
2,750.000	0.02	0.02	0.02	0.02	0.02
2,775.000	0.02	0.02	0.02	0.02	0.02
2,800.000	0.02	0.02	0.02	0.02	0.02
2,825.000	0.02	0.02	0.02	0.02	0.02
2,850.000	0.02	0.02	0.02	0.02	0.02
2,875.000	0.02	0.02	0.02	0.02	0.02
2,900.000	0.02	0.02	0.02	0.02	0.02
2,925.000	0.02	0.02	0.02	0.02	0.02
2,950.000	0.02	0.02	0.02	0.02	0.02
2,975.000	0.02	0.02	0.02	0.02	0.02
3,000.000	0.02	0.02	0.01	0.01	0.01

Drawdown-Basin #1

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 100 years
Storm Event:

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
3,025.000	0.01	0.01	0.01	0.01	0.01
3,050.000	0.01	0.01	0.01	0.01	0.01
3,075.000	0.01	0.01	0.01	0.01	0.01
3,100.000	0.01	0.01	0.01	0.01	0.01
3,125.000	0.01	0.01	0.01	0.01	0.01
3,150.000	0.01	0.01	0.01	0.01	0.01
3,175.000	0.01	0.01	0.01	0.01	0.01
3,200.000	0.01	0.01	0.01	0.01	0.01
3,225.000	0.01	0.01	0.01	0.01	0.01
3,250.000	0.01	0.01	0.01	0.01	0.01
3,275.000	0.01	0.01	0.01	0.01	0.01
3,300.000	0.01	0.01	0.01	0.01	0.01
3,325.000	0.01	0.01	0.01	0.01	0.01
3,350.000	0.01	0.01	0.01	0.01	0.01
3,375.000	0.01	0.01	0.01	0.01	0.01
3,400.000	0.01	0.01	0.01	0.01	0.01
3,425.000	0.01	0.01	0.01	0.01	0.01
3,450.000	0.01	0.01	0.01	0.01	0.01
3,475.000	0.01	0.01	0.01	0.01	0.01
3,500.000	0.01	0.01	0.01	0.01	0.01
3,525.000	0.01	0.01	0.01	0.01	0.01
3,550.000	0.01	0.01	0.01	0.01	0.01
3,575.000	0.01	0.01	0.01	0.01	0.01
3,600.000	0.01	0.00	0.00	0.00	0.00
3,625.000	0.00	0.00	0.00	0.00	0.00
3,650.000	0.00	0.00	0.00	0.00	0.00
3,675.000	0.00	0.00	0.00	0.00	0.00
3,700.000	0.00	0.00	0.00	0.00	0.00
3,725.000	0.00	0.00	0.00	0.00	0.00
3,750.000	0.00	0.00	0.00	0.00	0.00
3,775.000	0.00	0.00	0.00	0.00	0.00
3,800.000	0.00	0.00	0.00	0.00	0.00
3,825.000	0.00	0.00	0.00	0.00	0.00
3,850.000	0.00	0.00	0.00	0.00	0.00
3,875.000	0.00	0.00	0.00	0.00	0.00
3,900.000	0.00	0.00	0.00	0.00	0.00
3,925.000	0.00	0.00	0.00	0.00	0.00
3,950.000	0.00	0.00	0.00	0.00	0.00
3,975.000	0.00	0.00	0.00	0.00	0.00
4,000.000	0.00	0.00	0.00	0.00	0.00
4,025.000	0.00	0.00	0.00	0.00	0.00
4,050.000	0.00	0.00	0.00	0.00	0.00

Drawdown-Basin #1

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 100 years
Storm Event:

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
4,075.000	0.00	0.00	0.00	0.00	0.00
4,100.000	0.00	0.00	0.00	0.00	0.00
4,125.000	0.00	0.00	0.00	0.00	0.00
4,150.000	0.00	0.00	0.00	0.00	0.00
4,175.000	0.00	0.00	0.00	0.00	0.00
4,200.000	0.00	0.00	0.00	0.00	0.00
4,225.000	0.00	0.00	0.00	0.00	0.00
4,250.000	0.00	0.00	0.00	0.00	0.00
4,275.000	0.00	0.00	0.00	0.00	0.00
4,300.000	0.00	0.00	0.00	0.00	0.00
4,325.000	0.00	0.00	0.00	0.00	0.00
4,350.000	0.00	0.00	0.00	0.00	0.00
4,375.000	0.00	0.00	0.00	0.00	0.00
4,400.000	0.00	0.00	0.00	0.00	0.00
4,425.000	0.00	0.00	0.00	0.00	0.00
4,450.000	0.00	0.00	(N/A)	(N/A)	(N/A)

Drawdown-Basin #1

Index

Drawdown-Basin #2

Project Summary	
Title	CPW Basin Drawdown calculations
Engineer	PDC
Company	PDC
Date	10/11/2011

Notes

Table of Contents

Drawdown-Basin #2

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
CM-1	EX10	0	0.000	0.000	0.00

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
O-1	EX10	0	1.007	0.000	1.35

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
2 (IN)	EX10	0	0.000	0.000	0.00	(N/A)	(N/A)
2 (OUT)	EX10	0	1.007	0.000	1.35	3.86	0.998

Drawdown-Basin #2

Subsection: Outlet Input Data
Label: Outlet#1

Return Event: 100 years
Storm Event:

Requested Pond Water Surface Elevations	
Minimum (Headwater)	0.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	5.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Culvert-Circular	Culvert - 1	Forward + Reverse	TW	7.66	16.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Drawdown-Basin #2

Subsection: Outlet Input Data
Label: Outlet#1

Return Event: 100 years
Storm Event:

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	0.00 ft
Orifice Diameter	3.2 in
Orifice Coefficient	0.670

Structure ID: Orifice - 2 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	1.90 ft
Orifice Diameter	4.4 in
Orifice Coefficient	0.670

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft^3/s
Flow Tolerance (Maximum)	10.000 ft^3/s

Drawdown-Basin #2

Subsection: Pond Routed Hydrograph (total out)
Label: 2 (OUT)

Return Event: 100 years
Storm Event:

Peak Discharge	1.35 ft³/s
Time to Peak	0.000 min
Hydrograph Volume	1.006 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.000	1.35	1.34	1.32	1.31	1.30
25.000	1.29	1.28	1.27	1.26	1.25
50.000	1.24	1.23	1.22	1.21	1.20
75.000	1.19	1.18	1.17	1.16	1.15
100.000	1.13	1.12	1.11	1.10	1.09
125.000	1.08	1.07	1.06	1.05	1.04
150.000	1.03	1.02	1.00	0.99	0.98
175.000	0.97	0.96	0.95	0.94	0.92
200.000	0.91	0.90	0.89	0.88	0.87
225.000	0.86	0.85	0.84	0.83	0.81
250.000	0.80	0.78	0.76	0.75	0.73
275.000	0.72	0.70	0.69	0.67	0.66
300.000	0.64	0.63	0.62	0.60	0.59
325.000	0.58	0.57	0.56	0.54	0.53
350.000	0.52	0.51	0.50	0.49	0.48
375.000	0.47	0.46	0.45	0.44	0.43
400.000	0.43	0.42	0.42	0.42	0.41
425.000	0.41	0.41	0.40	0.40	0.40
450.000	0.40	0.40	0.39	0.39	0.39
475.000	0.39	0.39	0.39	0.39	0.39
500.000	0.38	0.38	0.38	0.38	0.38
525.000	0.38	0.38	0.38	0.37	0.37
550.000	0.37	0.37	0.37	0.37	0.37
575.000	0.37	0.36	0.36	0.36	0.36
600.000	0.36	0.36	0.36	0.36	0.36
625.000	0.35	0.35	0.35	0.35	0.35
650.000	0.35	0.35	0.35	0.34	0.34
675.000	0.34	0.34	0.34	0.34	0.34
700.000	0.34	0.33	0.33	0.33	0.33
725.000	0.33	0.33	0.33	0.33	0.32
750.000	0.32	0.32	0.32	0.32	0.32
775.000	0.32	0.32	0.31	0.31	0.31
800.000	0.31	0.31	0.31	0.31	0.31
825.000	0.30	0.30	0.30	0.30	0.30
850.000	0.30	0.30	0.30	0.30	0.29
875.000	0.29	0.29	0.29	0.29	0.29
900.000	0.29	0.29	0.29	0.28	0.28

