PRELIMINARY

HYDROMODIFICATION MANAGEMENT STUDY

FOR

Warner Ranch

(Tract No. 5508 rpl4)

3810-06-002 (SP), 3800-06-009 (GPA), 3600-06-011(R), 3100-5508 (TM), 3300-06-016 (MUP), 3500-11-007 (S), 3000-06-040 (AD), 3910-0602020 (ER)

Prepared By:

SHAPOURI & ASSOCIATES

PROJECT MANAGEMENT SERVICES

ENGINEERING • ARCHITECTURE • PLANNING

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M.H. Shapouri
RCE No. C52794
Expires 12/31/2014

~~February 27, 2013~~

August 8, 2013

SDC PDS RCVD 08-12-13
SP06-002, GPA06-009, R06-011, TM5508, P06-016, S11-007, AD06-040

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Declaration of Responsible Charge

I hereby declare that I am the engineer of work for this project, that I have exercised responsible charge over the design of the project as defined in section 6703 of the business and professions code, and that the design is consistent with the current standards.

I understand that the check of project drawings and specifications by the County of San Diego is confined to a review only and does not relieve me, as engineer of work, of my responsibilities for project design.

Name: M.H. Shapouri

Address: 18025 Calle Ambiente Suite 202, Rancho Santa Fe, CA 92067

Telephone No: (858) 756-8340

By: _____ Date:

M.H. Shapouri

R.C.E. No: C52794 Expires: 12/31/2014

Registered Professional Engineer
M. H. SHAPOURI
LIC. NO.
C52794
EXP. DATE:
12/31/2014
Civil Engineer
State of California

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Pre-Project Slope Analysis (Gomez Creek - Full Size)	Attached
Post-Project Slope Analysis (Gomez Creek - Full Size)	Attached

Section 1 Project Description

SECTION 1

PROJECT DESCRIPTION

Purpose

This Hydromodification Management Plan has been prepared to demonstrate that the proposed project, TM 5508 RPL4, will comply with the County of San Diego's Hydromodification Management Plan (HMP). The HMP was developed by the County of San Diego, and its NPDES Co-permittees, to address the hydromodification requirements issued by the Regional Water Quality Control Board in Order R9-2007-000 1, Provision D. 1 .g (6). Provision D. 1 .g (6) states, "Each Co-permittee shall collaborate with the other Co-permittees to develop and implement a Hydromodification Management Plan (HMP) 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. "As required by Permit Order No. R9-2007-0001, each Copermittee shall incorporate the approved HMP into
its local Standard Urban Storm Water Mitigation Plan (SUSMP) and implement the HMP for all applicable PDPs by January 14, 2011", so that post-project runoff discharge rates and durations shall not exceed estimated pre-project discharge rates and durations where the increased discharge rates and durations will result in increased potential for erosion or other significant adverse impacts to beneficial uses, attributable to changes in the discharge rates and durations.
" Per final hydromodification management criteria developed for San Diego County, which will be applicable to all Priority Development Projects, results of a hydromodification management analysis must adhere to the following criteria: "

- "For flow rates between the pre-project lower flow thresholds (see below) and the pre-project 10-year runoff event, the post-project discharge rates, and durations may not deviate above the pre-project discharge rates and durations by more than 10 percent over more than 10 percent of the length of the flow duration curve.

- Lower flow thresholds may be determined using the HMP Decision Matrix (located in Chapter 6) along with a critical flow calculator and channel screening tools developed by the Southern California Coastal Water Research Project (SCCWRP), detailed in Chapter 5. These methods identify lower flow thresholds for a range of channel conditions. The critical flow calculator recommends a lower flow value of 0.1Q2, 0.3Q2, or 0.5Q2 dependent on the receiving channel material and dimensions. This value will be compared to the channel susceptibility rating (High, Medium, or Low) as determined

from the SCCWRP screening tools located in Appendix B to determine the final lower flow threshold.

- The lower flow threshold may alternately be determined as 10 percent of the pre-project 2-year runoff event, or 0.1Q2. This approach, which is outlined in the HMP Decision Matrix, is available if the project applicant chooses not to complete the channel screening analysis. "

This report has been prepared in accordance with the, "Hydromodification Management Plan" (HMP)", prepared by Brown and Caldwell for the County of San Diego, dated March, 2011.

Project Description

The project area consists of 780 residential units (534 single family detached, with lot size ranging from 3,000 sq. ft. 8,000 sq. ft., and 246 multi-family and attached townhomes)

- 7.7 acres of Private community parks, including a clubhouse
- 14.54 acres of Landscaped areas
- 4.23 acres of Public recreational park
- 359.05 acres of Preserved open space
- 10,000 sq. ft. On-site fire station

The proposed Warner Ranch Project is located in the unincorporated area in the northwestern portion of San Diego County, approximately five miles east of Interstate 15 on Pala Road (State Route (SR) 76). It is just west of Pala Temecula Road in the Pala Pauma Subregional Planning Area (Figures 1.38 and 1.39). It includes Assessor's Parcel Numbers (APNs) 110-021-09 and10; 110-090-01, -17, -18; 110-021-32; and 110-040-22. Mostly agricultural areas are located along the western and southern boundary of the site. The project site consists of 513.49 acres situated between two small bodies (Gomez and Pala Creek) of intermittently flowing water on both sides. Gomez Creek runs through the western portion of the Project, and Pala Creek traverses through the eastern side, however, no disturbance is proposed within the Pala Creek basin. This Hydromodification Management Plan accompanies the Tentative Map for "Warner Ranch Tract 5508 rpl4", and assesses the need for hydromodification Best Management Practices (BMPs) for Gomez Creek to comply with the HMP.

Project completion and permanent post construction BMPs will be implemented. Water quality and erosion control BMPs will be incorporated as needed to address this level of development.

Should a project propose alternative BMPs, or any variation to the assumptions made within this report, then that project will need to provide additional modeling and analysis to demonstrate that the subdivision as a whole will still be in compliance with the HMP upon completion of the project.

Method of Analysis

The hydromodification analysis within this report utilizes continuous modeling software called San Diego Hydrology Model (SDHM), version dated 10/11/2011, developed by Clear Creek Solutions, Inc. Using rain gauge data specific to the project of interest; SDHM calculates pre-project runoff rates for each water year to compute the pre-project 2- through 25-year flood frequency values. The software then calculates the post-project 2- through 25-year flood frequency values, routing runoff through project BMPs as applicable. The maximum flow value for each water year is selected by the model to compute the pre- and post-project 2- through 25-year flood frequencies. The pre-project 2-year peak flow is multiplied by 10%, or 0.1Q2 to set the lower limit of the erosive flows, in accordance with the IHC, and the 10-year peak flow is used as the upper limit. The model counts the number of hours that pre project flows exceed each of the flow levels during the entire simulation period. The model does the same analysis for the post-project mitigated flows. A comparison of the pre-project and post-project flow duration curves is conducted for 100 flow levels between the lower limit and the upper limit. If the comparison of the pre-project and post-project flow duration curves yields compliance with the IHC, the software issues a "pass" for the model, otherwise it issues a "fail".

A basin is modeled within SDHM using land use type and slope, for the pre- and post-project condition. In the post-project condition, the basin can be broken down into multiple sub-basins, if necessary, and each sub-basin can be routed to a different BMP or to no BMP at all. Additionally, the software contains an "auto-pond" component that can automatically size a BMP for the specific basin of interest. This component calculates, through an iterative process, the optimal size of the BMP and the BMP outlet structure. Though this may not ultimately be the detention volume required, it provides a starting point for sizing BMP facilities and assessing the feasibility of satisfying the IHC.

The pre- and post-project land use and slope values for Warner Ranch are calculated within Section 3 and are illustrated on Exhibits "A" and "B", also included within that section.

Ridges running through Gomez Creek basin divide the site into two pre-drainage basins labeled Basins "1" and "2" that converge at the Lower Point of Gomez Creek, on the north side of the bridge before SR76. In Section 4, the pre- and post-project land uses are used to model each basin within SDHM. In the post-project condition, the portion of each basin anticipated to be detained, or routed through a BMP before merge into Gomez Creek.

Rainfall Data

The SDHM models within Sections 4 utilize rainfall data from the Fallbrook gauge (dated April 2009). Per the Rainfall Station Map prepared by Brown & Caldwell, the Fallbrook rain gauge is located west off the Project site. According to the 85th Percentile Precipitation Isopluvial Map found in Appendix E of the San Diego Hydrology Manual, dated June 2003, the Warner Ranch project is located relatively close to the isopluvial contour, therefore no scaling was consider for this analysis report.

Maintenance of Hydromodification Facilities

The proposed hydromodification facilities at Warner Ranch will fall under second maintenance mechanisms, as defined within the County of San Diego "Standard Urban Storm Water Mitigation Plan Requirements for Development Applications", dated January 8, 2011. The on-site BMPs constructed during the ultimate build-out will fall under the second category maintenance mechanisms, requiring that a Stormwater Facilities Maintenance Agreement, with Easement and Covenants be entered into between the owner and the County of San Diego, obliging the owner/HOA to maintain the project category two BMPs into perpetuity. Prior to recordation of the agreement, the owner/ developer will provide the County with security to back up the maintenance agreement, which shall remain in place for an interim period of 5 years. The amount of the security shall equal the estimated cost of 2 years of maintenance activities.

The BMPs (swale) servicing the public right-of-way (SR76) will ultimately be maintained by Caltrans or the owner/HOA. Agreements for maintenance will be secured prior to issuance of building permit.

Conclusion

The calculations within this report assess the feasibility of satisfying the IHC and establish detention facility sizes and locations for the project. Based on the detention requirements and the anticipated facility sizes, as illustrated on Exhibit B within Section 3, the Warner Ranch project will comply with the IHC. Should a project propose alternative BMPs, or any variation to the assumptions made within this report, then that project will need to provide additional modeling and analysis to demonstrate that the subdivision as a whole will still be in compliance with the IHC upon completion of the project.

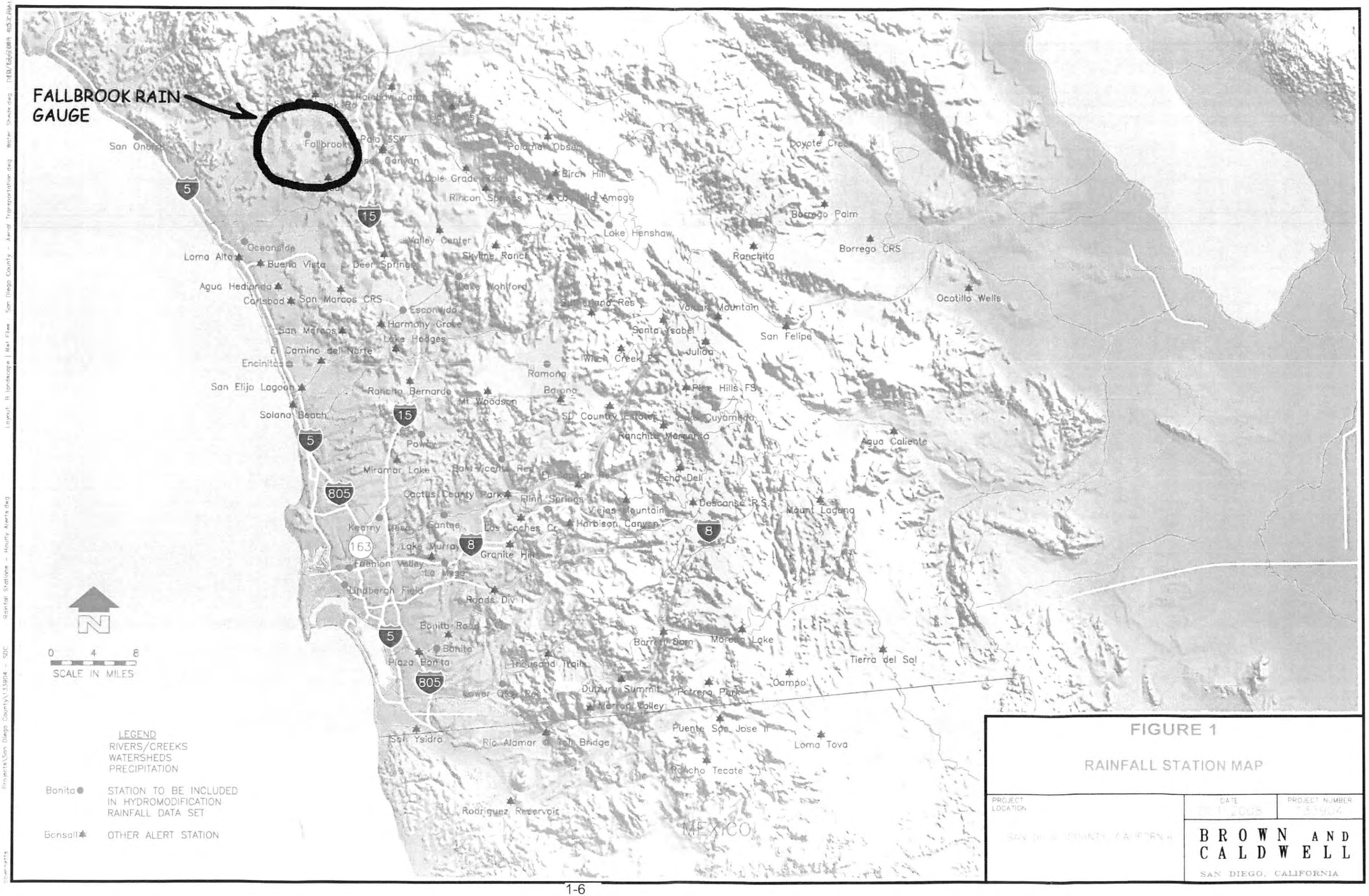
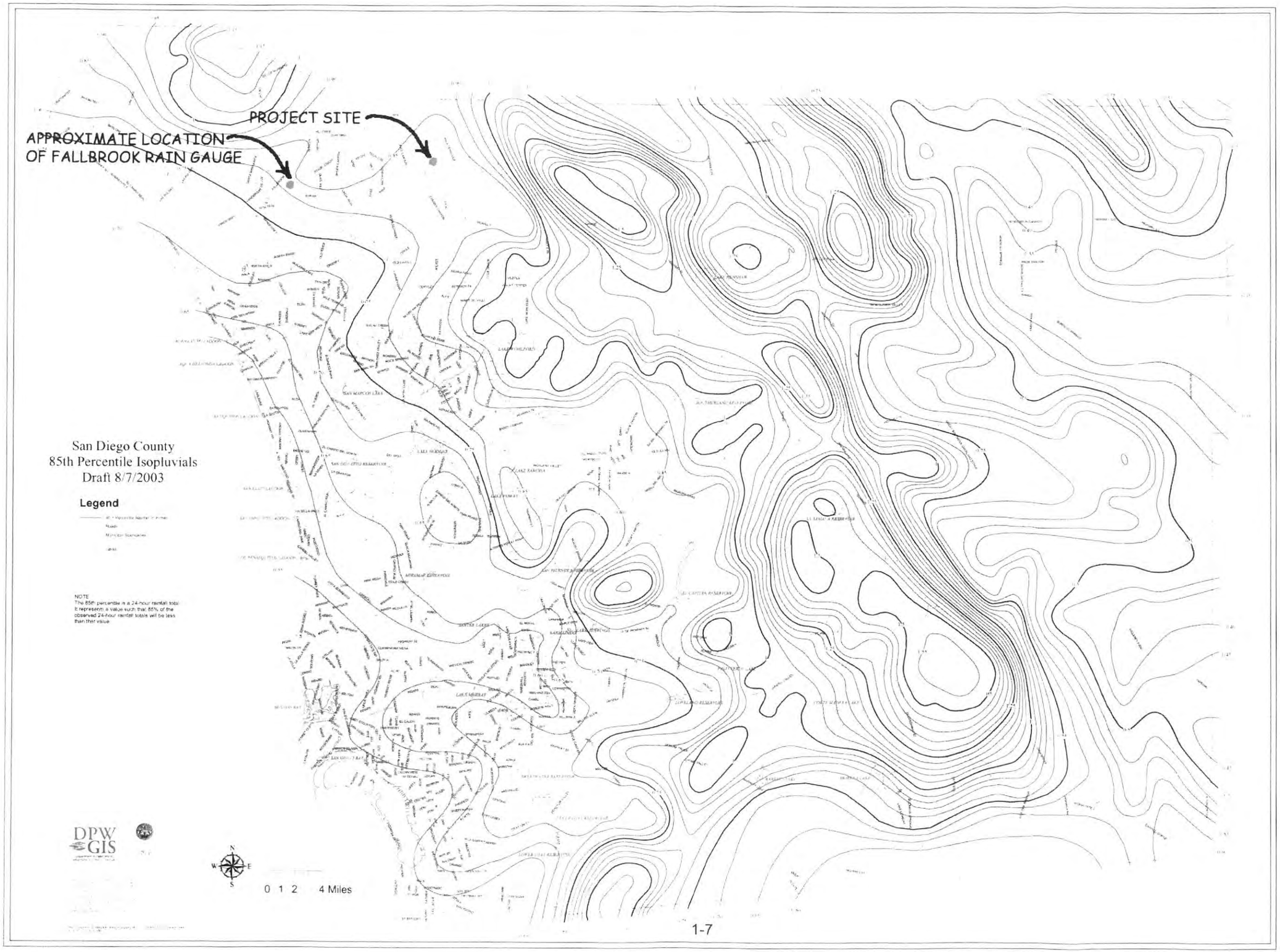


FIGURE 1

RAINFALL STATION MAP

PROJECT LOCATION	DATE	PROJECT NUMBER
SAN DIEGO COUNTY, CALIFORNIA	[illegible] 2005	[illegible]

BROWN AND CALDWELL
SAN DIEGO, CALIFORNIA


PROJECT SITE
APPROXIMATE LOCATION
OF FALLBROOK RAIN GAUGE
San Diego County
85th Percentile Isopluvials
Draft 8/7/2003
Legend
NOTE
The 85th percentile is a 24-hour rainfall total. It represents a value such that 85% of the observed 24-hour rainfall totals will be less than that value.
DPW
GIS
N
W
E
S
0 1 2 4 Miles

Section 2 Vicinity/Key Map

SECTION 2

VICINITY MAP

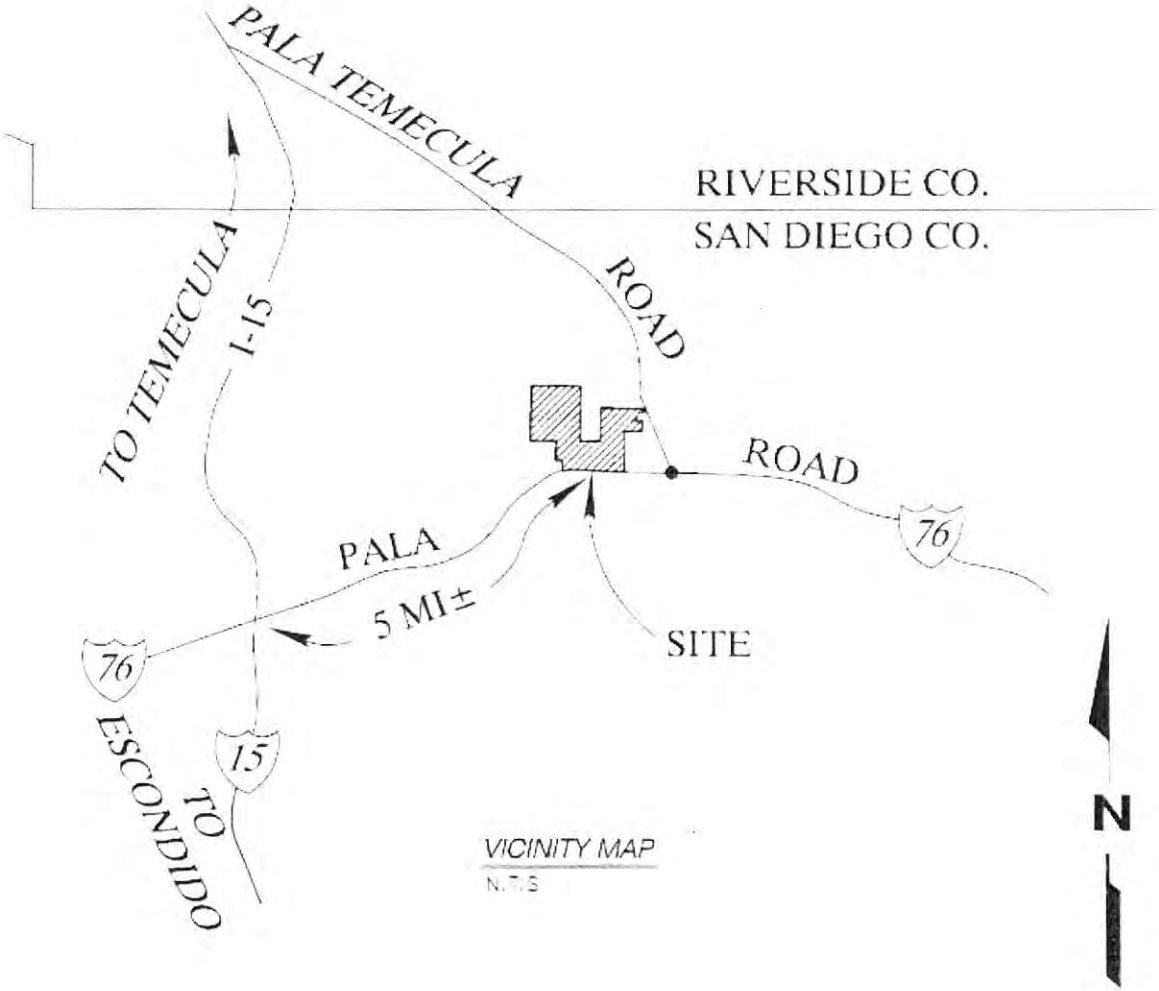


Figure 2-1 - Vicinity map

Section 3 Land Use
Calculations

SECTION 3

LAND USE AREA CALCULATIONS

Pre-Project Condition:

The Site is characterized by diverse topography with elevation ranging 350 feet to 1,000 feet above mean sea level; however, the entire basin study reaches a high elevation of 1,950. The northern portion of the site is generally depicted as moderate to steep slopes. The area contains a variety of vegetation types, including Chaparral and Coastal Sage Scrub, as well as habitats supporting a wide range of sensitive plants and animals. The southern portion of the site is relatively flat and presently contains orchards, as well as a network of unimproved roads.
For the purpose of this report, the pervious land use was based on soil types: A (well infiltrating soils), B (moderate infiltrating soils), and C/D (poor infiltrating soils), the slope categories used are flat (0-5%), moderate (5-10%), steep (10-20%), and very steep (>20%). The pre-project condition was considered to have no impervious surfaces.
Ridge lines within the project basin divide the site into two drainage basins (See Exhibit "A") labeled Basin "1" and "2". Both Basin flows converge to Gomez Creek along the south west side of the project set as Point of Compliance 1 (POC1) and eventually outflows to the San Luis Rey River further south.

Post-Project Condition:

In the post-project condition, Basins where broken down into appropriate sub-basins labeled "1" thru "17" and routed into proposed BMP's. Flow will generally maintain existing drainage patterns and outfall at the same Point of Compliance 1 (Gomez Creek- POC 1). The site will be graded into 780 residential units (534 single family detached and 246 multi-family and attached townhomes). In the post-project condition, the portion of each new developed basin anticipated to be detained, or routed through BMP facilities and assessing the feasibility to satisfying the IHC.

For the purpose of this report, the impervious areas within each basin are individually categorize into five types: roads, roofs, driveways, sidewalks, and parking. The slope categories are the same as for the pervious land use (flat, moderate, steep, and very steep).

Bio retentions, Detention ponds, and Bio swales where design and proposed along the development area. Bioretention/Detention facilities area labeled as BMP 1 thru 8, Bio swales areas are labeled 1 thru 3.

Though various BMP areas are proposed within the project, drainage flows in this study are directed to the same Point of Compliance (POC1), as described below.
Basin 1 is part of the detached single family units located within the north eastern side of the proposed project with a basin area of 37.82 acres. Rainfall flows from this basin are routed through streets and landscape areas. These flows are collected through street curb inlets and into the proposed storm drain system, which then travel to a Detention Basin labeled as "BMP 1". This basin (BMP 1) is approximately 49,100 sq. ft. in size, which detains and treats receiving waters before being routed to Gomez Creek (POC1).

Basin 2 is located within the south eastern portion of the project; it mainly consists of detached single family and multi-family units. The basin area is 29.48 acres in size. Flows are collected at curb inlets in different locations of the basin and into a storm drain system that directs to a Detention Basin labeled "BMP 2". The basin area (BMP 2) is approximately 82,700 sq. ft., where water is collected thru a riser pipe and into a reinforced concrete pipe that outflows to Bio swale 2. Flow from this swale runs parallel along the north part of SR76 from east to west and eventually connects to Gomez Creek (POC1).

Basin 3 is located within the multi-family units north east of Basin 2 with an area of 2.45 acres. Flows are routed through streets and landscape areas, which redirect to curb cuts and into a Bioretention (BMP 3). After water treatment, flow from this basin gets collected through a storm drain system that drains to Bio swale 2 and then travels to Gomez Creek (POC 1).

The majority of Basin 4 is within the multi-family units, some single family and part of Club House/Recreational area. This basin is located in the mid portion of the project and has an area of 14.04 acres. Flows are collected through street curb inlets and into the proposed storm drain system, which is then directs to a Detention Basin labeled as "BMP 4". This treatment facility is approximately 37,500 sq. ft. in size, where runoff flow is collected thru a riser pipe and into a 66" reinforced concrete pipe that runs in the main entry road. This flow merges with upstream receiving waters and into Bio swale 1 and eventually connects to Gomez Creek (POC 1).

Basin 5 is located in the eastern side of the development, being part of the detached single family units, with an area of 40.82 acres in size. Runoff from this area is routed through street flow and landscape areas. Flows gets collected through curb inlets and into a storm drain system that flows to a Detention Basin labeled "BMP 5". This basin (BMP) is approximately 71,600 sq. ft. in area.

After water treatment, flow from this basin gets collected through a riser pipe and into a reinforced concrete pipe that outflows to Bio swale 3 and into Gomez Creek (POC 1).

Basin 6 is located within the multi-family units in the mid portion of the project and has an area of 4.12 acres. Flows from this basin are collected through curb inlets, curb-cuts and into a Bioretention labeled "BMP 6". This treatment facility is approximately 10,500 sq. ft. in area. After water is treated, flow from this BMP is collected thru a riser pipe and into a 66" reinforced concrete pipe, which outflows into Bio swale 1.

Basin 7 is located within the public park area just east of the main entry and has an area of 4.16 acres. Flows are collected through curb-cuts and into a Bioretention labeled "BMP 7". This Basin (BMP) has an area of approximately 7,900 sq. ft. in size, and outflows directly to Bio swale 1, than travels to Gomez Creek (POC 1).

Basin 8 is located within the attached townhomes in the mid east side of the project with an area of 1.42 acres in size. Flows from this area are routed through street flow, landscape areas, curb-cuts and into a Bioretention labeled "BMP 8". After water treatment, flow from this basin gets collected through a storm drain system that drains to Bio swale 2 and then routed to Gomez Creek (POC 1).

Basin 9 and 10 are part of the swale areas. This areas are located parallel to SR76 and are self-treated.

Basin 11, 12, 13 and 14 are undisturbed or side slope landscape areas, that are self-treated. Flows from these basins are collected into a 66" reinforced concrete pipe storm drain system that outflows into Bio swale 1. This swale runs parallel through the southeast portion of the development along SR76, with a flow direction running west and into Gomez Creek (POC1).
Basin 15 is part of a portion of SR76 and has an area of 3.31 acres. Flows from this basin are captured through proposed drain inlets and into Bio swale 3.

Basin 17 is located southeast of the project with an area of 2.08 acres of undisturbed land. Flows from this basin are self-treated, and drain through a 24" reinforced concrete pipe to Bio swale 2.
Finally, Basin 16 is relatively equal to Basin 1 of the pre-project condition, and has an area of 3,564.51 acres. It flows from north to south along the west side of the development area. The majority of this Basin compare to the pre-condition was left undeveloped, no impervious areas are proposed within this Basin, and outflows directly into Gomez Creek (POC 1).

Project Soils Conditions:

Per Geocon Incorporated, "site soils and geologic condition study", dated March 3, 2011 and included for reference at the end of this report, top soils at the majority of the site consist of, "loose, silty, fine to coarse sands" and "gravelly medium to coarse sands". Soils Groups A, B, C and D where found on site. For the purpose of this report, no infiltration rates where utilized. Actual percolation rates will be determined after the proposed grading is completed.

PRE-PROJECT LAND USE AREA BREAKDOWN - TABLE 3-1

Basin No.	Basin 1 (ac.)	Basin 2 (ac.)	Total Land Use Area (ac.)
A-Forest (0-5%)	0.16	0.07	0.23
A-Forest (5-10%)	0.02	0	0.02
A-Forest (10-20%)	0.01	0.04	0.05
A-Forest (>20%)	0.1	2.45	2.55
A-Shrubs (0-5%)	0	0	0.00
A-Shrubs (5-10%)	0	0.01	0.01
A-Shrubs (10-20%)	0	1.32	1.32
A-Shrubs (>20%)	0	34.39	34.39
A-Grass (0-5%)	12.03	1.58	13.61
A-Grass (5-10%)	0.54	0.02	0.56
A-Grass (10-20%)	0.12	0	0.12
A-Grass (>20%)	0.19	0	0.19
B-Forest (0-5%)	4.93	0	4.93
B-Forest (5-10%)	5.3	0	5.30
B-Forest (10-20%)	1.2	0.01	1.21
B-Forest (>20%)	5.76	3.99	9.75
B-Grass (0-5%)	6.56	9.4	15.96
B-Grass (5-10%)	2.07	2.08	4.15
B-Grass (10-20%)	1.63	2.18	3.81
B-Grass (>20%)	1.58	3.63	5.21
B-Shrubs (0-5%)	0.66	3.24	3.90
B-Shrubs (5-10%)	6.7	8.54	15.24
B-Shrubs (10-20%)	8.63	29	37.63

Basin No.	Basin 1 (ac.)	Basin 2 (ac.)	Total Land Use Area (ac.)
B-Shrubs (>20%)	10.4	106.46	116.86
C/D-Forest (0-5%)	4.12	9.95	14.07
C/D-Forest (5-10%)	6.8	8.96	15.76
C/D-Forest (10-20%)	2.38	28.97	31.35
C/D-Forest (>20%)	3.7	51.67	55.37
C/D-Shrubs (0-5%)	0.83	9.85	10.68
C/D-Shrubs (5-10%)	16.64	111.68	128.32
C/D-Shrubs (10-20%)	43.7	482.84	526.54
C/D-Shrubs (>20%)	354.98	2680.24	3035.22
C/D-Grass (0-5%)	5.02	10.33	15.35
C/D-Grass (5-10%)	1.37	1.3	2.67
C/D-Grass (10-20%)	0.25	0.04	0.29
C/D-Grass (>20%)	0.02	0	0.02
Total Basin Area (ac.)	508.40	3604.24	4112.64

POST PROJECT LAND USE AREA BREAKDOWN (TREATED) - TABLE 3-2 (LID/BMP SUMMARY SIZING CALCULATIONS)