Drawdown-Basin #2

Subsection: Pond Routed Hydrograph (total out)
Label: 2 (OUT)

Return Event: 100 years
Storm Event:

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
925.000	0.28	0.28	0.28	0.28	0.28
950.000	0.28	0.28	0.27	0.27	0.27
975.000	0.27	0.27	0.27	0.27	0.26
1,000.000	0.26	0.26	0.26	0.26	0.26
1,025.000	0.26	0.25	0.25	0.25	0.25
1,050.000	0.25	0.25	0.25	0.25	0.24
1,075.000	0.24	0.24	0.24	0.24	0.24
1,100.000	0.24	0.24	0.23	0.23	0.23
1,125.000	0.23	0.23	0.23	0.23	0.23
1,150.000	0.22	0.22	0.22	0.22	0.22
1,175.000	0.22	0.22	0.22	0.22	0.21
1,200.000	0.21	0.21	0.21	0.21	0.21
1,225.000	0.21	0.21	0.21	0.20	0.20
1,250.000	0.20	0.20	0.20	0.20	0.20
1,275.000	0.20	0.20	0.19	0.19	0.19
1,300.000	0.19	0.19	0.19	0.19	0.19
1,325.000	0.19	0.19	0.19	0.18	0.18
1,350.000	0.18	0.18	0.18	0.18	0.18
1,375.000	0.17	0.17	0.17	0.17	0.17
1,400.000	0.17	0.16	0.16	0.16	0.16
1,425.000	0.16	0.16	0.15	0.15	0.15
1,450.000	0.15	0.15	0.15	0.15	0.14
1,475.000	0.14	0.14	0.14	0.14	0.14
1,500.000	0.14	0.14	0.13	0.13	0.13
1,525.000	0.13	0.13	0.13	0.13	0.13
1,550.000	0.12	0.12	0.12	0.12	0.12
1,575.000	0.12	0.12	0.12	0.11	0.11
1,600.000	0.11	0.11	0.11	0.11	0.11
1,625.000	0.11	0.11	0.11	0.10	0.10
1,650.000	0.10	0.10	0.10	0.10	0.10
1,675.000	0.10	0.10	0.10	0.09	0.09
1,700.000	0.09	0.09	0.09	0.09	0.09
1,725.000	0.09	0.09	0.09	0.09	0.08
1,750.000	0.08	0.08	0.08	0.08	0.08
1,775.000	0.08	0.08	0.08	0.08	0.08
1,800.000	0.08	0.08	0.07	0.07	0.07
1,825.000	0.07	0.07	0.07	0.07	0.07
1,850.000	0.07	0.07	0.07	0.07	0.07
1,875.000	0.07	0.07	0.06	0.06	0.06
1,900.000	0.06	0.06	0.06	0.06	0.06
1,925.000	0.06	0.06	0.06	0.06	0.06
1,950.000	0.06	0.06	0.06	0.06	0.05

Drawdown-Basin #2

Subsection: Pond Routed Hydrograph (total out)
Label: 2 (OUT)

Return Event: 100 years
Storm Event:

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,975.000	0.05	0.05	0.05	0.05	0.05
2,000.000	0.05	0.05	0.05	0.05	0.05
2,025.000	0.05	0.05	0.05	0.05	0.05
2,050.000	0.05	0.05	0.05	0.05	0.05
2,075.000	0.04	0.04	0.04	0.04	0.04
2,100.000	0.04	0.04	0.04	0.04	0.04
2,125.000	0.04	0.04	0.04	0.04	0.04
2,150.000	0.04	0.04	0.04	0.04	0.04
2,175.000	0.04	0.04	0.04	0.04	0.04
2,200.000	0.04	0.03	0.03	0.03	0.03
2,225.000	0.03	0.03	0.03	0.03	0.03
2,250.000	0.03	0.03	0.03	0.03	0.03
2,275.000	0.03	0.03	0.03	0.03	0.03
2,300.000	0.03	0.03	0.03	0.03	0.03
2,325.000	0.03	0.03	0.03	0.03	0.03
2,350.000	0.03	0.03	0.03	0.03	0.03
2,375.000	0.03	0.02	0.02	0.02	0.02
2,400.000	0.02	0.02	0.02	0.02	0.02
2,425.000	0.02	0.02	0.02	0.02	0.02
2,450.000	0.02	0.02	0.02	0.02	0.02
2,475.000	0.02	0.02	0.02	0.02	0.02
2,500.000	0.02	0.02	0.02	0.02	0.02
2,525.000	0.02	0.02	0.02	0.02	0.02
2,550.000	0.02	0.02	0.02	0.02	0.02
2,575.000	0.02	0.02	0.02	0.02	0.02
2,600.000	0.02	0.02	0.02	0.02	0.02
2,625.000	0.02	0.02	0.02	0.01	0.01
2,650.000	0.01	0.01	0.01	0.01	0.01
2,675.000	0.01	0.01	0.01	0.01	0.01
2,700.000	0.01	0.01	0.01	0.01	0.01
2,725.000	0.01	0.01	0.01	0.01	0.01
2,750.000	0.01	0.01	0.01	0.01	0.01
2,775.000	0.01	0.01	0.01	0.01	0.01
2,800.000	0.01	0.01	0.01	0.01	0.01
2,825.000	0.01	0.01	0.01	0.01	0.01
2,850.000	0.01	0.01	0.01	0.01	0.01
2,875.000	0.01	0.01	0.01	0.01	0.01
2,900.000	0.01	0.01	0.01	0.01	0.01
2,925.000	0.01	0.01	0.01	0.01	0.01
2,950.000	0.01	0.01	0.01	0.01	0.01
2,975.000	0.01	0.01	0.01	0.01	0.01
3,000.000	0.01	0.01	0.01	0.01	0.01

Drawdown-Basin #2

Subsection: Pond Routed Hydrograph (total out)
Label: 2 (OUT)

Return Event: 100 years
Storm Event:

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
3,025.000	0.01	0.01	0.01	0.01	0.01
3,050.000	0.01	0.01	0.01	0.01	0.01
3,075.000	0.01	0.01	0.01	0.01	0.01
3,100.000	0.01	0.01	0.01	0.01	0.01
3,125.000	0.01	0.01	0.01	0.01	0.01
3,150.000	0.01	0.01	0.01	0.01	0.01
3,175.000	0.01	0.01	0.01	0.01	0.01
3,200.000	0.01	0.01	0.00	0.00	0.00
3,225.000	0.00	0.00	0.00	0.00	0.00
3,250.000	0.00	0.00	0.00	0.00	0.00
3,275.000	0.00	0.00	0.00	0.00	0.00
3,300.000	0.00	0.00	0.00	0.00	0.00
3,325.000	0.00	0.00	0.00	0.00	0.00
3,350.000	0.00	0.00	0.00	0.00	0.00
3,375.000	0.00	0.00	0.00	0.00	0.00
3,400.000	0.00	0.00	0.00	0.00	0.00
3,425.000	0.00	0.00	0.00	0.00	0.00
3,450.000	0.00	0.00	0.00	0.00	0.00
3,475.000	0.00	0.00	0.00	0.00	0.00
3,500.000	0.00	0.00	0.00	0.00	0.00
3,525.000	0.00	0.00	0.00	0.00	0.00
3,550.000	0.00	0.00	0.00	0.00	0.00
3,575.000	0.00	0.00	0.00	0.00	0.00
3,600.000	0.00	0.00	0.00	0.00	0.00
3,625.000	0.00	0.00	0.00	0.00	0.00
3,650.000	0.00	0.00	0.00	0.00	0.00
3,675.000	0.00	0.00	0.00	0.00	0.00
3,700.000	0.00	0.00	0.00	0.00	0.00
3,725.000	0.00	0.00	0.00	0.00	0.00
3,750.000	0.00	0.00	0.00	0.00	0.00
3,775.000	0.00	0.00	0.00	0.00	0.00
3,800.000	0.00	0.00	0.00	0.00	0.00
3,825.000	0.00	0.00	0.00	0.00	0.00
3,850.000	0.00	0.00	0.00	0.00	0.00
3,875.000	0.00	0.00	0.00	0.00	0.00
3,900.000	0.00	0.00	0.00	0.00	0.00
3,925.000	0.00	0.00	0.00	0.00	0.00
3,950.000	0.00	0.00	0.00	0.00	0.00
3,975.000	0.00	0.00	0.00	0.00	0.00
4,000.000	0.00	0.00	0.00	0.00	(N/A)

Drawdown-Basin #2

Index

Drawdown-Basin #3

Project Summary	
Title	CPW Basin Drawdown calculations
Engineer	PDC
Company	PDC
Date	10/11/2011

Notes

Table of Contents

Drawdown-Basin #3

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
CM-1	EX10	0	0.000	0.000	0.00

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
O-1	EX10	0	5.742	0.000	3.67

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
3 (IN)	EX10	0	0.000	0.000	0.00	(N/A)	(N/A)
3 (OUT)	EX10	0	5.742	0.000	3.67	3.89	5.717

Drawdown-Basin #3

Subsection: Outlet Input Data
Label: Outlet#1

Return Event: 100 years
Storm Event:

Requested Pond Water Surface Elevations	
Minimum (Headwater)	0.00 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	5.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Area	Orifice - 1	Forward	TW	0.00	5.00
Orifice-Circular	Orifice - 2	Forward	TW	1.40	5.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Drawdown-Basin #3

Subsection: Outlet Input Data
Label: Outlet#1

Return Event: 100 years
Storm Event:

Structure ID: Orifice - 1 Structure Type: Orifice-Area	
Number of Openings	1
Elevation	0.00 ft
Orifice Area	0.2 ft²
Top Elevation	0.00 ft
Datum Elevation	0.00 ft
Orifice Coefficient	0.670

Structure ID: Orifice - 2 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	1.40 ft
Orifice Diameter	6.0 in
Orifice Coefficient	0.670

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Drawdown-Basin #3

Subsection: Pond Routed Hydrograph (total out) Return Event: 100 years
Label: 3 (OUT) Storm Event:

Peak Discharge	3.67 ft³/s
Time to Peak	0.000 min
Hydrograph Volume	5.742 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.000	3.67	3.66	3.65	3.64	3.63
25.000	3.62	3.61	3.60	3.59	3.58
50.000	3.57	3.56	3.55	3.53	3.52
75.000	3.51	3.50	3.49	3.48	3.47
100.000	3.46	3.45	3.44	3.43	3.42
125.000	3.41	3.40	3.39	3.37	3.36
150.000	3.35	3.34	3.33	3.32	3.31
175.000	3.30	3.29	3.28	3.27	3.26
200.000	3.25	3.23	3.22	3.21	3.20
225.000	3.19	3.18	3.17	3.16	3.15
250.000	3.14	3.13	3.12	3.11	3.09
275.000	3.08	3.07	3.06	3.05	3.04
300.000	3.03	3.02	3.01	3.00	2.99
325.000	2.98	2.96	2.95	2.94	2.93
350.000	2.92	2.91	2.90	2.89	2.88
375.000	2.87	2.85	2.84	2.83	2.82
400.000	2.81	2.80	2.79	2.78	2.77
425.000	2.76	2.74	2.73	2.72	2.71
450.000	2.70	2.69	2.68	2.67	2.66
475.000	2.64	2.63	2.62	2.61	2.60
500.000	2.59	2.58	2.57	2.55	2.54
525.000	2.53	2.52	2.51	2.50	2.49
550.000	2.47	2.46	2.45	2.44	2.43
575.000	2.42	2.40	2.39	2.38	2.37
600.000	2.36	2.35	2.34	2.32	2.31
625.000	2.30	2.29	2.28	2.26	2.25
650.000	2.24	2.23	2.22	2.20	2.19
675.000	2.18	2.17	2.15	2.14	2.13
700.000	2.12	2.10	2.09	2.08	2.07
725.000	2.05	2.04	2.03	2.01	2.00
750.000	1.99	1.97	1.95	1.92	1.90
775.000	1.88	1.86	1.84	1.81	1.79
800.000	1.77	1.75	1.73	1.72	1.70
825.000	1.69	1.68	1.66	1.65	1.64
850.000	1.63	1.61	1.60	1.59	1.58
875.000	1.57	1.56	1.55	1.53	1.52
900.000	1.51	1.50	1.49	1.48	1.47

Drawdown-Basin #3

Subsection: Pond Routed Hydrograph (total out) Return Event: 100 years
Label: 3 (OUT) Storm Event:

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
925.000	1.46	1.46	1.45	1.44	1.43
950.000	1.42	1.41	1.40	1.40	1.39
975.000	1.38	1.38	1.37	1.36	1.36
1,000.000	1.35	1.34	1.34	1.33	1.32
1,025.000	1.32	1.31	1.31	1.30	1.30
1,050.000	1.30	1.29	1.29	1.28	1.28
1,075.000	1.27	1.27	1.27	1.26	1.26
1,100.000	1.25	1.25	1.25	1.24	1.24
1,125.000	1.24	1.24	1.23	1.23	1.23
1,150.000	1.23	1.22	1.22	1.22	1.22
1,175.000	1.21	1.21	1.21	1.21	1.20
1,200.000	1.20	1.20	1.20	1.19	1.19
1,225.000	1.19	1.18	1.18	1.18	1.18
1,250.000	1.17	1.17	1.17	1.17	1.16
1,275.000	1.16	1.16	1.16	1.15	1.15
1,300.000	1.15	1.15	1.14	1.14	1.14
1,325.000	1.14	1.13	1.13	1.13	1.12
1,350.000	1.12	1.12	1.12	1.11	1.11
1,375.000	1.11	1.11	1.10	1.10	1.10
1,400.000	1.10	1.09	1.09	1.09	1.09
1,425.000	1.08	1.08	1.08	1.08	1.07
1,450.000	1.07	1.07	1.06	1.06	1.06
1,475.000	1.06	1.05	1.05	1.05	1.05
1,500.000	1.04	1.04	1.04	1.04	1.03
1,525.000	1.03	1.03	1.03	1.02	1.02
1,550.000	1.02	1.02	1.01	1.01	1.01
1,575.000	1.01	1.00	1.00	1.00	0.99
1,600.000	0.99	0.99	0.99	0.98	0.98
1,625.000	0.98	0.98	0.97	0.97	0.97
1,650.000	0.97	0.96	0.96	0.96	0.96
1,675.000	0.95	0.95	0.95	0.95	0.94
1,700.000	0.94	0.94	0.93	0.93	0.93
1,725.000	0.93	0.92	0.92	0.92	0.92
1,750.000	0.91	0.91	0.91	0.91	0.90
1,775.000	0.90	0.90	0.90	0.89	0.89
1,800.000	0.89	0.89	0.88	0.88	0.88
1,825.000	0.87	0.87	0.87	0.87	0.86
1,850.000	0.86	0.86	0.86	0.85	0.85
1,875.000	0.85	0.85	0.84	0.84	0.84
1,900.000	0.84	0.83	0.83	0.83	0.83
1,925.000	0.82	0.82	0.82	0.81	0.81
1,950.000	0.81	0.81	0.80	0.80	0.80