Sub-Basin No.	Basin 1 (ac.)	Basin 2 (ac.)	Basin 3 (ac.)	Basin 4 (ac.)	Basin 5 (ac.)	Basin 6 (ac.)	Basin 7 (ac.)	Basin 8 (ac.)	Basin 9 (ac.)	Basin 10 (ac.)	Basin 15 (ac.)	Total Land Use Area (ac.)
A,Urban Flat (0-5%)	0.00	2.80	0.00	0.00	1.37	0.00	1.71	0.00	0.00	0.26	0.62	6.76
A,Urban Very Steep (>20%)	0.00	0.66	0.00	0.00	0.51	0.00	0.05	0.00	1.44	0.98	0.00	3.63
B,Urban Flat (0-5%)	5.98	3.43	0.25	1.04	8.52	1.45	0.79	0.17	0.00	0.16	0.00	21.78
B,Urban Moderate (5-10%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B,Urban Very Steep (>20%)	1.84	1.56	0.05	0.43	1.39	0.28	0.39	0.00	0.00	0.00	0.00	5.94
C,Urban Flat (0-5%)	9.89	2.63	0.50	2.05	0.00	0.00	0.00	0.39	0.00	0.00	0.00	15.46
C,Urban Moderate (5-10%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C,Urban Very Steep (>20%)	1.96	1.97	0.08	0.04	0.00	0.00	0.00	0.11	0.00	0.00	0.00	4.16
D,Urban Flat (0-5%)	0.00	1.57	0.00	1.22	3.97	0.00	0.07	0.00	0.00	0.02	0.03	6.89
D,Urban Very Steep (>20%)	0.00	0.00	0.00	0.79	0.29	0.00	0.06	0.00	0.00	0.00	0.00	1.14
Roads Flat (0-5%)	4.48	3.16	0.46	3.39	7.64	1.07	0.39	0.27	0.00	0.50	2.59	23.93
Roads Moderate (5-10%)	1.70	2.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	3.96
Dwy Flat (0-5%)	2.07	2.07	0.23	1.33	2.51	0.27	0.00	0.00	0.00	0.00	0.00	8.48
Sidewalk Flat (0-5%)	0.70	0.62	0.03	0.91	1.37	0.20	0.07	0.00	0.00	0.07	0.07	4.02
Sidewalk Moderate (5-10%)	0.46	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.82
Parking Lots Flat (0-5%)	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.00	0.00	0.35
Roof Area	8.74	6.66	0.85	2.84	8.55	0.85	0.02	0.49	0.00	0.00	0.00	29.00
B-Shrubs (>20%)	0.00	0.00	0.00	0.00	3.91	0.00	0.00	0.00	0.00	0.00	0.00	3.91
B-Forest (>20%)	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.80
Total Basin Area (ac.)	37.82	29.48	2.45	14.04	40.82	4.12	4.16	1.42	1.44	1.99	3.31	141.06
Drains to LID/BMP Type	Detention Pond (BMP 1)	Detention Pond (BMP 2)	Bioretention (BMP 3)	Detention Pond (BMP 4)	Detention Pond (BMP 5)	Bioretention (BMP 6)	Bioretention (BMP 7)	Bioretention (BMP 8)	Bioswale 2 Self-treated	Bioswale 1 Self-treated	Bioswale 3	N/A
Minimum LID/BMP Area (sqft.)*	45,963	36,674	7,760	28,547	67,713	10,048	4,480	3,877	N/A	N/A	N/A	205,062
Proposed LID/BMP Area (sqft.)	49,100	82,700	6,500	37,500	71,600	10,500	7,900	4,850	N/A	N/A	N/A	270,650

* Minimum Area/Volume Based on the County of San Diego SUSMP "Standard Urban Stormwater Management Plan" and Hydromodification Workgroup, BMP Sizing calculator (Version 3.0). Set to Low Flow Threshold of 0.1Q2. (See section 4 for summary of calculations).

CONTINUE...

POST PROJECT LAND USE AREA BREAKDOWN (TREATED) - TABLE 3-2 (LID/BMP SUMMARY SIZING CALCULATIONS)

Sub-Basin No.	Basin 1 (ac.)	Basin 2 (ac.)	Basin 3 (ac.)	Basin 4 (ac.)	Basin 5 (ac.)	Basin 6 (ac.)	Basin 7 (ac.)	Basin 8 (ac.)	Basin 9 (ac.)	Basin 10 (ac.)	Basin 15 (ac.)	Total Volume (Cu. Ft.)
Minimum Volume 1 (cu. Ft.)	199,908	156,436	6,469	119,642	301,782	8,373	3,734	3,231	N/A	N/A	N/A	799,575
Minimum Volume 2 (cu. Ft.)	N/A	N/A	4,183	N/A	N/A	N/A	114	2,095	N/A	N/A	N/A	6,392
Minimum Volume Total *	199,908	156,436	10,652	119,642	301,782	8,373	3,848	5,326	N/A	N/A	N/A	805,967
Proposed Volume 1 (cu. Ft.)	206,150	354,400	8,550	155,200	304,300	12,475	10,200	6,190	N/A	N/A	N/A	1,057,465
Proposed Volume 2 (cu. Ft.)	N/A	N/A	3,035	N/A	N/A	3,700	3,420	2,100	N/A	N/A	N/A	12,255
Proposed Volume Total	206,150	354,400	11,585	155,200	304,300	16,175	13,620	8,290	N/A	N/A	N/A	1,069,720

* Minimum Area/Volume Based on the County of San Diego SUSMP "Standard Urban Stormwater Management Plan" and Hydromodification Workgroup, BMP Sizing calculator (Version 3.0) Set to Low Flow Threshold of 0.1Q2 (See section 4 for summary of calculations)

POST-PROJECT LAND USE AREA BREAKDOWN (SELF-TREATED) - TABLE 3-3

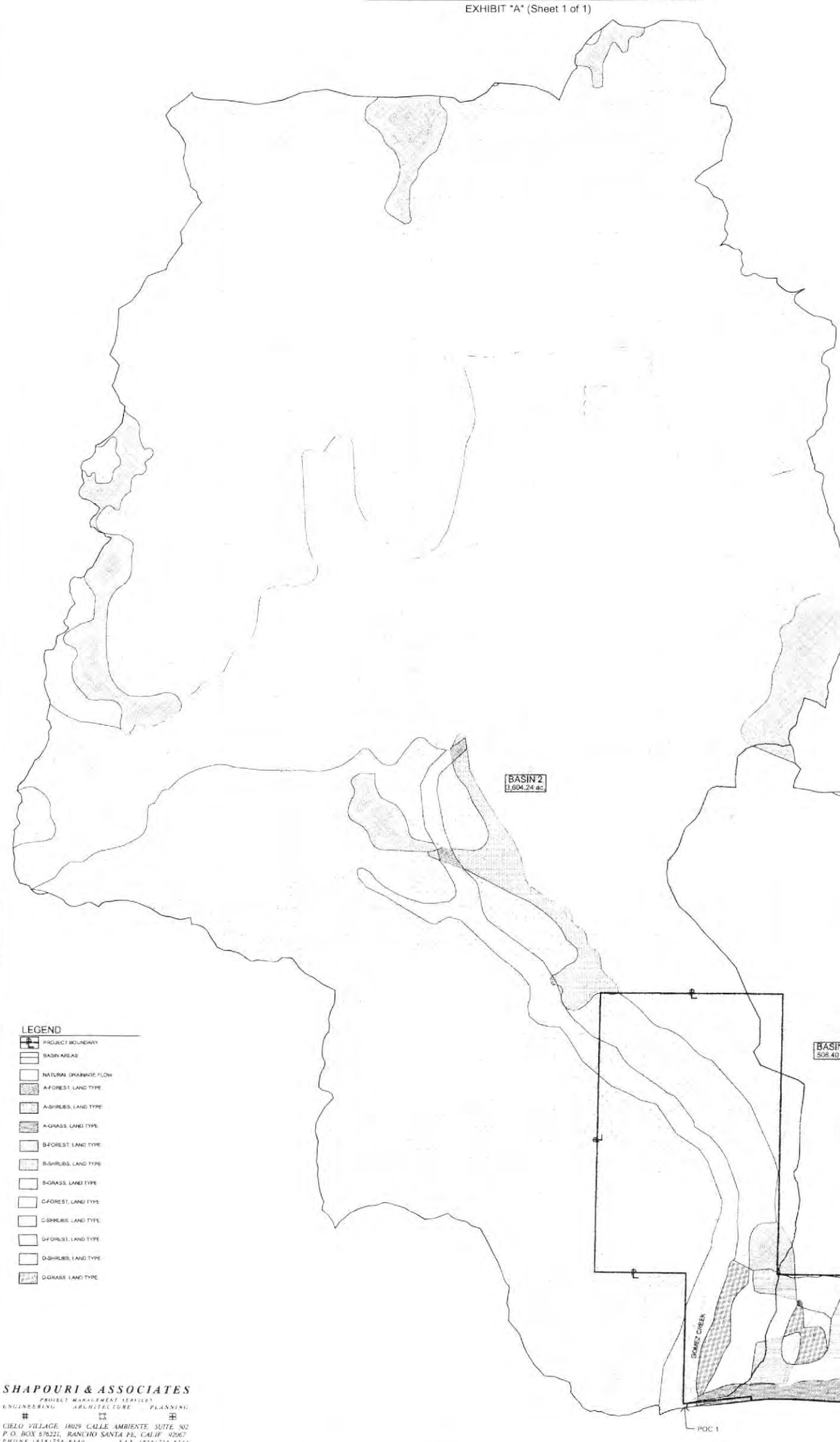
Sub-Basin No.	Basin 11 (ac.)	Basin 12 (ac.)	Basin 13 (ac.)	Basin 14 (ac.)	Basin 16 (ac.)	Basin 17 (ac.)	Total Land Use Area (ac.)
A-Forest (0-5%)	0.00	0.00	0.00	0.00	0.13	0.00	0.13
A-Forest (5-10%)	0.00	0.00	0.00	0.00	0.01	0.00	0.01
A-Forest (10-20%)	0.00	0.00	0.00	0.00	0.05	0.00	0.05
A-Forest (>20%)	0.00	0.00	0.00	0.00	2.41	0.00	2.41
A-Shrubs (0-5%)	0.00	0.00	0.00	0.00	0.15	0.00	0.15
A-Shrubs (5-10%)	0.00	0.00	0.00	0.00	0.14	0.00	0.14
A-Shrubs (10-20%)	0.00	0.00	0.00	0.00	1.45	0.00	1.45
A-Shrubs (>20%)	0.00	0.00	0.00	0.00	33.98	0.00	33.98
A-Grass (0-5%)	0.00	0.00	0.00	0.00	0.11	0.61	0.72
B-Forest (0-5%)	0.00	0.08	0.00	0.00	0	0.00	0.08
B-Forest (5-10%)	0.00	0.00	0.01	0.00	0	0.00	0.01
B-Forest (10-20%)	0.00	0.00	0.01	0.00	0	0.00	0.01
B-Forest (>20%)	0.00	0.00	1.40	0.00	0.11	0.00	1.51
B-Grass (0-5%)	0.00	0.00	0.00	0.00	0	0.00	0
B-Grass (5-10%)	0.00	0.00	0.00	0.00	0	0.35	0.35
B-Grass (10-20%)	0.00	0.00	0.00	0.00	0	0.34	0.34
B-Grass (>20%)	0.00	0.00	0.00	0.00	0	0.35	0.35
B-Shrubs (0-5%)	0.04	0.31	0.01	0.00	14.1	0.00	14.46
B-Shrubs (5-10%)	0.23	1.41	0.00	0.00	8.85	0.00	10.49
B-Shrubs (10-20%)	1.81	0.77	0.07	0.00	27.2	0.43	30.28
B-Shrubs (>20%)	0.77	4.16	1.53	0.00	92.68	0.00	99.14
C/D-Forest (0-5%)	0.00	0.00	0.00	0.00	17.49	0.00	17.49
C/D-Forest (5-10%)	0.00	0.00	0.00	0.00	9.02	0.00	9.02

CONTINUE... POST-PROJECT LAND USE AREA BREAKDOWN (SELF-TREATED) - TABLE 3-3

Sub-Basin No.	Basin 11 (ac.)	Basin 12 (ac.)	Basin 13 (ac.)	Basin 14 (ac.)	Basin 16 (ac.)	Basin 17 (ac.)	Total Land Use Area (ac.)
C/D-Forest (10-20%)	0.00	0.00	0.01	0.00	26.56	0.00	26.57
C/D-Forest (>20%)	0.00	0.60	0.30	0.00	46.4	0.00	47.31
C/D-Shrubs (0-5%)	0.03	3.23	0.00	0.00	47.64	0.00	50.90
C/D-Shrubs (5-10%)	0.09	10.44	0.00	0.00	128.81	0.00	139.34
C/D-Shrubs (10-20%)	2.10	34.49	0.00	0.00	481.29	0.00	517.87
C/D-Shrubs (>20%)	7.68	325.79	1.32	0.00	2623.92	0.00	2958.70
C/D-Grass (0-5%)	0.00	0.00	0.00	0.00	0.84	0.00	0.84
C/D-Grass (5-10%)	0.00	0.00	0.00	0.00	0.04	0.00	0.04
B,Urban (0-5%)	0.00	0.15	0.00	0.14	0	0.00	0.29
B,Urban (5-10%)	0.00	0.06	0.00	0.08	0	0.00	0.13
B,Urban (10-20%)	0.01	0.03	0.05	0.05	0	0.00	0.14
B,Urban (>20%)	0.65	1.04	1.26	0.19	0	0.00	3.14
C,Urban (0-5%)	0.00	0.36	0.01	0.00	0	0.00	0.37
C,Urban (5-10%)	0.00	0.06	0.00	0.02	0	0.00	0.08
C,Urban (10-20%)	0.00	0.11	0.00	0.00	0	0.00	0.11
C,Urban (>20%)	0.78	3.00	0.17	0.00	0	0.00	3.95
D,Urban (0-5%)	0.00	0.00	0.00	0.00	0.04	0.00	0.04
D,Urban (5-10%)	0.00	0.00	0.00	0.00	0.01	0.00	0.01
D,Urban (10-20%)	0.00	0.00	0.00	0.00	0.05	0.00	0.05
D,Urban (>20%)	0.00	0.00	0.00	0.00	1.03	0.00	1.03
Sidewalks Flat (0-5%)	0.00	0.00	0.00	0.03	0	0.00	0.03
Total Basin Area (ac.)	14.18	386.09	6.15	0.52	3564.51	2.08	3973.54
Drains Thruough	Bioswale 1	Bioswale 1	Bioswale 1	Bioswale 1	Gomez Creek	Bioswale 2	

WARNER RANCH (GOMEZ CREEK)
PRE-PROJECT LAND USE AREA BREAKDOWN

EXHIBIT "A" (Sheet 1 of 1)



PRE-PROJECT LAND USE BREAKDOWN

Basin No.	Basin 1 (ac.)	Basin 2 (ac.)	Total Land Use Area (ac.)
A-Forest (0-5%)	0.16	0.07	0.23
A-Forest (5-10%)	0.02	0	0.02
A-Forest (10-20%)	0.01	0.04	0.05
A-Forest (>20%)	0.1	2.45	2.55
A-Shrubs (0-5%)	0	0	0.00
A-Shrubs (5-10%)	0	0.01	0.01
A-Shrubs (10-20%)	0	1.32	1.32
A-Shrubs (>20%)	0	34.39	34.39
A-Grass (0-5%)	12.03	1.58	13.61
A-Grass (5-10%)	0.54	0.02	0.56
A-Grass (10-20%)	0.12	0	0.12
A-Grass (>20%)	0.19	0	0.19
B-Forest (0-5%)	4.93	0	4.93
B-Forest (5-10%)	5.3	0	5.30
B-Forest (10-20%)	1.2	0.01	1.21
B-Forest (>20%)	5.76	3.99	9.75
B-Grass (0-5%)	8.56	8.4	16.96
B-Grass (5-10%)	2.07	2.08	4.15
B-Grass (10-20%)	1.83	2.16	3.81
B-Grass (>20%)	1.94	3.03	5.21
B-Shrubs (0-5%)	0.86	3.24	3.90
B-Shrubs (5-10%)	5.7	9.54	15.24
B-Shrubs (10-20%)	8.63	29	37.63
B-Shrubs (>20%)	10.4	106.46	116.86
C/D-Forest (0-5%)	4.12	9.95	14.07
C/D-Forest (5-10%)	6.8	8.96	15.76
C/D-Forest (10-20%)	2.38	28.97	31.35
C/D-Forest (>20%)	3.7	51.67	55.37
C/D-Shrubs (0-5%)	0.83	9.85	10.68
C/D-Shrubs (5-10%)	18.64	111.68	130.32
C/D-Shrubs (10-20%)	43.7	482.94	526.64
C/D-Shrubs (>20%)	354.98	2680.24	3035.22
C/D-Grass (0-5%)	5.02	10.33	15.35
C/D-Grass (5-10%)	1.37	1.3	2.67
C/D-Grass (10-20%)	0.29	0.04	0.33
C/D-Grass (>20%)	0.92	0	0.92
Total Basin Area (ac.)	508.40	3604.24	4112.64

LEGEND

- PROJECT BOUNDARY
- BASIN AREAS
- NATURAL DRAINAGE FLOW
- A-FOREST, LAND TYPE
- A-SHRUBS, LAND TYPE
- A-GRASS, LAND TYPE
- B-FOREST, LAND TYPE
- B-SHRUBS, LAND TYPE
- B-GRASS, LAND TYPE
- C-FOREST, LAND TYPE
- C-SHRUBS, LAND TYPE
- D-FOREST, LAND TYPE
- D-SHRUBS, LAND TYPE
- D-GRASS, LAND TYPE

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WARNER RANCH (GOMEZ CREEK)
PRE-PROJECT LAND USE
AREA BREAKDOWN
EXHIBIT "A" (Sheet 1 of 1)

SCALE: 1"=500'
0' 500' 1000'

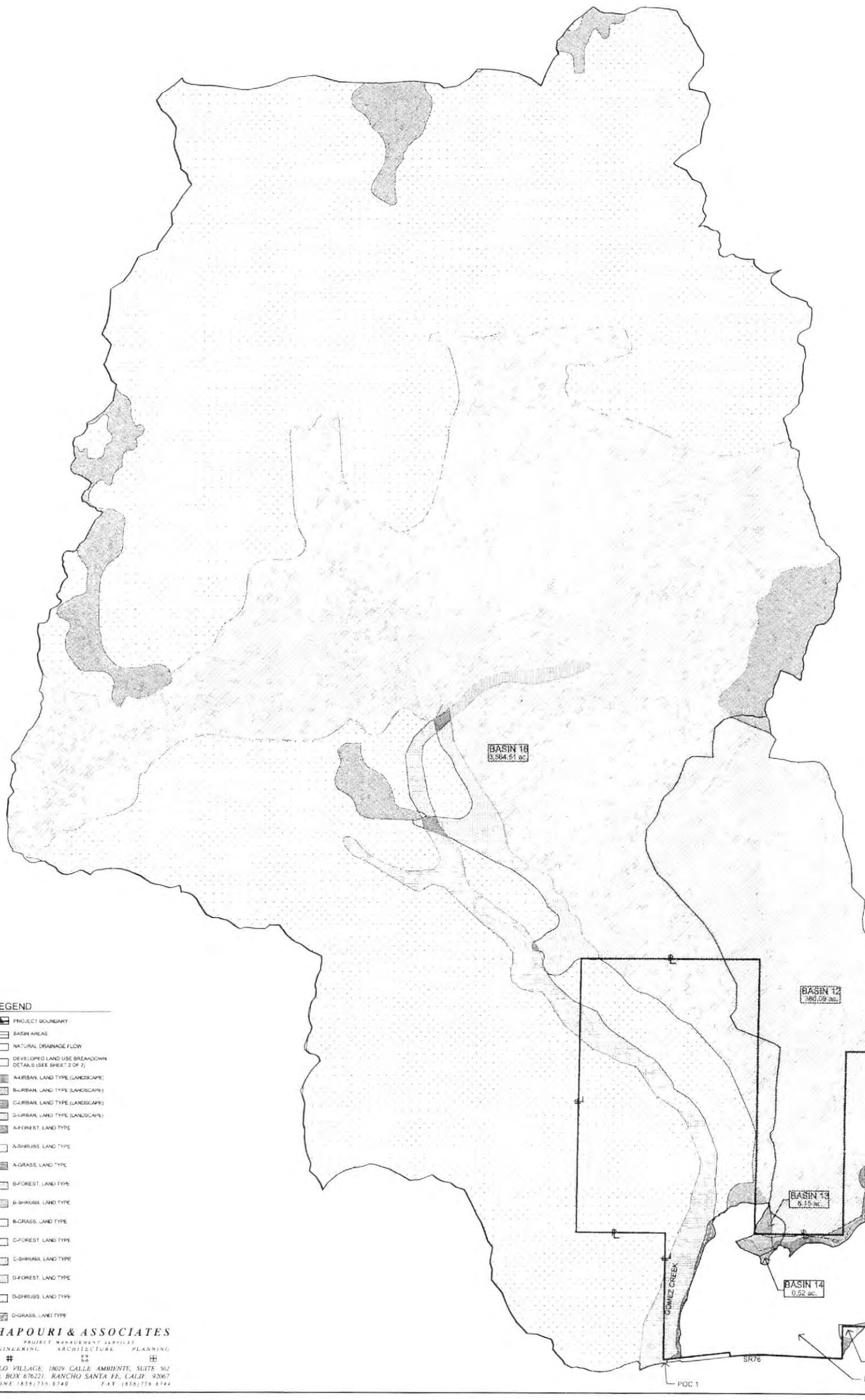
SHEET 1 OF 1

08-08-2013

WARNER RANCH (GOMEZ CREEK) - TM 5508 RPL4

DRAINAGE MANAGEMENT AREA MAP

EXHIBIT "B" (sheet 1 of 2)



POST-PROJECT LAND USE AREA BREAKDOWN (SELF-TREATED)

Sub-Basin No.	Basin 11 (ac.)	Basin 12 (ac.)	Basin 13 (ac.)	Basin 14 (ac.)	Basin 16 (ac.)	Basin 17 (ac.)	Total Land Use Area (ac.)
A-Forest (0-5%)	0.00	0.00	0.00	0.00	0.13	0.00	0.13
A-Forest (5-10%)	0.00	0.00	0.00	0.00	0.21	0.00	0.21
A-Forest (10-20%)	0.00	0.00	0.00	0.00	0.05	0.00	0.05
A-Forest (>20%)	0.00	0.00	0.00	0.00	2.41	0.00	2.41
A-Shrubs (0-5%)	0.00	0.00	0.00	0.00	0.15	0.00	0.15
A-Shrubs (5-10%)	0.00	0.00	0.00	0.00	0.14	0.00	0.14
A-Shrubs (10-20%)	0.00	0.00	0.00	0.00	1.48	0.00	1.48
A-Shrubs (>20%)	0.00	0.00	0.00	0.00	33.88	0.00	33.88
A-Grass (>5%)	0.00	0.00	0.00	0.00	0.11	0.61	0.72
B-Forest (0-5%)	0.00	0.08	0.00	0.00	0	0.00	0.08
B-Forest (5-10%)	0.00	0.00	0.01	0.00	0	0.00	0.01
B-Forest (10-20%)	0.00	0.00	0.01	0.00	0	0.00	0.01
B-Forest (>20%)	0.00	0.00	1.40	0.00	0.11	0.00	1.51
B-Grass (0-5%)	0.00	0.00	0.00	0.00	0	0.00	0
B-Grass (5-10%)	0.00	0.00	0.00	0.00	0	0.30	0.30
B-Grass (10-20%)	0.00	0.00	0.00	0.00	0	0.34	0.34
B-Grass (>20%)	0.00	0.00	0.00	0.00	0	0.35	0.35
B-Shrubs (0-5%)	0.04	0.31	0.01	0.00	14.1	0.00	14.46
B-Shrubs (5-10%)	0.23	1.41	0.00	0.00	8.85	0.00	10.49
B-Shrubs (10-20%)	1.51	0.77	0.07	0.00	27.2	0.43	30.28
B-Shrubs (>20%)	0.77	4.16	1.53	0.00	92.68	0.00	99.14
C/D-Forest (0-5%)	0.00	0.00	0.00	0.00	17.49	0.00	17.49
C/D-Forest (5-10%)	0.00	0.00	0.00	0.00	9.02	0.00	9.02
C/D-Forest (10-20%)	0.00	0.00	0.01	0.00	25.56	0.00	25.57
C/D-Forest (>20%)	0.00	0.00	0.00	0.00	46.4	0.00	47.31
C/D-Shrubs (0-5%)	0.63	1.23	0.00	0.00	47.64	0.00	50.90
C/D-Shrubs (5-10%)	0.69	10.44	0.00	0.00	128.81	0.00	139.94
C/D-Shrubs (10-20%)	2.10	34.48	0.00	0.00	481.23	0.00	517.87
C/D-Shrubs (>20%)	7.88	325.79	1.32	0.00	2523.92	0.00	2858.70
C/D-Grass (0-5%)	0.00	0.00	0.00	0.00	0.84	0.00	0.84
C/D-Grass (5-10%)	0.00	0.00	0.00	0.00	0.04	0.00	0.04
B_Urban (0-5%)	0.00	0.15	0.00	0.14	0	0.00	0.29
B_Urban (5-10%)	0.00	0.08	0.00	0.04	0	0.00	0.12
B_Urban (10-20%)	0.01	0.03	0.06	0.04	0	0.00	0.14
B_Urban (>20%)	0.65	1.44	1.26	0.19	0	0.00	3.14
C_Urban (0-5%)	0.00	0.36	0.01	0.09	0	0.00	0.31
C_Urban (5-10%)	0.00	0.04	0.00	0.02	0	0.00	0.06
C_Urban (10-20%)	0.00	0.11	0.00	0.00	0	0.00	0.11
C_Urban (>20%)	0.78	2.00	0.17	0.00	0	0.00	2.95
D_Urban (0-5%)	0.00	0.00	0.00	0.00	0.04	0.00	0.04
D_Urban (5-10%)	0.00	0.00	0.00	0.00	0.01	0.00	0.01
D_Urban (10-20%)	0.00	0.00	0.00	0.00	0.05	0.00	0.05
D_Urban (>20%)	0.00	0.00	0.00	0.00	1.03	0.00	1.03
Sidewalks (Flat (0-5%))	0.00	0.00	0.00	0.03	0	0.00	0.03
Total Basin Area (ac.)	14.18	380.09	6.15	0.52	3564.61	2.08	3971.64
Drains Through	Sidewalk 1	Sidewalk 1	Sidewalk 1	Sidewalk 1	Gomez Creek	Sidewalk 2	

LEGEND

- PROJECT BOUNDARY
- BASIN AREAS
- NATURAL DRAINAGE FLOW
- DEVELOPED LAND USE BREAKDOWN DETAILS (SEE SHEET 2 OF 2)
- A-URBAN, LAND TYPE (LANDSCAPE)
- B-URBAN, LAND TYPE (LANDSCAPE)
- C-URBAN, LAND TYPE (LANDSCAPE)
- D-URBAN, LAND TYPE (LANDSCAPE)
- A-FOREST, LAND TYPE
- A-SHRUBS, LAND TYPE
- A-GRASS, LAND TYPE
- B-FOREST, LAND TYPE
- B-SHRUBS, LAND TYPE
- B-GRASS, LAND TYPE
- C-FOREST, LAND TYPE
- C-SHRUBS, LAND TYPE
- D-FOREST, LAND TYPE
- D-SHRUBS, LAND TYPE
- D-GRASS, LAND TYPE

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WARNER RANCH (GOMEZ CREEK)
DRAINAGE MANAGEMENT AREA MAP
EXHIBIT "B" (sheet 1 of 2)

08-08-2013

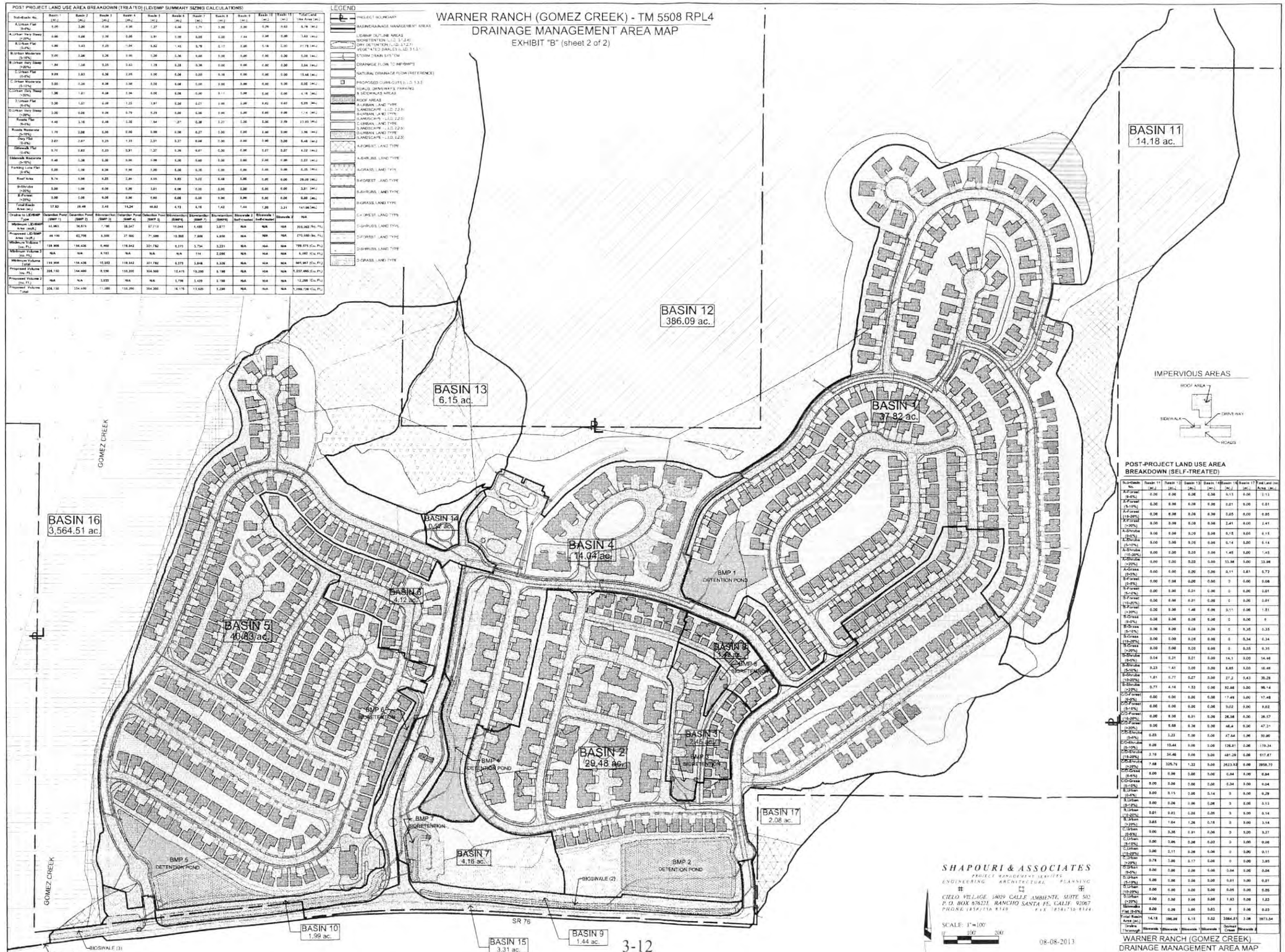
WARNER RANCH (GOMEZ CREEK) - TM 5508 RPL4
DRAINAGE MANAGEMENT AREA MAP
EXHIBIT "B" (sheet 2 of 2)

POST PROJECT LAND USE AREA BREAKDOWN (TREATED) (LID/BMP SUMMARY SIZING CALCULATIONS)