Drawdown-Basin #3

Subsection: Pond Routed Hydrograph (total out) Return Event: 100 years
Label: 3 (OUT) Storm Event:

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,975.000	0.80	0.79	0.79	0.79	0.79
2,000.000	0.78	0.78	0.78	0.78	0.77
2,025.000	0.77	0.77	0.76	0.76	0.76
2,050.000	0.76	0.75	0.75	0.75	0.75
2,075.000	0.74	0.74	0.74	0.74	0.73
2,100.000	0.73	0.73	0.73	0.72	0.72
2,125.000	0.72	0.71	0.71	0.71	0.71
2,150.000	0.70	0.70	0.70	0.70	0.69
2,175.000	0.69	0.69	0.69	0.68	0.68
2,200.000	0.68	0.68	0.67	0.67	0.67
2,225.000	0.67	0.66	0.66	0.66	0.66
2,250.000	0.65	0.65	0.65	0.64	0.64
2,275.000	0.64	0.64	0.63	0.63	0.63
2,300.000	0.63	0.62	0.62	0.62	0.62
2,325.000	0.61	0.61	0.61	0.61	0.60
2,350.000	0.60	0.60	0.60	0.59	0.59
2,375.000	0.59	0.59	0.58	0.58	0.58
2,400.000	0.58	0.57	0.57	0.57	0.56
2,425.000	0.56	0.56	0.56	0.55	0.55
2,450.000	0.55	0.54	0.54	0.54	0.54
2,475.000	0.53	0.53	0.53	0.53	0.52
2,500.000	0.52	0.52	0.52	0.51	0.51
2,525.000	0.51	0.51	0.50	0.50	0.50
2,550.000	0.50	0.49	0.49	0.49	0.49
2,575.000	0.48	0.48	0.48	0.48	0.47
2,600.000	0.47	0.47	0.47	0.46	0.46
2,625.000	0.46	0.45	0.45	0.45	0.44
2,650.000	0.44	0.44	0.44	0.43	0.43
2,675.000	0.43	0.43	0.42	0.42	0.42
2,700.000	0.41	0.41	0.41	0.41	0.40
2,725.000	0.40	0.40	0.40	0.39	0.39
2,750.000	0.39	0.39	0.38	0.38	0.38
2,775.000	0.38	0.37	0.37	0.37	0.37
2,800.000	0.36	0.36	0.36	0.36	0.35
2,825.000	0.35	0.35	0.35	0.35	0.34
2,850.000	0.34	0.34	0.34	0.33	0.33
2,875.000	0.32	0.32	0.31	0.31	0.30
2,900.000	0.30	0.29	0.29	0.28	0.28
2,925.000	0.27	0.27	0.27	0.26	0.26
2,950.000	0.25	0.25	0.24	0.24	0.24
2,975.000	0.23	0.23	0.22	0.22	0.22
3,000.000	0.21	0.21	0.21	0.20	0.20

Drawdown-Basin #3

Subsection: Pond Routed Hydrograph (total out) Return Event: 100 years
Label: 3 (OUT) Storm Event:

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
3,025.000	0.20	0.19	0.19	0.19	0.18
3,050.000	0.18	0.18	0.17	0.17	0.17
3,075.000	0.17	0.16	0.16	0.16	0.16
3,100.000	0.15	0.15	0.15	0.15	0.14
3,125.000	0.14	0.14	0.14	0.13	0.13
3,150.000	0.13	0.13	0.13	0.12	0.12
3,175.000	0.12	0.12	0.12	0.11	0.11
3,200.000	0.11	0.11	0.11	0.10	0.10
3,225.000	0.10	0.10	0.10	0.10	0.09
3,250.000	0.09	0.09	0.09	0.09	0.09
3,275.000	0.09	0.08	0.08	0.08	0.08
3,300.000	0.08	0.08	0.08	0.07	0.07
3,325.000	0.07	0.07	0.07	0.07	0.07
3,350.000	0.07	0.07	0.06	0.06	0.06
3,375.000	0.06	0.06	0.06	0.06	0.06
3,400.000	0.06	0.06	0.05	0.05	0.05
3,425.000	0.05	0.05	0.05	0.05	0.05
3,450.000	0.05	0.05	0.05	0.05	0.04
3,475.000	0.04	0.04	0.04	0.04	0.04
3,500.000	0.04	0.04	0.04	0.04	0.04
3,525.000	0.04	0.04	0.04	0.04	0.03
3,550.000	0.03	0.03	0.03	0.03	0.03
3,575.000	0.03	0.03	0.03	0.03	0.03
3,600.000	0.03	0.03	0.03	0.03	0.03
3,625.000	0.03	0.03	0.03	0.03	0.02
3,650.000	0.02	0.02	0.02	0.02	0.02
3,675.000	0.02	0.02	0.02	0.02	0.02
3,700.000	0.02	0.02	0.02	0.02	0.02
3,725.000	0.02	0.02	0.02	0.02	0.02
3,750.000	0.02	0.02	0.02	0.02	0.02
3,775.000	0.02	0.02	0.02	0.02	0.01
3,800.000	0.01	0.01	0.01	0.01	0.01
3,825.000	0.01	0.01	0.01	0.01	0.01
3,850.000	0.01	0.01	0.01	0.01	0.01
3,875.000	0.01	0.01	0.01	0.01	0.01
3,900.000	0.01	0.01	0.01	0.01	0.01
3,925.000	0.01	0.01	0.01	0.01	0.01
3,950.000	0.01	0.01	0.01	0.01	0.01
3,975.000	0.01	0.01	0.01	0.01	0.01
4,000.000	0.01	0.01	0.01	0.01	0.01
4,025.000	0.01	0.01	0.01	0.01	0.01
4,050.000	0.01	0.01	0.01	0.01	0.01

Drawdown-Basin #3

Subsection: Pond Routed Hydrograph (total out) Return Event: 100 years
Label: 3 (OUT) Storm Event:

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
4,075.000	0.01	0.01	0.01	0.01	0.01
4,100.000	0.01	0.01	0.01	0.01	0.01
4,125.000	0.00	0.00	0.00	0.00	0.00
4,150.000	0.00	0.00	0.00	0.00	0.00
4,175.000	0.00	0.00	0.00	0.00	0.00
4,200.000	0.00	0.00	0.00	0.00	0.00
4,225.000	0.00	0.00	0.00	0.00	0.00
4,250.000	0.00	0.00	0.00	0.00	0.00
4,275.000	0.00	0.00	0.00	0.00	0.00
4,300.000	0.00	0.00	0.00	0.00	0.00
4,325.000	0.00	0.00	0.00	0.00	0.00
4,350.000	0.00	0.00	0.00	0.00	0.00
4,375.000	0.00	0.00	0.00	0.00	0.00
4,400.000	0.00	0.00	0.00	0.00	0.00
4,425.000	0.00	0.00	0.00	0.00	0.00
4,450.000	0.00	0.00	0.00	0.00	0.00
4,475.000	0.00	0.00	0.00	0.00	0.00
4,500.000	0.00	0.00	0.00	0.00	0.00
4,525.000	0.00	0.00	0.00	0.00	0.00
4,550.000	0.00	0.00	0.00	0.00	0.00
4,575.000	0.00	0.00	0.00	0.00	(N/A)

Drawdown-Basin #3

Index

Drawdown-Basin #4

Project Summary	
Title	CPW Basin Drawdown calculations
Engineer	PDC
Company	PDC
Date	4/11/2012

Notes

Table of Contents

Drawdown-Basin #4

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
CM-1	EX10	0	0.000	0.000	0.00

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
O-1	EX10	0	1.117	0.000	0.97

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
4 (IN)	EX10	0	0.000	0.000	0.00	(N/A)	(N/A)
4 (OUT)	EX10	0	1.117	0.000	0.97	3.88	1.111

Drawdown-Basin #4

Subsection: Outlet Input Data
Label: Outlet#1

Return Event: 100 years
Storm Event:

Requested Pond Water Surface Elevations	
Minimum (Headwater)	0.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	5.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	TW	0.00	5.00
Orifice-Circular	Orifice - 2	Forward	TW	0.90	5.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Drawdown-Basin #4

Subsection: Outlet Input Data
Label: Outlet#1

Return Event: 100 years
Storm Event:

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	0.00 ft
Orifice Diameter	3.2 in
Orifice Coefficient	0.670

Structure ID: Orifice - 2 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	0.90 ft
Orifice Diameter	2.8 in
Orifice Coefficient	0.670

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft^3/s
Flow Tolerance (Maximum)	10.000 ft^3/s

Drawdown-Basin #4

Subsection: Pond Routed Hydrograph (total out)
Label: 4 (OUT)

Return Event: 100 years
Storm Event:

Peak Discharge	0.97 ft³/s
Time to Peak	0.000 min
Hydrograph Volume	1.117 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.000	0.97	0.97	0.97	0.96	0.96
25.000	0.96	0.95	0.95	0.94	0.94
50.000	0.94	0.93	0.93	0.93	0.92
75.000	0.92	0.92	0.92	0.91	0.91
100.000	0.90	0.90	0.90	0.89	0.89
125.000	0.89	0.88	0.88	0.88	0.87
150.000	0.87	0.87	0.86	0.86	0.86
175.000	0.85	0.85	0.85	0.84	0.84
200.000	0.84	0.83	0.83	0.83	0.82
225.000	0.82	0.82	0.81	0.81	0.81
250.000	0.80	0.80	0.79	0.79	0.79
275.000	0.78	0.78	0.78	0.77	0.77
300.000	0.77	0.76	0.76	0.76	0.75
325.000	0.75	0.75	0.74	0.74	0.74
350.000	0.73	0.73	0.73	0.72	0.72
375.000	0.72	0.71	0.71	0.71	0.70
400.000	0.70	0.70	0.69	0.69	0.68
425.000	0.68	0.68	0.67	0.67	0.67
450.000	0.66	0.66	0.66	0.65	0.65
475.000	0.65	0.65	0.64	0.64	0.63
500.000	0.63	0.63	0.62	0.62	0.62
525.000	0.61	0.61	0.60	0.60	0.60
550.000	0.59	0.59	0.59	0.58	0.58
575.000	0.58	0.57	0.57	0.57	0.56
600.000	0.56	0.55	0.55	0.55	0.54
625.000	0.54	0.54	0.53	0.53	0.53
650.000	0.53	0.52	0.52	0.52	0.51
675.000	0.51	0.50	0.50	0.49	0.49
700.000	0.48	0.48	0.47	0.47	0.46
725.000	0.46	0.45	0.45	0.44	0.44
750.000	0.44	0.43	0.43	0.42	0.42
775.000	0.41	0.41	0.40	0.40	0.40
800.000	0.39	0.39	0.38	0.38	0.38
825.000	0.37	0.37	0.36	0.36	0.36
850.000	0.35	0.35	0.35	0.34	0.34
875.000	0.34	0.33	0.33	0.33	0.32
900.000	0.32	0.32	0.31	0.31	0.31

Drawdown-Basin #4

Subsection: Pond Routed Hydrograph (total out)
Label: 4 (OUT)

Return Event: 100 years
Storm Event:

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
925.000	0.30	0.30	0.30	0.29	0.29
950.000	0.29	0.29	0.28	0.28	0.28
975.000	0.28	0.28	0.27	0.27	0.27
1,000.000	0.27	0.27	0.26	0.26	0.26
1,025.000	0.26	0.26	0.26	0.26	0.25
1,050.000	0.25	0.25	0.25	0.25	0.25
1,075.000	0.25	0.25	0.24	0.24	0.24
1,100.000	0.24	0.24	0.24	0.24	0.24
1,125.000	0.24	0.23	0.23	0.23	0.23
1,150.000	0.23	0.23	0.23	0.23	0.23
1,175.000	0.22	0.22	0.22	0.22	0.22
1,200.000	0.22	0.22	0.22	0.22	0.21
1,225.000	0.21	0.21	0.21	0.21	0.21
1,250.000	0.21	0.21	0.21	0.21	0.20
1,275.000	0.20	0.20	0.20	0.20	0.20
1,300.000	0.20	0.20	0.20	0.20	0.19
1,325.000	0.19	0.19	0.19	0.19	0.19
1,350.000	0.19	0.19	0.19	0.19	0.19
1,375.000	0.18	0.18	0.18	0.18	0.18
1,400.000	0.18	0.18	0.18	0.17	0.17
1,425.000	0.17	0.17	0.17	0.17	0.17
1,450.000	0.16	0.16	0.16	0.16	0.16
1,475.000	0.16	0.16	0.15	0.15	0.15
1,500.000	0.15	0.15	0.15	0.15	0.15
1,525.000	0.14	0.14	0.14	0.14	0.14
1,550.000	0.14	0.14	0.14	0.13	0.13
1,575.000	0.13	0.13	0.13	0.13	0.13
1,600.000	0.13	0.13	0.12	0.12	0.12
1,625.000	0.12	0.12	0.12	0.12	0.12
1,650.000	0.12	0.11	0.11	0.11	0.11
1,675.000	0.11	0.11	0.11	0.11	0.11
1,700.000	0.11	0.10	0.10	0.10	0.10
1,725.000	0.10	0.10	0.10	0.10	0.10
1,750.000	0.10	0.10	0.10	0.09	0.09
1,775.000	0.09	0.09	0.09	0.09	0.09
1,800.000	0.09	0.09	0.09	0.09	0.09
1,825.000	0.09	0.08	0.08	0.08	0.08
1,850.000	0.08	0.08	0.08	0.08	0.08
1,875.000	0.08	0.08	0.08	0.08	0.08
1,900.000	0.07	0.07	0.07	0.07	0.07
1,925.000	0.07	0.07	0.07	0.07	0.07
1,950.000	0.07	0.07	0.07	0.07	0.07