Subbasin No.	Basin 1 (ac.)	Basin 2 (ac.)	Basin 3 (ac.)	Basin 4 (ac.)	Basin 5 (ac.)	Basin 6 (ac.)	Basin 7 (ac.)	Basin 8 (ac.)	Basin 9 (ac.)	Basin 10 (ac.)	Basin 11 (ac.)	Total Land Use Area (ac.)
A.Urban Flat (0-5%)	5.06	2.86	0.06	5.06	1.27	0.06	1.79	3.06	3.06	0.26	0.63	5.79 (ac.)
A.Urban Very Steep (>20%)	0.06	0.06	3.06	0.06	0.91	3.06	0.06	0.06	1.44	0.06	0.06	1.82 (ac.)
B.Urban Flat (0-5%)	0.06	1.43	0.25	0.94	0.62	1.43	5.79	0.17	0.06	0.18	0.00	21.75 (ac.)
B.Urban Moderate (5-10%)	0.00	3.06	0.26	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (ac.)
B.Urban Very Steep (>20%)	1.84	1.06	0.25	0.63	1.78	0.28	0.06	0.06	0.06	0.06	0.06	3.84 (ac.)
C.Urban Flat (0-5%)	9.09	1.83	0.34	2.95	0.06	0.06	0.00	0.18	0.06	0.06	0.06	15.44 (ac.)
C.Urban Moderate (5-10%)	0.00	1.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (ac.)
C.Urban Very Steep (>20%)	1.36	1.21	0.06	0.94	0.06	0.06	0.06	0.11	0.06	0.06	0.06	4.18 (ac.)
D.Urban Flat (0-5%)	0.06	1.07	0.06	1.23	1.91	0.06	0.21	0.06	0.06	0.42	0.63	5.89 (ac.)
D.Urban Very Steep (>20%)	0.06	0.06	0.06	0.79	0.23	0.06	0.06	0.06	0.06	0.06	0.06	1.14 (ac.)
Roads Flat (0-5%)	4.46	3.16	0.46	3.06	1.64	0.27	0.38	0.27	0.06	0.06	0.69	23.93 (ac.)
Roads Moderate (5-10%)	1.79	0.06	0.06	0.06	0.06	0.06	0.27	0.06	0.06	0.06	0.06	3.96 (ac.)
Dwy Flat (0-5%)	2.07	0.07	0.23	1.33	2.31	0.27	0.06	0.06	0.06	0.06	0.06	6.46 (ac.)
Sidewalk Flat (0-5%)	0.70	0.83	0.23	0.91	1.27	0.26	0.67	0.06	0.06	0.27	0.27	4.22 (ac.)
Sidewalk Moderate (5-10%)	0.46	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.57 (ac.)
Parking Lots Flat (0-5%)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.35 (ac.)
Roof Area	5.74	0.06	0.23	2.84	0.55	0.83	5.22	0.48	0.06	0.06	0.06	26.06 (ac.)
B-Shrubs (>20%)	0.06	0.06	0.06	0.06	0.91	0.06	0.06	0.06	0.06	0.06	0.06	3.31 (ac.)
B.Forest (>20%)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (ac.)
Total Basin Area (ac.)	17.82	20.48	2.43	14.24	10.82	4.13	8.16	1.42	1.44	1.28	2.31	141.06 (ac.)
Drains to LID/BMP Type	Detention Pond (BMP 1)	Detention Pond (BMP 2)	Bioinvention (BMP 3)	Detention Pond (BMP 4)	Detention Pond (BMP 5)	Bioinvention (BMP6)	Bioinvention (BMP 7)	Bioinvention (BMP8)	Biowaale 2 Self-treated	Biowaale 1 Self-treated	Biowaale 3	N/A
Minimum LID/BMP Area (sq.ft.)	16,963	36,874	7,196	28,247	67,713	10,244	4,488	3,877	N/A	N/A	N/A	315,062 (Sq. Ft.)
Proposed LID/BMP Area (sq.ft.)	46,190	62,706	8,308	27,500	71,086	10,300	7,806	4,858	N/A	N/A	N/A	270,560 (Sq. Ft.)
Minimum Volume 1 (cu. Ft.)	139,906	156,436	6,460	118,842	301,782	6,373	3,734	3,231	N/A	N/A	N/A	799,575 (Cu. Ft.)
Minimum Volume 2 (cu. Ft.)	N/A	N/A	4,153	N/A	N/A	N/A	114	2,096	N/A	N/A	N/A	6,363 (Cu. Ft.)
Minimum Volume (total)	139,906	156,436	10,613	118,842	301,782	6,373	3,848	5,326	N/A	N/A	N/A	801,967 (Cu. Ft.)
Proposed Volume (cu. Ft.)	208,150	144,400	8,590	155,200	304,300	12,475	15,200	8,198	N/A	N/A	N/A	1,257,465 (Cu. Ft.)
Proposed Volume 2 (cu. Ft.)	N/A	N/A	3,033	N/A	N/A	1,798	3,425	2,198	N/A	N/A	N/A	12,258 (Cu. Ft.)
Proposed Volume Total	208,150	154,400	11,623	155,200	304,300	14,175	13,625	1,298	N/A	N/A	N/A	1,269,723 (Cu. Ft.)

LEGEND

- PROJECT BOUNDARY
- BASIN/DRAINAGE MANAGEMENT AREAS
- LID/BMP OUTLINE AREAS (BIORETENTION (L.I.D. 3.1.2.4)) (DRY DETENTION (L.I.D. 3.1.2.1)) (VEGETATED SWALES (L.I.D. 3.1.3.))
- STORM DRAIN SYSTEM
- DRAINAGE FLOW TO INFISMPS
- NATURAL DRAINAGE FLOW (REFERENCE)
- PROPOSED CURB/GUTTER (L.I.D. 1.3.3)
- ROADS, DRIVEWAYS, PARKING & SIDEWALKS AREAS
- ROOF AREAS
- A-URBAN LAND TYPE
- SANDSCAPE (L.I.D. 2.2.3)
- B-URBAN LAND TYPE
- SANDSCAPE (L.I.D. 2.2.3)
- C-URBAN LAND TYPE
- SANDSCAPE (L.I.D. 2.2.3)
- D-URBAN LAND TYPE
- SANDSCAPE (L.I.D. 2.2.3)
- A-FOREST LAND TYPE
- A-SHRUBS LAND TYPE
- A-GRASS LAND TYPE
- B-FOREST LAND TYPE
- B-SHRUBS LAND TYPE
- B-GRASS LAND TYPE
- C-FOREST LAND TYPE
- C-SHRUBS LAND TYPE
- D-FOREST LAND TYPE
- D-SHRUBS LAND TYPE
- D-GRASS LAND TYPE



POST-PROJECT LAND USE AREA BREAKDOWN (SELF-TREATED)

Subbasin No.	Basin 11 (ac.)	Basin 12 (ac.)	Basin 13 (ac.)	Basin 14 (ac.)	Basin 16 (ac.)	Basin 17 (ac.)	Total Land Use Area (ac.)
A-Forest (0-5%)	0.00	0.00	0.00	0.00	0.11	0.00	0.11
A-Forest (5-10%)	0.00	0.00	0.00	0.00	0.01	0.00	0.01
A-Forest (10-20%)	0.00	0.00	0.00	0.00	0.05	0.00	0.05
A-Forest (>20%)	0.00	0.00	0.00	0.00	2.41	0.00	2.41
A-Shrubs (0-5%)	0.00	0.00	0.00	0.00	0.15	0.00	0.15
A-Shrubs (5-10%)	0.00	0.00	0.00	0.00	0.14	0.00	0.14
A-Shrubs (10-20%)	0.00	0.00	0.00	0.00	1.45	0.00	1.45
A-Shrubs (>20%)	0.00	0.00	0.00	0.00	13.98	0.00	13.98
A-Grass (0-5%)	0.00	0.00	0.00	0.00	0.11	0.61	0.72
B-Forest (0-5%)	0.00	0.08	0.00	0.00	0	0.00	0.08
B-Forest (5-10%)	0.00	0.00	0.01	0.00	0	0.00	0.01
B-Forest (10-20%)	0.00	0.00	0.01	0.00	0	0.00	0.01
B-Forest (>20%)	0.00	0.00	1.48	0.00	0.11	0.00	1.61
B-Grass (0-5%)	0.00	0.00	0.00	0.00	0	0.00	0
B-Grass (5-10%)	0.00	0.00	0.00	0.00	0	0.35	0.35
B-Grass (10-20%)	0.00	0.00	0.00	0.00	0	0.34	0.34
B-Grass (>20%)	0.00	0.00	0.00	0.00	0	0.35	0.35
B-Shrubs (0-5%)	0.04	0.21	0.21	0.00	14.1	0.00	14.46
B-Shrubs (5-10%)	0.23	1.41	0.00	0.00	8.85	0.00	10.49
B-Shrubs (10-20%)	1.41	5.77	0.27	0.00	27.2	1.43	36.28
B-Shrubs (>20%)	5.77	4.14	1.53	0.00	82.68	0.00	96.14
C-Forest (0-5%)	0.00	0.00	0.00	0.00	17.49	0.00	17.49
C-Forest (5-10%)	0.00	0.00	0.00	0.00	3.02	0.00	3.02
C-Forest (10-20%)	0.00	0.00	0.01	0.00	28.56	0.00	28.57
C-Forest (>20%)	0.00	0.68	0.38	0.00	46.4	0.00	47.31
C-Shrubs (0-5%)	0.03	1.23	0.00	0.00	47.64	1.96	50.86
C-Shrubs (5-10%)	0.08	10.44	0.00	0.00	128.81	0.00	139.34
C-Shrubs (10-20%)	2.19	34.46	0.00	0.00	481.29	0.00	517.87
C-Shrubs (>20%)	7.68	325.79	1.32	0.00	2623.92	0.00	2958.70
C-Grass (0-5%)	0.00	0.00	0.00	0.00	0.04	0.00	0.04
C-Grass (5-10%)	0.00	0.00	0.00	0.00	0.04	0.00	0.04
C-Grass (10-20%)	0.00	0.15	0.00	0.14	0	0.00	0.29
D-Urban (0-5%)	0.00	0.06	0.06	0.06	0	0.00	0.13
D-Urban (5-10%)	0.01	0.01	0.06	0.06	0	0.00	0.14
D-Urban (10-20%)	0.65	1.64	1.26	0.18	0	0.00	3.74
D-Urban (>20%)	0.00	3.36	0.01	0.06	0	0.00	3.37
C-Urban (0-5%)	0.00	0.06	0.06	0.03	0	0.00	0.06
C-Urban (5-10%)	0.00	0.11	0.06	0.06	0	0.00	0.11
C-Urban (10-20%)	0.78	0.86	0.17	0.06	0	0.00	2.85
C-Urban (>20%)	0.00	0.06	0.06	0.06	0.04	0.00	0.24
D-Urban (0-5%)	0.06	0.06	0.06	0.00	0.01	0.00	0.21
D-Urban (5-10%)	0.06	0.06	0.06	0.00	0.05	0.00	0.23
D-Urban (10-20%)	0.06	0.06	0.06	0.06	1.63	0.06	1.83
D-Urban (>20%)	0.06	0.06	0.06	0.03	0	0.06	0.23
Total Basin Area (ac.)	14.18	386.09	6.15	0.56	3564.51	2.08	3973.54
Drains To/through	Biowaale	Biowaale	Biowaale	Biowaale	Gomez Creek	Biowaale 4	

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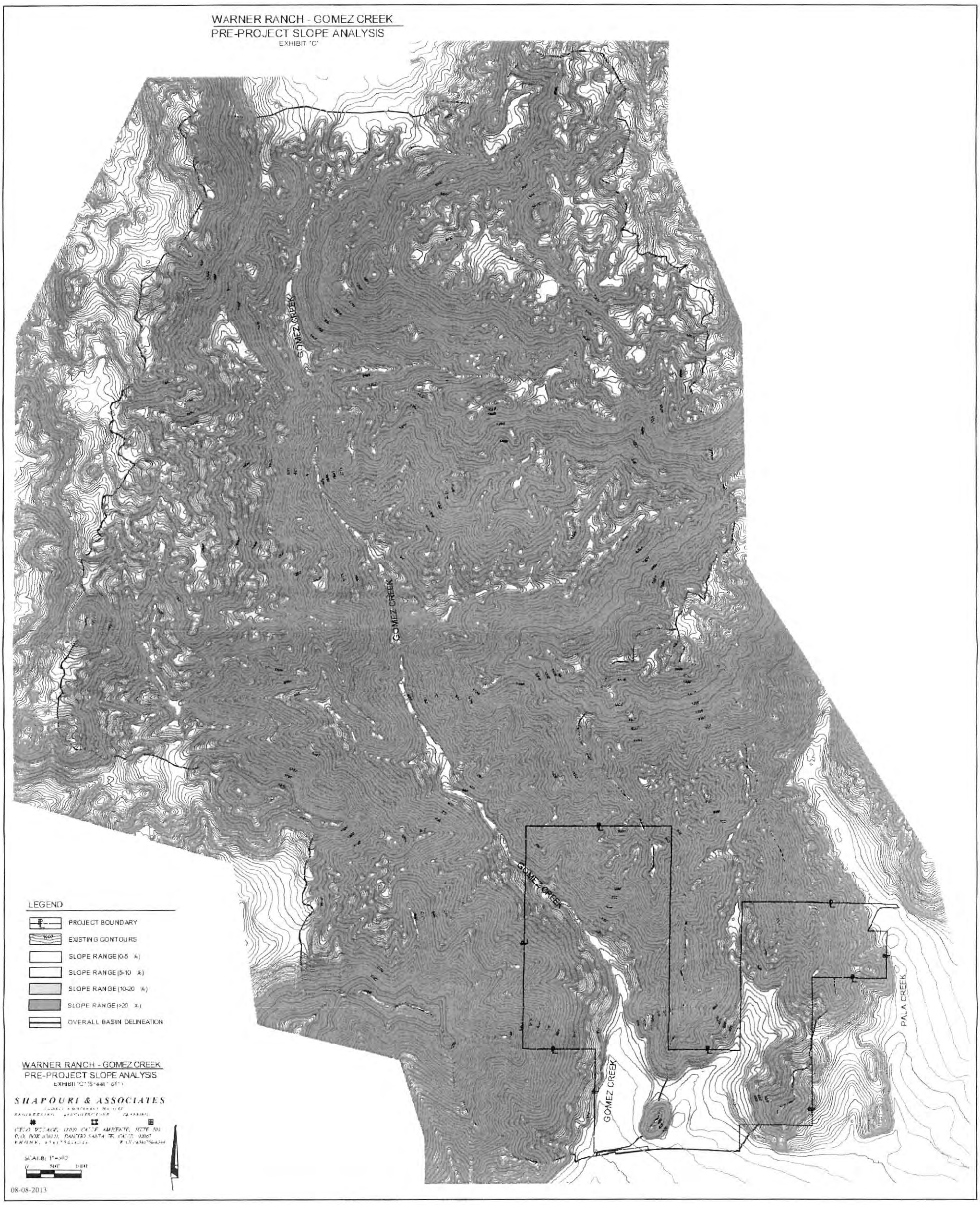
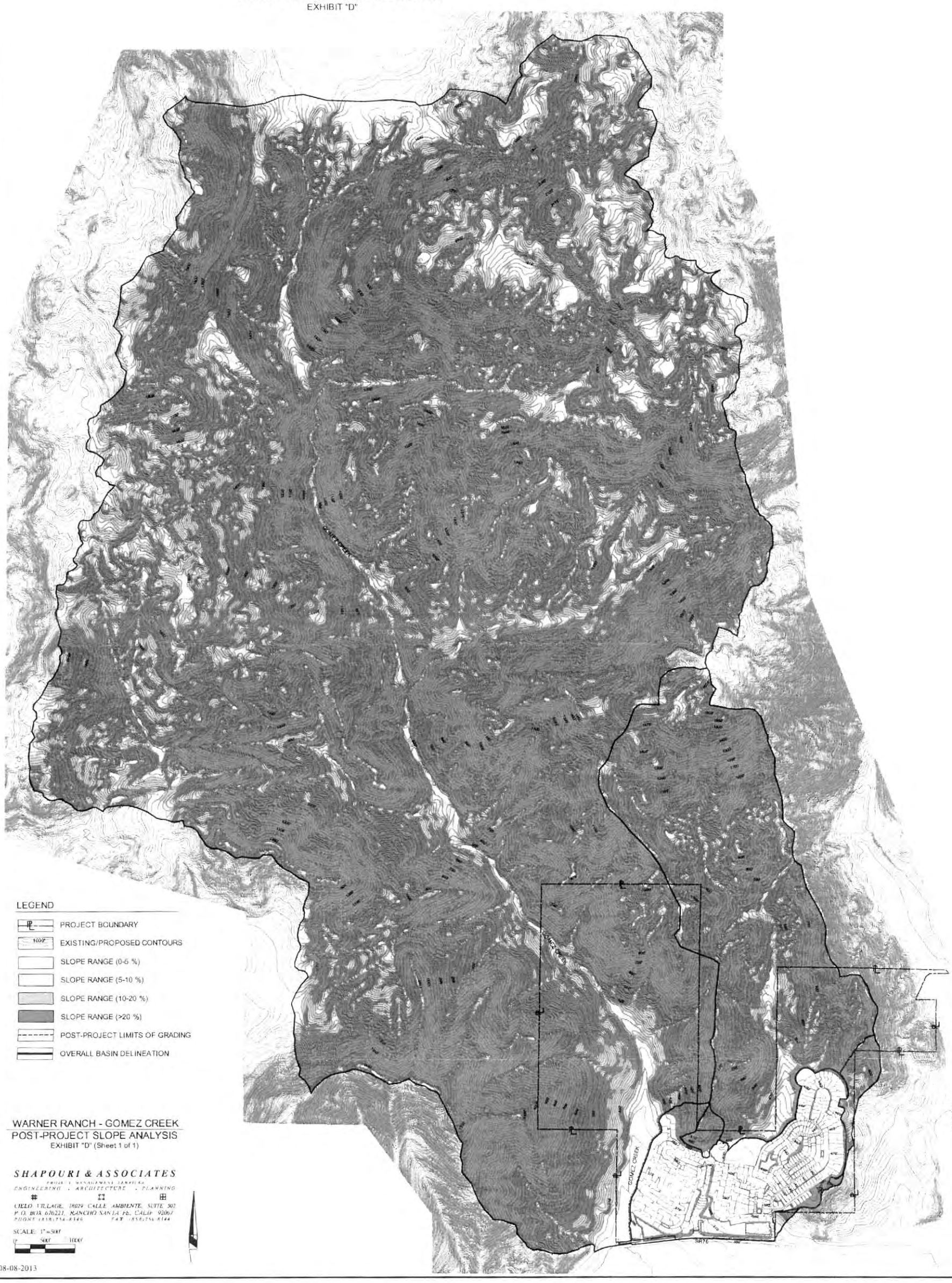
SCALE: 1"=100'
0 100 200

08-08-2013

WARNER RANCH (GOMEZ CREEK)
DRAINAGE MANAGEMENT AREA MAP
EXHIBIT "B" (sheet 2 of 2) SHEET 2 OF 2


WARNER RANCH - GOMEZ CREEK
PRE-PROJECT SLOPE ANALYSIS
EXHIBIT "C"
GOMEZ CREEK
GOMEZ CREEK
GOMEZ CREEK
GOMEZ CREEK
PALA CREEK
LEGEND
PROJECT BOUNDARY
EXISTING CONTOURS
SLOPE RANGE (0-5 %)
SLOPE RANGE (5-10 %)
SLOPE RANGE (10-20 %)
SLOPE RANGE (>20 %)
OVERALL BASIN DELINEATION
WARNER RANCH - GOMEZ CREEK
PRE-PROJECT SLOPE ANALYSIS
SHAPOURI & ASSOCIATES
08-08-2013

WARNER RANCH - GOMEZ CREEK
POST-PROJECT SLOPE ANALYSIS
EXHIBIT "D"



LEGEND

- PROJECT BOUNDARY
- EXISTING/PROPOSED CONTOURS
- SLOPE RANGE (0-5 %)
- SLOPE RANGE (5-10 %)
- SLOPE RANGE (10-20 %)
- SLOPE RANGE (>20 %)
- POST-PROJECT LIMITS OF GRADING
- OVERALL BASIN DELINEATION

WARNER RANCH - GOMEZ CREEK
POST-PROJECT SLOPE ANALYSIS
EXHIBIT "D" (Sheet 1 of 1)

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SCALE: 1"=500'
0 500' 1000'

08-08-2013

SECTION 4

HYDROMODIFICATION ANALYSIS

The hydromodification analysis within this section utilizes the continuous modeling software SDHM, version dated 10/11/2011, developed by Clear Creek Solutions Inc. to model the pre- and post-project condition of each basin. The user inputs the number of acres of appropriate basin land use information. Pervious land use information is in the form of soil, vegetation, and land slope. For example, "A, Grass, Flat" means SCS soil type A, non-turf grassland vegetation, and flat (0-5%) land slope.

There are three basic soil types: A (well infiltrating soils), B (moderate infiltrating soils), and C/D (poor infiltrating soils). There are five basic vegetation categories: forest, native shrub rural vegetation, non-turf grasslands, dirt (no vegetation), and urban landscaped vegetation. Natural vegetation has been divided into forest, shrub, and non-turf grass and refers to the natural (non-planted) vegetation. In contrast, the developed landscape will consist of urban vegetation (lawns, flowers, planted shrubs and trees). Urban vegetation is irrigated in the model. Land slope is divided into flat (0-5%), moderate (5-10%), steep (10-20%), and very steep (>20%) land slopes.

HSPF parameter values in SDHM are adjusted for the different soil, vegetation, and land slope categories. SDHMHSPF soil parameter values take into account the hydrologic effects of land development activities that result from soil compaction when "Urban" is specified. Impervious areas are divided into five types with four different slopes. The five types are: roads, roofs, driveways, sidewalks, and parking. The slope categories are the same as for the pervious land use (flat, moderate, steep, and very steep).

Calculations within the software were performed using historical rain gauge data specific to the project. In this case data was used from the "Fallbrook" gauge. Monthly peak rainfall measurements from the gauge. The basin models were created using the pre- and post-project land use and slope values calculated within Section 3 and Illustrated on Exhibits "A" & "B" (POC1). In the post-project condition, the basins were routed to various hydromodification BMP's. IMP (Integrated Management Practices) facilities are small-scale stormwater control facilities designed to meet hydromodification plan (HMP) flow duration requirements. IMP facilities can be designed in San Diego County, California, using the BMP Sizing Calculator; they can also be designed using the San Diego Hydrology Model (SDHM). SDHM gives the user more control and flexibility than the BMP Sizing calculator in sizing IMP facilities.

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For the purposes of these calculations, the County of San Diego SUSMP "Standard Urban Stormwater Management Plan" and Hydromodification Workgroup, BMP Sizing calculator (Version 3.0) was utilized to determine the approximate Bioretention/Detention storage area needed in each basin, and than adjusted to meet hydromodification flow durations. The reports from each of the BMP's follow in this section and the results are summarized in attachments below.

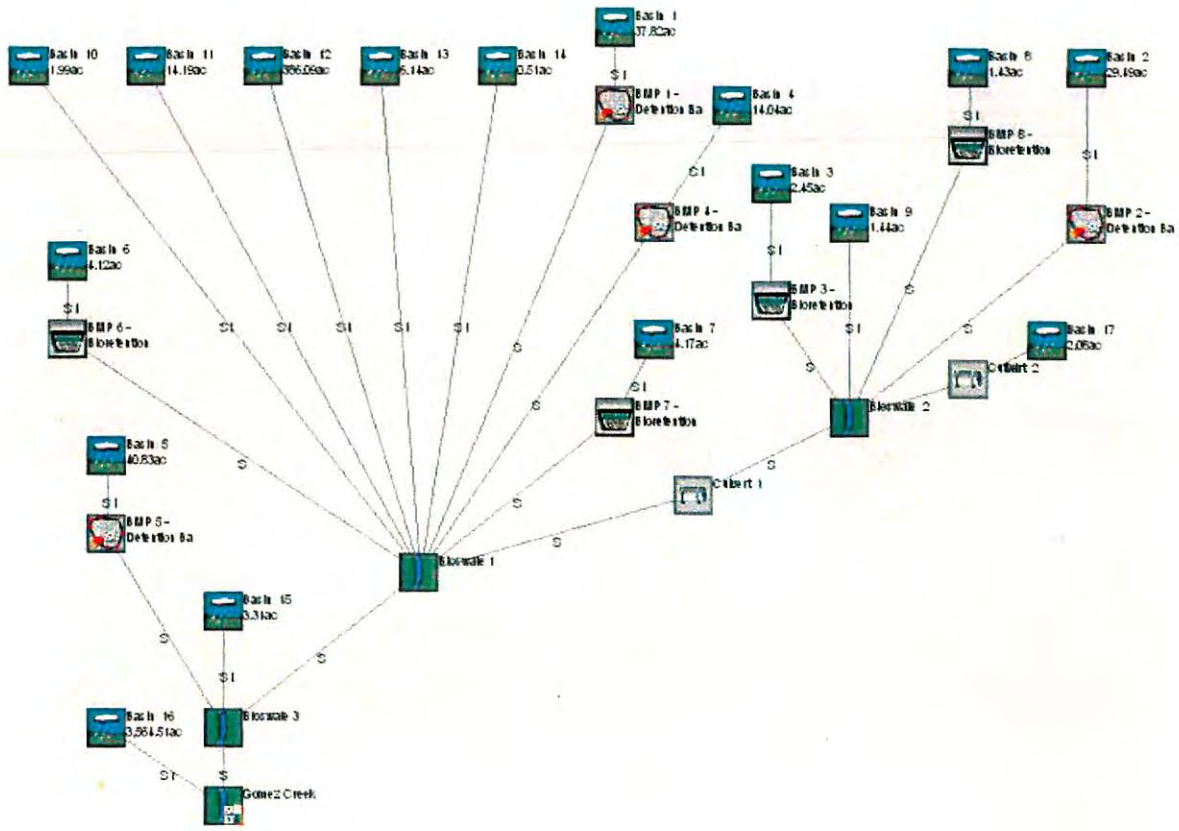


Figure 4-1 – Gomez Creek SDHM Diagram POC1

SDHM2011
PROJECT REPORT

Project Name: WARNER RANCH - (Tract No. 5508 rp14)
Site Address: APN 110-090-01,17,18, 110-021-09,10 110-021-32, 110-021-22
City : SAN DIEGO, CA
Report Date : 3/20/2013
Gage : FALLBROO
Data Start : 10/01/1959
Data End : 09/30/2004
Precip Scale: 1.00
Version : 2011/10/11

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	Acres
A,Forest,Flat(0-5%)	.16
A,Forest,Mod(5-10%)	.02
A,Forest,Stee(10-20)	.01
A,Forest,Very(>20%)	.1
A,Grass,Flat(0-5%)	12.03
A,Grass,Mod(5-10%)	.54
A,Grass,Stee(10-20%)	.12
A,Grass,Very S(>20%)	.19
B,Forest,Flat(0-5%)	4.93
B,Forest,Mod(5-10%)	5.3
B,Forest,Stee(10-20)	1.2
B,Forest,Very(>20%)	5.76
B,Shrub,Flat(0-5%)	.66
B,Shrub,Mod(5-10%)	6.7
B,Shrub,Stee(10-20%)	8.63
B,Shrub,Very S(>20%)	10.4
B,Grass,Flat(0-5%)	6.56
B,Grass,Mod(5-10%)	2.07
B,Grass,Stee(10-20%)	1.63
B,Grass,Very S(>20%)	1.58
C D,Forest,Flat(0-5)	4.12
C D,Forest,Mod(5-10)	6.8
C D,Forest,St(10-20)	2.38
C D,Forest,Very(>20)	3.7
C D,Shrub,Mod(5-10%)	16.64
C D,Shrub,St(10-20%)	43.7
C D,Shrub,Very(>20%)	354.98
C D,Grass,Flat(0-5%)	5.02

C D,Grass,Mod(5-10%)	1.37
C D,Grass,Very(>20%)	.02
C D,Shrub,Flat(0-5%)	.83
C D,Grass,Ste(10-20)	.25

Impervious Land Use	Acres

Element Flows To:

Surface	Interflow	Groundwater
Gomez Creek	Gomez Creek	

Name : Gomez Creek
Bottom Length: 1500.00 ft.
Bottom Width : 47.00 ft.
Manning's n : 0.05
Channel bottom slope 1: 0.007 To 1
Channel Left side slope 0: 2 To 1
Channel right side slope 2: 2 To 1
Infiltration On
Infiltration rate : 0.7
Infiltration saftey factor : 0.5
Discharge Structure
Riser Height: 0 ft.
Riser Diameter: 0 in.

Element Flows To:

Outlet 1	Outlet 2

Channel Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	1.618	0.000	0.000	0.000
0.0778	1.629	0.126	1.661	0.571
0.1556	1.639	0.253	5.278	0.571
0.2333	1.650	0.381	10.38	0.571
0.3111	1.661	0.510	16.78	0.571
0.3889	1.672	0.639	24.35	0.571
0.4667	1.682	0.770	33.02	0.571
0.5444	1.693	0.901	42.73	0.571
0.6222	1.704	1.033	53.42	0.571
0.7000	1.714	1.166	65.05	0.571
0.7778	1.725	1.300	77.59	0.571
0.8556	1.736	1.435	91.02	0.571
0.9333	1.747	1.570	105.3	0.571
1.0111	1.757	1.706	120.4	0.571

1.0889	1.768	1.844	136.3	0.571
1.1667	1.779	1.982	153.1	0.571
1.2444	1.789	2.120	170.6	0.571
1.3222	1.800	2.260	188.9	0.571
1.4000	1.811	2.400	208.0	0.571
1.4778	1.822	2.542	227.8	0.571
1.5556	1.832	2.684	248.3	0.571
1.6333	1.843	2.827	269.6	0.571
1.7111	1.854	2.971	291.6	0.571
1.7889	1.864	3.115	314.3	0.571
1.8667	1.875	3.261	337.7	0.571
1.9444	1.886	3.407	361.8	0.571
2.0222	1.897	3.554	386.7	0.571
2.1000	1.907	3.702	412.2	0.571
2.1778	1.918	3.851	438.3	0.571
2.2556	1.929	4.000	465.2	0.571
2.3333	1.939	4.151	492.7	0.571
2.4111	1.950	4.302	520.9	0.571
2.4889	1.961	4.454	549.7	0.571
2.5667	1.972	4.607	579.3	0.571
2.6444	1.982	4.761	609.4	0.571
2.7222	1.993	4.916	640.3	0.571
2.8000	2.004	5.071	671.7	0.571
2.8778	2.014	5.228	703.8	0.571
2.9556	2.025	5.385	736.6	0.571
3.0333	2.036	5.543	770.0	0.571
3.1111	2.047	5.701	804.0	0.571
3.1889	2.057	5.861	838.7	0.571
3.2667	2.068	6.022	874.0	0.571
3.3444	2.079	6.183	910.0	0.571
3.4222	2.089	6.345	946.6	0.571
3.5000	2.100	6.508	983.8	0.571
3.5778	2.111	6.672	1021.	0.571
3.6556	2.122	6.836	1060.	0.571
3.7333	2.132	7.002	1099.	0.571
3.8111	2.143	7.168	1138.	0.571
3.8889	2.154	7.335	1179.	0.571
3.9667	2.164	7.503	1220.	0.571
4.0444	2.175	7.672	1261.	0.571
4.1222	2.186	7.842	1303.	0.571
4.2000	2.197	8.012	1346.	0.571
4.2778	2.207	8.183	1390.	0.571
4.3556	2.218	8.356	1434.	0.571
4.4333	2.229	8.529	1478.	0.571
4.5111	2.239	8.702	1524.	0.571
4.5889	2.250	8.877	1570.	0.571
4.6667	2.261	9.052	1616.	0.571
4.7444	2.272	9.229	1663.	0.571
4.8222	2.282	9.406	1711.	0.571
4.9000	2.293	9.584	1759.	0.571
4.9778	2.304	9.763	1808.	0.571
5.0556	2.314	9.942	1858.	0.571
5.1333	2.325	10.12	1908.	0.571