Drawdown-Basin #4

Subsection: Pond Routed Hydrograph (total out)
Label: 4 (OUT)

Return Event: 100 years
Storm Event:

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1,975.000	0.07	0.06	0.06	0.06	0.06
2,000.000	0.06	0.06	0.06	0.06	0.06
2,025.000	0.06	0.06	0.06	0.06	0.06
2,050.000	0.06	0.06	0.06	0.06	0.06
2,075.000	0.05	0.05	0.05	0.05	0.05
2,100.000	0.05	0.05	0.05	0.05	0.05
2,125.000	0.05	0.05	0.05	0.05	0.05
2,150.000	0.05	0.05	0.05	0.05	0.05
2,175.000	0.05	0.05	0.05	0.04	0.04
2,200.000	0.04	0.04	0.04	0.04	0.04
2,225.000	0.04	0.04	0.04	0.04	0.04
2,250.000	0.04	0.04	0.04	0.04	0.04
2,275.000	0.04	0.04	0.04	0.04	0.04
2,300.000	0.04	0.04	0.04	0.04	0.04
2,325.000	0.04	0.04	0.03	0.03	0.03
2,350.000	0.03	0.03	0.03	0.03	0.03
2,375.000	0.03	0.03	0.03	0.03	0.03
2,400.000	0.03	0.03	0.03	0.03	0.03
2,425.000	0.03	0.03	0.03	0.03	0.03
2,450.000	0.03	0.03	0.03	0.03	0.03
2,475.000	0.03	0.03	0.03	0.03	0.03
2,500.000	0.03	0.03	0.03	0.03	0.03
2,525.000	0.03	0.02	0.02	0.02	0.02
2,550.000	0.02	0.02	0.02	0.02	0.02
2,575.000	0.02	0.02	0.02	0.02	0.02
2,600.000	0.02	0.02	0.02	0.02	0.02
2,625.000	0.02	0.02	0.02	0.02	0.02
2,650.000	0.02	0.02	0.02	0.02	0.02
2,675.000	0.02	0.02	0.02	0.02	0.02
2,700.000	0.02	0.02	0.02	0.02	0.02
2,725.000	0.02	0.02	0.02	0.02	0.02
2,750.000	0.02	0.02	0.02	0.02	0.02
2,775.000	0.02	0.02	0.02	0.02	0.02
2,800.000	0.02	0.02	0.02	0.02	0.01
2,825.000	0.01	0.01	0.01	0.01	0.01
2,850.000	0.01	0.01	0.01	0.01	0.01
2,875.000	0.01	0.01	0.01	0.01	0.01
2,900.000	0.01	0.01	0.01	0.01	0.01
2,925.000	0.01	0.01	0.01	0.01	0.01
2,950.000	0.01	0.01	0.01	0.01	0.01
2,975.000	0.01	0.01	0.01	0.01	0.01
3,000.000	0.01	0.01	0.01	0.01	0.01

Drawdown-Basin #4

Subsection: Pond Routed Hydrograph (total out)
Label: 4 (OUT)

Return Event: 100 years
Storm Event:

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
3,025.000	0.01	0.01	0.01	0.01	0.01
3,050.000	0.01	0.01	0.01	0.01	0.01
3,075.000	0.01	0.01	0.01	0.01	0.01
3,100.000	0.01	0.01	0.01	0.01	0.01
3,125.000	0.01	0.01	0.01	0.01	0.01
3,150.000	0.01	0.01	0.01	0.01	0.01
3,175.000	0.01	0.01	0.01	0.01	0.01
3,200.000	0.01	0.01	0.01	0.01	0.01
3,225.000	0.01	0.01	0.01	0.01	0.01
3,250.000	0.01	0.01	0.01	0.01	0.01
3,275.000	0.01	0.01	0.01	0.01	0.01
3,300.000	0.01	0.01	0.01	0.01	0.01
3,325.000	0.01	0.01	0.01	0.01	0.01
3,350.000	0.01	0.01	0.01	0.01	0.01
3,375.000	0.01	0.01	0.01	0.01	0.01
3,400.000	0.01	0.01	0.01	0.01	0.01
3,425.000	0.01	0.01	0.01	0.01	0.01
3,450.000	0.00	0.00	0.00	0.00	0.00
3,475.000	0.00	0.00	0.00	0.00	0.00
3,500.000	0.00	0.00	0.00	0.00	0.00
3,525.000	0.00	0.00	0.00	0.00	0.00
3,550.000	0.00	0.00	0.00	0.00	0.00
3,575.000	0.00	0.00	0.00	0.00	0.00
3,600.000	0.00	0.00	0.00	0.00	0.00
3,625.000	0.00	0.00	0.00	0.00	0.00
3,650.000	0.00	0.00	0.00	0.00	0.00
3,675.000	0.00	0.00	0.00	0.00	0.00
3,700.000	0.00	0.00	0.00	0.00	0.00
3,725.000	0.00	0.00	0.00	0.00	0.00
3,750.000	0.00	0.00	0.00	0.00	0.00
3,775.000	0.00	0.00	0.00	0.00	0.00
3,800.000	0.00	0.00	0.00	0.00	0.00
3,825.000	0.00	0.00	0.00	0.00	0.00
3,850.000	0.00	0.00	0.00	0.00	0.00
3,875.000	0.00	0.00	0.00	0.00	0.00
3,900.000	0.00	0.00	0.00	0.00	0.00
3,925.000	0.00	0.00	0.00	0.00	0.00
3,950.000	0.00	0.00	0.00	0.00	0.00
3,975.000	0.00	0.00	0.00	0.00	0.00
4,000.000	0.00	0.00	0.00	0.00	0.00
4,025.000	0.00	0.00	0.00	0.00	0.00
4,050.000	0.00	0.00	0.00	0.00	0.00

Drawdown-Basin #4

Subsection: Pond Routed Hydrograph (total out)
Label: 4 (OUT)

Return Event: 100 years
Storm Event:

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
4,075.000	0.00	0.00	0.00	0.00	0.00
4,100.000	0.00	0.00	0.00	0.00	0.00
4,125.000	0.00	0.00	0.00	0.00	0.00
4,150.000	0.00	0.00	0.00	0.00	0.00
4,175.000	0.00	0.00	0.00	0.00	0.00
4,200.000	0.00	0.00	0.00	0.00	0.00
4,225.000	0.00	0.00	0.00	0.00	0.00
4,250.000	0.00	0.00	0.00	0.00	0.00
4,275.000	0.00	0.00	0.00	0.00	0.00
4,300.000	0.00	0.00	0.00	0.00	0.00
4,325.000	0.00	0.00	0.00	0.00	0.00