5.2111	2.336	10.30	1959.	0.571
5.2889	2.347	10.48	2010.	0.571
5.3667	2.357	10.67	2062.	0.571
5.4444	2.368	10.85	2115.	0.571
5.5222	2.379	11.03	2168.	0.571
5.6000	2.389	11.22	2222.	0.571
5.6778	2.400	11.41	2277.	0.571
5.7556	2.411	11.59	2332.	0.571
5.8333	2.422	11.78	2388.	0.571
5.9111	2.432	11.97	2444.	0.571
5.9889	2.443	12.16	2501.	0.571
6.0667	2.454	12.35	2558.	0.571
6.1444	2.464	12.54	2617.	0.571
6.2222	2.475	12.73	2676.	0.571
6.3000	2.486	12.93	2735.	0.571
6.3778	2.497	13.12	2795.	0.571
6.4556	2.507	13.31	2856.	0.571
6.5333	2.518	13.51	2917.	0.571
6.6111	2.529	13.71	2979.	0.571
6.6889	2.540	13.90	3041.	0.571
6.7667	2.550	14.10	3105.	0.571
6.8444	2.561	14.30	3168.	0.571
6.9222	2.572	14.50	3233.	0.571
7.0000	2.582	14.70	3298.	0.571
7.0778	2.593	14.90	3363.	0.571

Name : Basin 2
Bypass: No

GroundWater: No

Pervious Land Use	Acres
A,Forest,Flat(0-5%)	.07
A,Forest,Stee(10-20)	.04
A,Forest,Very(>20%)	2.45
A,Shrub,Mod(5-10%)	.01
A,Shrub,Stee(10-20%)	1.32
A,Shrub,Very S(>20%)	34.39
A,Grass,Flat(0-5%)	1.58
A,Grass,Mod(5-10%)	.02
B,Forest,Stee(10-20)	.01
B,Forest,Very(>20%)	3.99
B,Shrub,Flat(0-5%)	3.24
B,Shrub,Mod(5-10%)	8.54
B,Shrub,Stee(10-20%)	29
B,Shrub,Very S(>20%)	106.46
B,Grass,Flat(0-5%)	9.4
B,Grass,Mod(5-10%)	2.08
B,Grass,Stee(10-20%)	2.18
B,Grass,Very S(>20%)	3.63
C D,Forest,Flat(0-5)	9.95
C D,Forest,Mod(5-10)	8.96

C D,Forest,St(10-20)	28.97
C D,Forest,Very(>20)	51.67
C D,Shrub,Flat(0-5%)	9.85
C D,Shrub,Mod(5-10%)	111.68
C D,Shrub,St(10-20%)	482.84
C D,Shrub,Very(>20%)	2680.24
C D,Grass,Flat(0-5%)	10.33
C D,Grass,Mod(5-10%)	1.3
C D,Grass,Ste(10-20)	.04

Impervious Land Use	Acres

Element Flows To:

Surface	Interflow	Groundwater
Gomez Creek	Gomez Creek	

MITIGATED LAND USE

Name : Basin 12
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Forest,Flat(0-5%)	.08
B,Shrub,Flat(0-5%)	.31
B,Shrub,Mod(5-10%)	1.41
B,Shrub,Stee(10-20%)	.77
B,Shrub,Very S(>20%)	4.16
B,Urban,Flat(0-5%)	.15
B,Urban,Mod(5-10%)	.06
B,Urban,Stee(10-20%)	.03
B,Urban,Very S(>20%)	1.04
C D,Forest,Very(>20)	.6
C D,Shrub,Flat(0-5%)	3.23
C D,Shrub,Mod(5-10%)	10.44
C D,Shrub,St(10-20%)	34.49
C D,Shrub,Very(>20%)	325.79
C D,Urban,Flat(0-5%)	.36
C D,Urban,Mod(5-10%)	.06
C D,Urban,St(10-20%)	.11
C D,Urban,Very(>20%)	3

Impervious Land Use	Acres

Element Flows To:

Surface	Interflow	Groundwater
Bioswale 1	Bioswale 1	

Name : Basin 13
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Forest,Very(>20%)	1.4
B,Shrub,Very S(>20%)	1.53
B,Forest,Mod(5-10%)	.01
B,Forest,Stee(10-20)	.01
B,Shrub,Flat(0-5%)	.01
B,Shrub,Stee(10-20%)	.07
C D,Forest,St(10-20)	.01
C D,Forest,Very(>20)	.3
C D,Shrub,Very(>20%)	1.32
B,Urban,Stee(10-20%)	.05
B,Urban,Very S(>20%)	1.26
C D,Urban,Flat(0-5%)	.17

Impervious Land Use	Acres

Element Flows To:

Surface	Interflow	Groundwater
Bioswale 1	Bioswale 1	

Name : Basin 14
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Urban,Flat(0-5%)	.14
B,Urban,Mod(5-10%)	.08
B,Urban,Stee(10-20%)	.05
B,Urban,Very S(>20%)	.19
C D,Urban,Mod(5-10%)	.02

Impervious Land Use	Acres
Sidewalks,Flat(0-5%)	0.03

Element Flows To:

Surface	Interflow	Groundwater
Bioswale 1	Bioswale 1	

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Urban,Flat(0-5%)	5.98
B,Urban,Very S(>20%)	1.84
C D,Urban,Flat(0-5%)	9.89
C D,Urban,Very(>20%)	1.96

Impervious Land Use	Acres
Roads,Flat(0-5%)	4.48
Roads,Mod(5-10%)	1.7
Roof Area	8.74
Driveways,Flat(0-5%)	2.07
Sidewalks,Flat(0-5%)	0.7
Sidewalks,Mod(5-10%)	0.46

Element Flows To:

Surface	Interflow	Groundwater
BMP 1 - Detention Ba	BMP 1 - Detention Ba	

Name : Basin 4
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Urban,Flat(0-5%)	1.04
C D,Urban,Flat(0-5%)	3.27
B,Urban,Very S(>20%)	.43
C D,Urban,Very(>20%)	.83

Impervious Land Use	Acres
Roads,Flat(0-5%)	3.39
Roof Area	2.84
Driveways,Flat(0-5%)	1.33
Sidewalks,Flat(0-5%)	0.91

Element Flows To:

Surface	Interflow	Groundwater
BMP 4 - Detention Ba	BMP 4 - Detention Ba	

Name : Basin 3
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Urban,Very(>20%)	.08
B,Urban,Flat(0-5%)	.25
B,Urban,Very S(>20%)	.05
C D,Urban,Flat(0-5%)	.5

Impervious Land Use	Acres
Roads,Flat(0-5%)	0.46
Roof Area	0.85
Driveways,Flat(0-5%)	0.23
Sidewalks,Flat(0-5%)	0.03

Element Flows To:

Surface	Interflow	Groundwater
BMP 3 - Bi Surfaceon	BMP 3 - Bi Surfaceon	

Name : Basin 2
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Urban,Flat(0-5%)	3.43
B,Urban,Very S(>20%)	1.56
C D,Urban,Flat(0-5%)	4.2
C D,Urban,Very(>20%)	1.97
A,Urban,Flat(0-5%)	2.8
A,Urban,Very S(>20%)	.66

Impervious Land Use	Acres
Roads,Flat(0-5%)	3.16
Roads,Mod(5-10%)	2
Roof Area	6.66
Driveways,Flat(0-5%)	2.07
Sidewalks,Flat(0-5%)	0.62
Sidewalks,Mod(5-10%)	0.36

Element Flows To:

Surface	Interflow	Groundwater
BMP 2 - Detention Ba	BMP 2 - Detention Ba	

Name : BMP 1 - Detention Ba
Depth: 5 ft.
Discharge Structure
Riser Height: 3.2 ft.
Riser Diameter: 60 in.
Notch Type : Rectangular
Notch Width : 5.000 ft.
Notch Height: 0.250 ft.
Orifice 1 Diameter: 4.5 in. **Elevation:** 0 ft.
Orifice 2 Diameter: 18 in. **Elevation:** 2.25 ft.

Element Flows To:
Outlet 1 **Outlet 2**
Bioswale 1

Irregular Pond Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	0.591	0.000	0.000	0.000
0.0556	0.597	0.033	0.125	0.030
0.1111	0.602	0.066	0.177	0.030
0.1667	0.608	0.100	0.217	0.030
0.2222	0.613	0.134	0.250	0.030
0.2778	0.618	0.168	0.280	0.030
0.3333	0.624	0.203	0.307	0.030
0.3889	0.629	0.238	0.331	0.030
0.4444	0.635	0.273	0.354	0.030
0.5000	0.640	0.309	0.376	0.030
0.5556	0.646	0.345	0.396	0.030
0.6111	0.652	0.381	0.415	0.030
0.6667	0.657	0.418	0.434	0.030
0.7222	0.663	0.455	0.452	0.030
0.7778	0.668	0.492	0.469	0.030
0.8333	0.674	0.529	0.485	0.030
0.8889	0.680	0.567	0.501	0.030
0.9444	0.685	0.605	0.516	0.030
1.0000	0.691	0.643	0.531	0.030
1.0556	0.697	0.682	0.546	0.030
1.1111	0.702	0.721	0.560	0.030
1.1667	0.708	0.761	0.574	0.030
1.2222	0.714	0.800	0.588	0.030
1.2778	0.719	0.840	0.601	0.030
1.3333	0.725	0.881	0.614	0.030
1.3889	0.731	0.921	0.626	0.030
1.4444	0.736	0.962	0.639	0.030
1.5000	0.742	1.003	0.651	0.030
1.5556	0.748	1.045	0.663	0.030
1.6111	0.754	1.087	0.675	0.030
1.6667	0.759	1.129	0.686	0.030

1.7222	0.765	1.172	0.698	0.030
1.7778	0.771	1.214	0.709	0.030
1.8333	0.777	1.258	0.720	0.030
1.8889	0.783	1.301	0.730	0.030
1.9444	0.788	1.345	0.741	0.030
2.0000	0.794	1.389	0.752	0.030
2.0556	0.800	1.434	0.762	0.030
2.1111	0.806	1.478	0.772	0.030
2.1667	0.812	1.524	0.782	0.030
2.2222	0.818	1.569	0.792	0.030
2.2778	0.824	1.615	2.220	0.030
2.3333	0.830	1.661	3.268	0.030
2.3889	0.835	1.707	3.993	0.030
2.4444	0.841	1.754	4.583	0.030
2.5000	0.847	1.801	5.095	0.030
2.5556	0.853	1.849	5.554	0.030
2.6111	0.859	1.896	5.973	0.030
2.6667	0.865	1.944	6.361	0.030
2.7222	0.871	1.993	6.725	0.030
2.7778	0.877	2.042	7.068	0.030
2.8333	0.883	2.091	7.394	0.030
2.8889	0.889	2.140	7.705	0.030
2.9444	0.895	2.190	8.003	0.030
3.0000	0.901	2.240	8.476	0.030
3.0556	0.907	2.290	9.138	0.030
3.1111	0.913	2.341	9.911	0.030
3.1667	0.919	2.392	10.77	0.030
3.2222	0.925	2.444	11.58	0.030
3.2778	0.931	2.495	12.72	0.030
3.3333	0.938	2.548	14.28	0.030
3.3889	0.944	2.600	16.13	0.030
3.4444	0.950	2.653	18.25	0.030
3.5000	0.956	2.706	20.59	0.030
3.5556	0.962	2.759	23.13	0.030
3.6111	0.968	2.813	25.85	0.030
3.6667	0.974	2.867	28.75	0.030
3.7222	0.981	2.922	31.80	0.030
3.7778	0.987	2.977	35.01	0.030
3.8333	0.993	3.032	38.37	0.030
3.8889	0.999	3.087	41.86	0.030
3.9444	1.005	3.143	45.49	0.030
4.0000	1.012	3.200	49.24	0.030
4.0556	1.018	3.256	53.12	0.030
4.1111	1.024	3.313	57.11	0.030
4.1667	1.031	3.370	61.22	0.030
4.2222	1.037	3.428	65.45	0.030
4.2778	1.043	3.486	69.78	0.030
4.3333	1.050	3.544	74.22	0.030
4.3889	1.056	3.603	78.76	0.030
4.4444	1.062	3.662	83.40	0.030
4.5000	1.069	3.721	88.15	0.030
4.5556	1.075	3.781	92.99	0.030
4.6111	1.081	3.841	97.92	0.030

4.6667	1.088	3.902	102.9	0.030
4.7222	1.094	3.963	108.0	0.030
4.7778	1.101	4.024	113.2	0.030
4.8333	1.107	4.085	118.5	0.030
4.8889	1.114	4.147	123.9	0.030
4.9444	1.120	4.209	129.4	0.030
5.0000	1.127	4.272	134.9	0.030

Name : BMP 4 - Detention Ba
Depth: 5 ft.
Discharge Structure
Riser Height: 3.5 ft.
Riser Diameter: 48 in.
Notch Type : Rectangular
Notch Width : 4.000 ft.
Notch Height: 0.250 ft.
Orifice 1 Diameter: 2.5 in. **Elevation:** 0 ft.
Orifice 2 Diameter: 12 in. **Elevation:** 2 ft.

Element Flows To:
Outlet 1 **Outlet 2**
Bioswale 1

Irregular Pond Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	0.012	0.000	0.000	0.000
0.0556	0.023	0.001	0.038	0.000
0.1111	0.034	0.003	0.054	0.000
0.1667	0.045	0.005	0.067	0.000
0.2222	0.056	0.008	0.077	0.000
0.2778	0.067	0.012	0.086	0.000
0.3333	0.077	0.016	0.094	0.000
0.3889	0.088	0.021	0.102	0.000
0.4444	0.099	0.027	0.109	0.000
0.5000	0.109	0.033	0.116	0.000
0.5556	0.120	0.040	0.122	0.000
0.6111	0.131	0.047	0.128	0.000
0.6667	0.141	0.055	0.134	0.000
0.7222	0.152	0.063	0.139	0.000
0.7778	0.162	0.072	0.144	0.000
0.8333	0.172	0.082	0.149	0.000
0.8889	0.183	0.092	0.154	0.000
0.9444	0.193	0.103	0.159	0.000
1.0000	0.203	0.114	0.164	0.000
1.0556	0.213	0.126	0.168	0.000
1.1111	0.223	0.138	0.173	0.000
1.1667	0.233	0.151	0.177	0.000
1.2222	0.243	0.165	0.181	0.000
1.2778	0.253	0.179	0.185	0.000

1.3333	0.263	0.194	0.189	0.000
1.3889	0.273	0.209	0.193	0.000
1.4444	0.282	0.225	0.197	0.000
1.5000	0.292	0.241	0.201	0.000
1.5556	0.302	0.258	0.204	0.000
1.6111	0.311	0.275	0.208	0.000
1.6667	0.321	0.293	0.211	0.000
1.7222	0.330	0.311	0.215	0.000
1.7778	0.339	0.330	0.218	0.000
1.8333	0.349	0.349	0.222	0.000
1.8889	0.358	0.369	0.225	0.000
1.9444	0.367	0.390	0.228	0.000
2.0000	0.377	0.411	0.232	0.000
2.0556	0.386	0.432	1.126	0.000
2.1111	0.395	0.454	1.499	0.000
2.1667	0.404	0.477	1.785	0.000
2.2222	0.413	0.500	2.027	0.000
2.2778	0.422	0.523	2.241	0.000
2.3333	0.431	0.547	2.434	0.000
2.3889	0.440	0.571	2.612	0.000
2.4444	0.449	0.596	2.778	0.000
2.5000	0.458	0.622	2.933	0.000
2.5556	0.467	0.648	3.081	0.000
2.6111	0.476	0.674	3.221	0.000
2.6667	0.485	0.701	3.356	0.000
2.7222	0.494	0.729	3.484	0.000
2.7778	0.503	0.757	3.609	0.000
2.8333	0.512	0.785	3.728	0.000
2.8889	0.521	0.814	3.844	0.000
2.9444	0.530	0.844	3.957	0.000
3.0000	0.539	0.874	4.066	0.000
3.0556	0.548	0.904	4.172	0.000
3.1111	0.557	0.935	4.276	0.000
3.1667	0.565	0.967	4.377	0.000
3.2222	0.574	0.998	4.475	0.000
3.2778	0.583	1.031	4.634	0.000
3.3333	0.592	1.064	4.987	0.000
3.3889	0.601	1.097	5.448	0.000
3.4444	0.610	1.131	5.992	0.000
3.5000	0.619	1.166	6.604	0.000
3.5556	0.628	1.200	7.201	0.000
3.6111	0.637	1.236	8.220	0.000
3.6667	0.646	1.272	9.512	0.000
3.7222	0.654	1.308	11.02	0.000
3.7778	0.663	1.345	12.73	0.000
3.8333	0.672	1.382	14.60	0.000
3.8889	0.681	1.420	16.63	0.000
3.9444	0.690	1.459	18.80	0.000
4.0000	0.699	1.497	21.11	0.000
4.0556	0.708	1.537	23.54	0.000
4.1111	0.717	1.577	26.10	0.000
4.1667	0.726	1.617	28.77	0.000
4.2222	0.735	1.658	31.55	0.000

4.2778	0.744	1.699	34.43	0.000
4.3333	0.753	1.741	37.41	0.000
4.3889	0.762	1.783	40.50	0.000
4.4444	0.771	1.826	43.67	0.000
4.5000	0.780	1.870	46.94	0.000
4.5556	0.789	1.913	50.30	0.000
4.6111	0.798	1.958	53.75	0.000
4.6667	0.807	2.003	57.28	0.000
4.7222	0.816	2.048	60.90	0.000
4.7778	0.825	2.094	64.59	0.000
4.8333	0.834	2.140	68.36	0.000
4.8889	0.843	2.187	72.22	0.000
4.9444	0.852	2.234	76.14	0.000
5.0000	0.861	2.282	80.14	0.000

Name : BMP 2 - Detention Ba
Depth: 5 ft.
Discharge Structure
Riser Height: 2.5 ft.
Riser Diameter: 60 in.
Notch Type : Rectangular
Notch Width : 5.000 ft.
Notch Height: 0.200 ft.
Orifice 1 Diameter: 4.5 in. **Elevation:** 0 ft.
Orifice 2 Diameter: 8 in. **Elevation:** 0.8 ft.