Drawdown-Basin #4

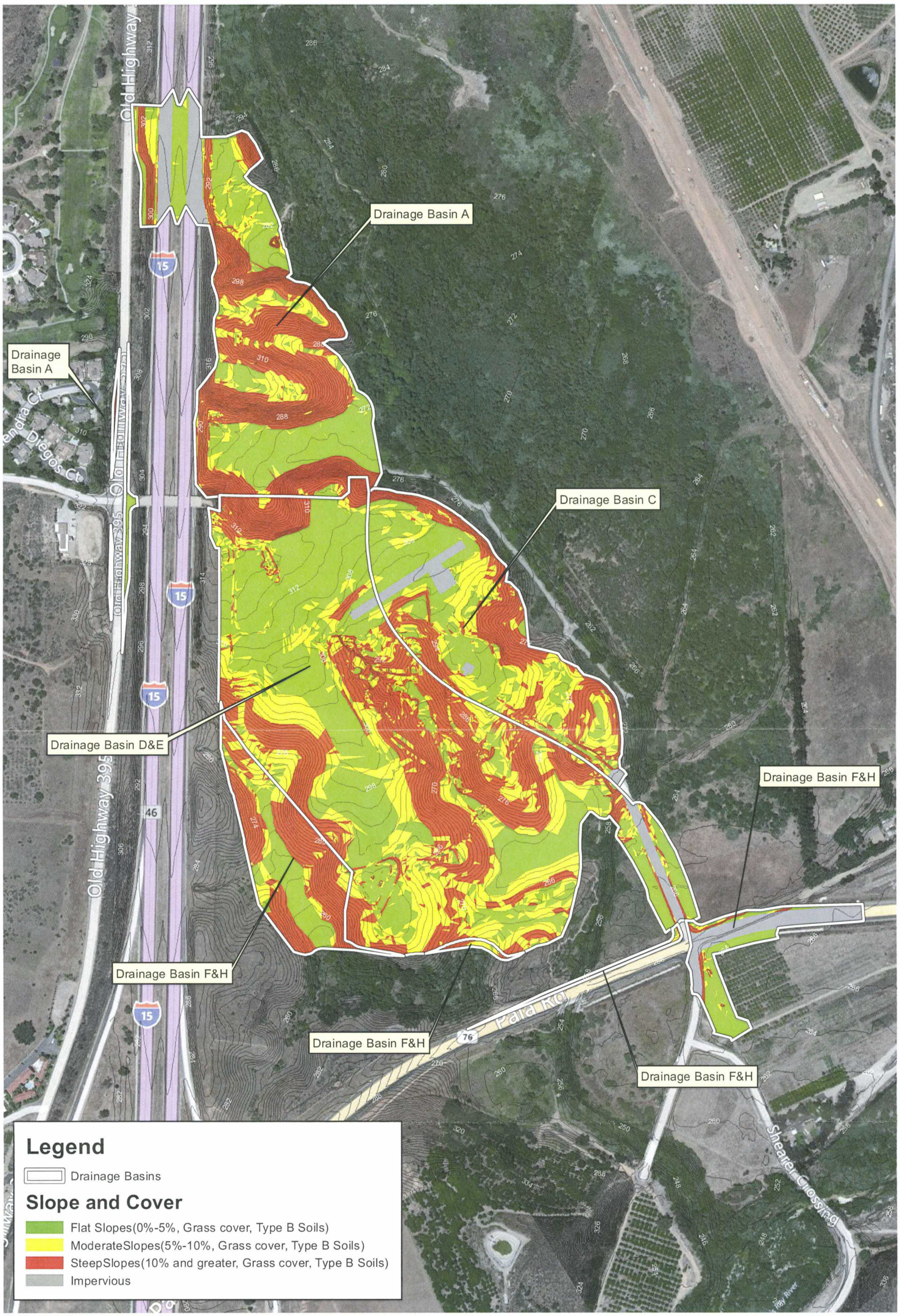
Index

APPENDIX 4

CD Containing SDHM Input and Output Files

APPENDIX 5

Exhibits



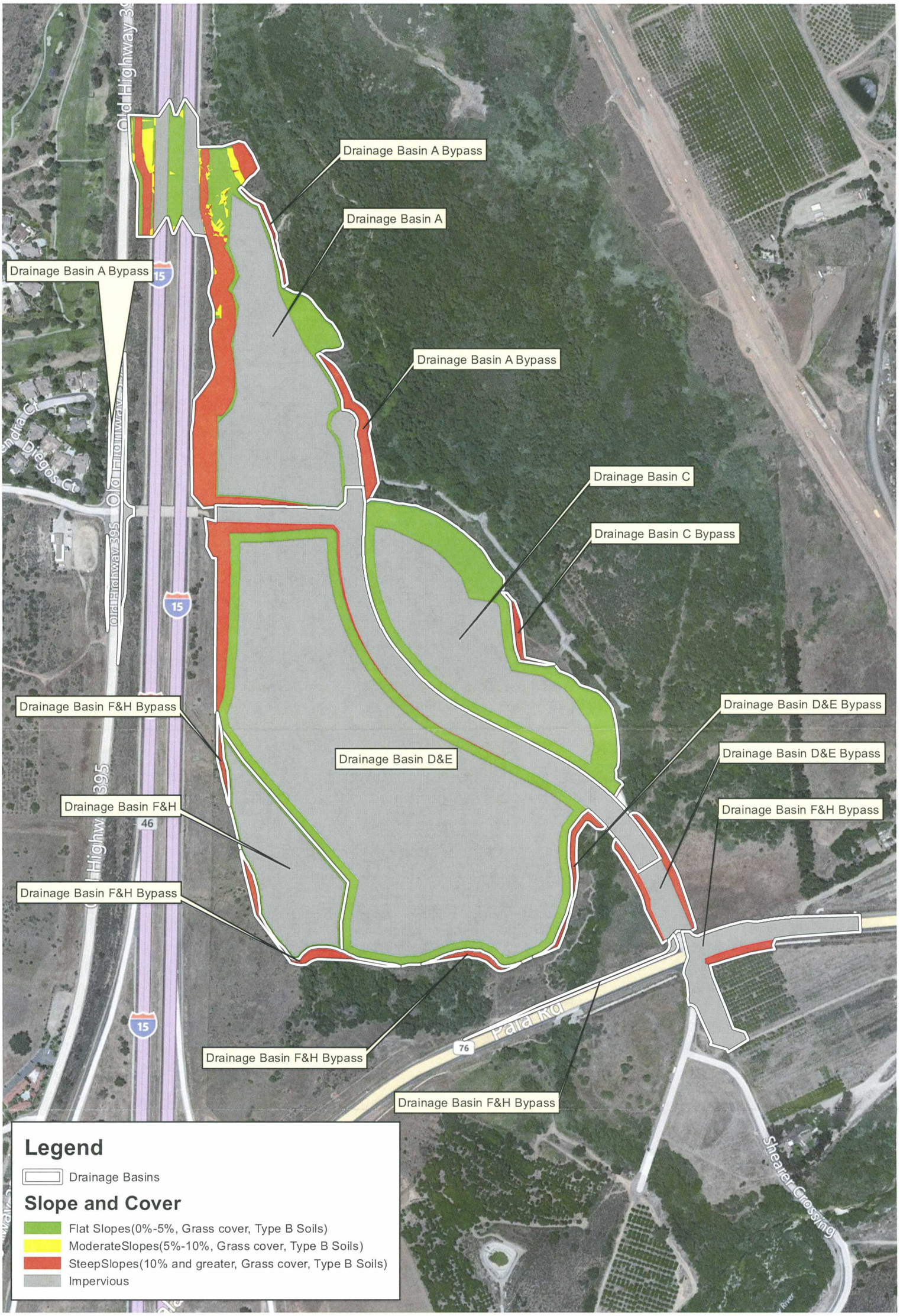
Campus Park West

Pre-Project Slope and Land Cover Exhibit For Hydromodification Analysis

Date: 9/10/2012
Name: 3631_Pre Prj Hydromod2
Path: C:\Documents and Settings\KeithH\Desktop\3631_Pre Prj Hydromod2.mxd

0 200 400 Feet

PROJECT DESIGN CONSULTANTS



Campus Park West

Post-Project Slope and Land Cover Exhibit For Hydromodification Analysis

Date: 9/11/2012
Name: 3631_Post Prj Hydromod
Path: C:\Documents and Settings\KeithH\Desktop\3631_Post Prj Hydromod.mxd

0 200 400 Feet

PROJECT DESIGN CONSULTANTS

N

LEGEND:

DRAINAGE SUBAREA

DRAINAGE FLOWPATH

CALTRANS R/W

HORSE RANCH CREEK

EXISTING CONDITION HORSE RANCH CREEK FLOODPLAIN PER PDC'S FLOODPLAIN STUDY

EXISTING CONDITION HORSE RANCH CREEK FLOODPLAIN PER PDC'S FLOODPLAIN STUDY

EXISTING N. PANKEY BRIDGE

EXISTING PANKEY RD

CALTRANS SR 76 REALIGNMENT & WIDENING

CALTRANS R/W

CALTRANS R/W

INTERSTATE 15

CALTRANS R/W

SUMP AREA

HORSE RANCH CREEK

EXISTING SR 76 BRIDGE

EXISTING 72" CULVERT

CALTRANS R/W

STATE ROUTE 76

PANKEY RD

EXISTING S. PANKEY BRIDGE

SAN LUIS REY RIVER

100 YEAR EXISTING CONDITION FLOODPLAIN LIMITS PER SAN LUIS REY FLOODPLAIN STUDY (CHANG CONSULTANTS)

FEMA EFFECTIVE 100 YEAR FLOODPLAIN LIMITS PER URS STUDY "FEMA LETTER OF MAP REVISION (LOMR) – FOLLOW UP TO CLOMR CASE #12-09-0511P STATE ROUTE 76 WIDENING AND REALIGNMENT FROM INTERSTATE 15 TO 3.9 KM EAST SAN DIEGO COUNTY" DATED AUGUST 26, 2011. LOMR EFFECTIVE DATE DECEMBER 3, 2012. (REPLACEMENT OF FEMA ZONE A 100-YEAR FLOODPLAIN LIMITS PER FIRM 06073C0485G)

SCALE:	1"=150'
JOB #:	3631.10
CREATED:	10/17/12

PREPARED BY:

PROJECT DESIGN CONSULTANTS
Planning | Landscape Architecture | Engineering | Survey

701 B Street, Suite 800
San Diego, CA 92101
619.235.6471 Tel
619.234.0349 Fax

COUNTY OF SAN DIEGO

CAMPUS PARK WEST

PRE-PROJECT
DRAINAGE SUBBASIN AREAS
EXHIBIT A

P:\3631\ENGR\REPORTS\HYDROMOD_TM\EXH\EX-ExhibitA.dwg 4/16/2013 12:18:59 PM

LEGEND:

- DRAINAGE SUBAREA
- FLOW DIRECTION
- DRAINAGE FLOWPATH
- PROPOSED WATER QUALITY/HYDROMOD BASIN # (1)
- POINT OF COMPLIANCE (POC 'X')

N

CALTRANS R/W

DISCHARGE PIPE A
(POC 'A')

DISCHARGE PIPE B
(OFFSITE RUNON - NO HYDROMOD MITIGATION REQUIRED)

HORSE RANCH CREEK

PALA MESA DR.

PROPOSED CONDITION HORSE RANCH CREEK FLOODPLAIN PER PDC'S FLOODPLAIN STUDY

DISCHARGE PIPE C
(POC 'C')

EXISTING N. PANKEY BRIDGE

PROPOSED N. PANKEY BRIDGE

PANKEY RD

CALTRANS SR 76 REALIGNMENT & WIDENING

DISCHARGE PIPE E

(POC 'D/E')

DISCHARGE PIPE D

DISCHARGE PIPE F

DISCHARGE PIPE F-1

(POC 'F/H')

SUMP AREA

DISCHARGE PIPE H

EXISTING SR 76 BRIDGE

100 YEAR PROPOSED CONDITION FLOODPLAIN LIMITS PER SAN LUIS REY FLOODPLAIN STUDY (CHANG CONSULTANTS)

THESE PADS ARE EXEMPT FROM HYDROMOD MITIGATION

FEMA EFFECTIVE 100 YEAR FLOODPLAIN LIMITS PER URS STUDY "FEMA LETTER OF MAP REVISION (LOMR) – FOLLOW UP TO CLOMR CASE #12-09-0511P STATE ROUTE 76 WIDENING AND REALIGNMENT FROM INTERSTATE 15 TO 3.9 KM EAST SAN DIEGO COUNTY" DATED AUGUST 26, 2011. LOMR EFFECTIVE DATE DECEMBER 3, 2012. (REPLACEMENT OF FEMA ZONE 'A' 100-YEAR FLOODPLAIN LIMITS PER FIRM 06073C0485G)

DISCHARGE PIPE G

EXISTING 72" CULVERT

DISCHARGE PIPE
(DIRECT DISCHARGE EXEMPTION)

100 YEAR COUNTY FLOODWAY LIMIT PER COUNTY FLOODPLAIN PANELS 422-1725, 426-1725, 422-1719 (DATED JAN. 20, 1976)

SEE INSET AT BOTTOM LEFT FOR "GRADING ALTERNATIVE #1"

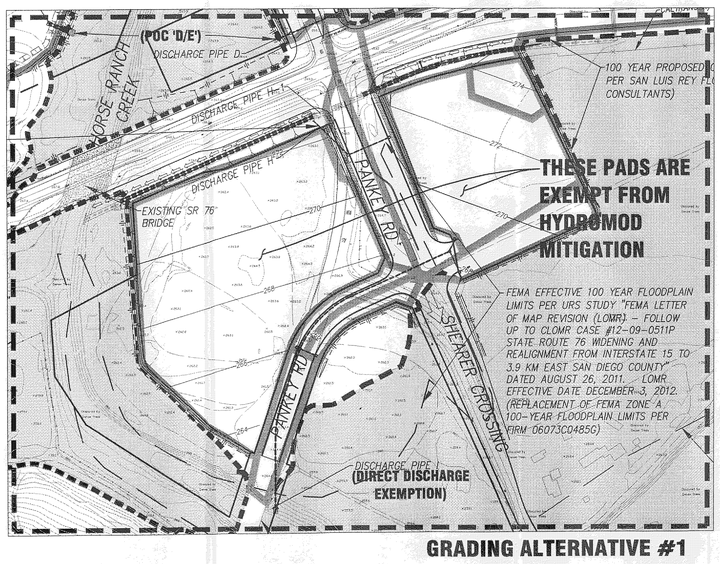
EXISTING S. PANKEY BRIDGE

SHEARER CROSSING

STATE ROUTE 76

INTERSTATE 15

SAN LUIS REY RIVER



GRADING ALTERNATIVE #1

SCALE:	1"=150'
JOB #:	3631.10
CREATED:	10/17/12

PREPARED BY:

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COUNTY OF SAN DIEGO

CAMPUS PARK WEST

POST-PROJECT
DRAINAGE SUBBASIN AREAS
EXHIBIT B

P:\3631\ENGR\REPORTS\HYDROMOD_TM\EXHIBITS\PE-ExhibitB.dwg 4/16/2013 12:21:11 PM

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