Element Flows To:
Outlet 1 **Outlet 2**
Bioswale 2

Irregular Pond Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	2.777	0.000	0.000	0.000
0.0556	2.767	0.153	0.125	0.019
0.1111	2.757	0.306	0.177	0.019
0.1667	2.747	0.459	0.217	0.019
0.2222	2.736	0.611	0.250	0.019
0.2778	2.726	0.763	0.280	0.019
0.3333	2.716	0.913	0.307	0.019
0.3889	2.706	1.064	0.331	0.019
0.4444	2.695	1.214	0.354	0.019
0.5000	2.685	1.363	0.376	0.019
0.5556	2.675	1.511	0.396	0.019
0.6111	2.665	1.659	0.415	0.019
0.6667	2.654	1.807	0.434	0.019
0.7222	2.644	1.954	0.452	0.019
0.7778	2.634	2.100	0.469	0.019
0.8333	2.624	2.246	0.792	0.019
0.8889	2.614	2.391	1.002	0.019

0.9444	2.604	2.536	1.155	0.019
1.0000	2.594	2.680	1.283	0.019
1.0556	2.584	2.824	1.396	0.019
1.1111	2.573	2.967	1.498	0.019
1.1667	2.563	3.109	1.592	0.019
1.2222	2.553	3.251	1.680	0.019
1.2778	2.543	3.392	1.763	0.019
1.3333	2.533	3.533	1.841	0.019
1.3889	2.523	3.673	1.916	0.019
1.4444	2.513	3.813	1.988	0.019
1.5000	2.503	3.952	2.057	0.019
1.5556	2.493	4.091	2.124	0.019
1.6111	2.483	4.229	2.188	0.019
1.6667	2.473	4.366	2.251	0.019
1.7222	2.463	4.503	2.312	0.019
1.7778	2.453	4.639	2.371	0.019
1.8333	2.443	4.775	2.428	0.019
1.8889	2.433	4.910	2.485	0.019
1.9444	2.424	5.045	2.539	0.019
2.0000	2.414	5.179	2.593	0.019
2.0556	2.404	5.312	2.646	0.019
2.1111	2.394	5.445	2.697	0.019
2.1667	2.384	5.578	2.747	0.019
2.2222	2.374	5.710	2.797	0.019
2.2778	2.364	5.841	2.846	0.019
2.3333	2.355	5.972	2.995	0.019
2.3889	2.345	6.102	3.382	0.019
2.4444	2.335	6.232	3.901	0.019
2.5000	2.325	6.361	4.521	0.019
2.5556	2.315	6.490	5.204	0.019
2.6111	2.306	6.618	6.414	0.019
2.6667	2.296	6.746	7.967	0.019
2.7222	2.286	6.873	9.798	0.019
2.7778	2.277	6.999	11.86	0.019
2.8333	2.267	7.125	14.15	0.019
2.8889	2.257	7.251	16.63	0.019
2.9444	2.247	7.376	19.29	0.019
3.0000	2.238	7.500	22.12	0.019
3.0556	2.228	7.624	25.10	0.019
3.1111	2.219	7.747	28.24	0.019
3.1667	2.209	7.870	31.52	0.019
3.2222	2.199	7.992	34.94	0.019
3.2778	2.190	8.114	38.50	0.019
3.3333	2.180	8.235	42.17	0.019
3.3889	2.171	8.355	45.98	0.019
3.4444	2.161	8.475	49.90	0.019
3.5000	2.151	8.595	53.94	0.019
3.5556	2.142	8.714	58.09	0.019
3.6111	2.132	8.832	62.35	0.019
3.6667	2.123	8.950	66.71	0.019
3.7222	2.113	9.068	71.18	0.019
3.7778	2.104	9.185	75.75	0.019
3.8333	2.094	9.301	80.42	0.019

3.8889	2.085	9.417	85.19	0.019
3.9444	2.075	9.532	90.06	0.019
4.0000	2.066	9.647	95.01	0.019
4.0556	2.057	9.761	100.0	0.019
4.1111	2.047	9.875	105.2	0.019
4.1667	2.038	9.988	110.4	0.019
4.2222	2.028	10.10	115.7	0.019
4.2778	2.019	10.21	121.1	0.019
4.3333	2.010	10.32	126.6	0.019
4.3889	2.000	10.43	132.2	0.019
4.4444	1.991	10.54	137.8	0.019
4.5000	1.982	10.65	143.5	0.019
4.5556	1.972	10.76	149.3	0.019
4.6111	1.963	10.87	155.2	0.019
4.6667	1.954	10.98	161.2	0.019
4.7222	1.945	11.09	167.2	0.019
4.7778	1.935	11.20	173.4	0.019
4.8333	1.926	11.30	179.5	0.019
4.8889	1.917	11.41	185.8	0.019
4.9444	1.908	11.52	192.2	0.019
5.0000	1.898	11.62	198.6	0.019

Name : Bioswale 2
Bottom Length: 1200.00 ft.
Bottom Width : 3.00 ft.
Manning's n : 0.022
Channel bottom slope 1: 0.01 To 1
Channel Left side slope 0: 3 To 1
Channel right side slope 2: 3 To 1
Infiltration On
Infiltration rate : 0.4
Infiltration saftey factor : 0.5
Discharge Structure
Riser Height: 0 ft.
Riser Diameter: 0 in.

Element Flows To:
Outlet 1 **Outlet 2**
Culvert 1

Channel Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	0.082	0.000	0.000	0.000
0.0356	0.088	0.003	0.078	0.016
0.0711	0.094	0.006	0.253	0.016
0.1067	0.100	0.009	0.504	0.016
0.1422	0.106	0.013	0.825	0.016
0.1778	0.112	0.017	1.213	0.016
0.2133	0.117	0.021	1.667	0.016

0.2489	0.123	0.025	2.187	0.016
0.2844	0.129	0.030	2.773	0.016
0.3200	0.135	0.034	3.426	0.016
0.3556	0.141	0.039	4.146	0.016
0.3911	0.147	0.045	4.934	0.016
0.4267	0.153	0.050	5.791	0.016
0.4622	0.159	0.055	6.719	0.016
0.4978	0.164	0.061	7.719	0.016
0.5333	0.170	0.067	8.792	0.016
0.5689	0.176	0.073	9.940	0.016
0.6044	0.182	0.080	11.16	0.016
0.6400	0.188	0.086	12.46	0.016
0.6756	0.194	0.093	13.84	0.016
0.7111	0.200	0.100	15.30	0.016
0.7467	0.206	0.107	16.84	0.016
0.7822	0.211	0.115	18.46	0.016
0.8178	0.217	0.122	20.17	0.016
0.8533	0.223	0.130	21.96	0.016
0.8889	0.229	0.138	23.84	0.016
0.9244	0.235	0.147	25.80	0.016
0.9600	0.241	0.155	27.86	0.016
0.9956	0.247	0.164	30.01	0.016
1.0311	0.253	0.173	32.25	0.016
1.0667	0.259	0.182	34.58	0.016
1.1022	0.264	0.191	37.01	0.016
1.1378	0.270	0.201	39.54	0.016
1.1733	0.276	0.210	42.16	0.016
1.2089	0.282	0.220	44.88	0.016
1.2444	0.288	0.230	47.71	0.016
1.2800	0.294	0.241	50.63	0.016
1.3156	0.300	0.251	53.66	0.016
1.3511	0.306	0.262	56.79	0.016
1.3867	0.311	0.273	60.03	0.016
1.4222	0.317	0.284	63.37	0.016
1.4578	0.323	0.296	66.83	0.016
1.4933	0.329	0.307	70.39	0.016
1.5289	0.335	0.319	74.06	0.016
1.5644	0.341	0.331	77.85	0.016
1.6000	0.347	0.343	81.75	0.016
1.6356	0.353	0.356	85.77	0.016
1.6711	0.358	0.368	89.90	0.016
1.7067	0.364	0.381	94.14	0.016
1.7422	0.370	0.394	98.51	0.016
1.7778	0.376	0.408	103.0	0.016
1.8133	0.382	0.421	107.6	0.016
1.8489	0.388	0.435	112.3	0.016
1.8844	0.394	0.449	117.1	0.016
1.9200	0.400	0.463	122.1	0.016
1.9556	0.405	0.477	127.2	0.016
1.9911	0.411	0.492	132.5	0.016
2.0267	0.417	0.507	137.8	0.016
2.0622	0.423	0.521	143.3	0.016
2.0978	0.429	0.537	148.9	0.016

2.1333	0.435	0.552	154.7	0.016
2.1689	0.441	0.568	160.6	0.016
2.2044	0.447	0.583	166.6	0.016
2.2400	0.452	0.599	172.7	0.016
2.2756	0.458	0.616	179.0	0.016
2.3111	0.464	0.632	185.5	0.016
2.3467	0.470	0.649	192.0	0.016
2.3822	0.476	0.665	198.7	0.016
2.4178	0.482	0.682	205.6	0.016
2.4533	0.488	0.700	212.6	0.016
2.4889	0.494	0.717	219.7	0.016
2.5244	0.499	0.735	227.0	0.016
2.5600	0.505	0.753	234.4	0.016
2.5956	0.511	0.771	242.0	0.016
2.6311	0.517	0.789	249.7	0.016
2.6667	0.523	0.808	257.6	0.016
2.7022	0.529	0.826	265.6	0.016
2.7378	0.535	0.845	273.8	0.016
2.7733	0.541	0.864	282.1	0.016
2.8089	0.546	0.884	290.6	0.016
2.8444	0.552	0.903	299.2	0.016
2.8800	0.558	0.923	308.0	0.016
2.9156	0.564	0.943	316.9	0.016
2.9511	0.570	0.963	326.0	0.016
2.9867	0.576	0.984	335.3	0.016
3.0222	0.582	1.004	344.7	0.016
3.0578	0.588	1.025	354.3	0.016
3.0933	0.594	1.046	364.0	0.016
3.1289	0.599	1.067	373.9	0.016
3.1644	0.605	1.089	384.0	0.016
3.2000	0.611	1.110	394.3	0.016
3.2356	0.617	1.132	404.7	0.016

Name : Basin 7
Bypass: No

GroundWater: No

Pervious Land Use	Acres
A,Urban,Flat(0-5%)	1.71
A,Urban,Very S(>20%)	.05
B,Urban,Flat(0-5%)	.79
B,Urban,Very S(>20%)	.39
C D,Urban,Flat(0-5%)	.07
C D,Urban,Very(>20%)	.06

Impervious Land Use	Acres
Roads,Flat(0-5%)	0.39
Roads,Mod(5-10%)	0.27
Roof Area	0.02
Sidewalks,Flat(0-5%)	0.07
Parking,Flat(0-5%)	0.35

Element Flows To:

Surface	Interflow	Groundwater
BMP 7 - Bi Surfaceon	BMP 7 - Bi Surfaceon	

Name : Culvert 1
Discharge Structure
Riser Height: 0 ft.
Riser Diameter: 0 in.

Element Flows To:

Outlet 1	Outlet 2
Bioswale 1	

Name : Bioswale 1
Bottom Length: 770.00 ft.
Bottom Width : 12.50 ft.
Manning's n : 0.022
Channel bottom slope 1: 0.004 To 1
Channel Left side slope 0: 3 To 1
Channel right side slope 2: 3 To 1
Infiltration On
Infiltration rate : 0.4
Infiltration saftey factor : 0.5
Discharge Structure
Riser Height: 0 ft.
Riser Diameter: 0 in.

Element Flows To:

Outlet 1	Outlet 2
Bioswale 3	

Channel Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	0.221	0.000	0.000	0.000
0.0356	0.224	0.007	0.206	0.044
0.0711	0.228	0.016	0.656	0.044
0.1067	0.232	0.024	1.293	0.044
0.1422	0.236	0.032	2.094	0.044
0.1778	0.239	0.041	3.046	0.044
0.2133	0.243	0.049	4.139	0.044
0.2489	0.247	0.058	5.366	0.044
0.2844	0.251	0.067	6.723	0.044
0.3200	0.254	0.076	8.204	0.044

0.3556	0.258	0.085	9.808	0.044
0.3911	0.262	0.094	11.53	0.044
0.4267	0.266	0.103	13.37	0.044
0.4622	0.270	0.113	15.32	0.044
0.4978	0.273	0.123	17.39	0.044
0.5333	0.277	0.132	19.57	0.044
0.5689	0.281	0.142	21.86	0.044
0.6044	0.285	0.152	24.27	0.044
0.6400	0.288	0.163	26.78	0.044
0.6756	0.292	0.173	29.40	0.044
0.7111	0.296	0.183	32.13	0.044
0.7467	0.300	0.194	34.97	0.044
0.7822	0.303	0.205	37.92	0.044
0.8178	0.307	0.216	40.97	0.044
0.8533	0.311	0.227	44.14	0.044
0.8889	0.315	0.238	47.41	0.044
0.9244	0.319	0.249	50.79	0.044
0.9600	0.322	0.261	54.27	0.044
0.9956	0.326	0.272	57.86	0.044
1.0311	0.330	0.284	61.57	0.044
1.0667	0.334	0.296	65.38	0.044
1.1022	0.337	0.308	69.29	0.044
1.1378	0.341	0.320	73.32	0.044
1.1733	0.345	0.332	77.45	0.044
1.2089	0.349	0.344	81.70	0.044
1.2444	0.353	0.357	86.05	0.044
1.2800	0.356	0.369	90.51	0.044
1.3156	0.360	0.382	95.08	0.044
1.3511	0.364	0.395	99.76	0.044
1.3867	0.368	0.408	104.5	0.044
1.4222	0.371	0.421	109.4	0.044
1.4578	0.375	0.434	114.4	0.044
1.4933	0.379	0.448	119.6	0.044
1.5289	0.383	0.461	124.8	0.044
1.5644	0.386	0.475	130.1	0.044
1.6000	0.390	0.489	135.6	0.044
1.6356	0.394	0.503	141.2	0.044
1.6711	0.398	0.517	146.9	0.044
1.7067	0.402	0.531	152.7	0.044
1.7422	0.405	0.545	158.6	0.044
1.7778	0.409	0.560	164.6	0.044
1.8133	0.413	0.575	170.8	0.044
1.8489	0.417	0.589	177.0	0.044
1.8844	0.420	0.604	183.4	0.044
1.9200	0.424	0.619	189.9	0.044
1.9556	0.428	0.634	196.5	0.044
1.9911	0.432	0.650	203.3	0.044
2.0267	0.435	0.665	210.1	0.044
2.0622	0.439	0.681	217.1	0.044
2.0978	0.443	0.696	224.2	0.044
2.1333	0.447	0.712	231.4	0.044
2.1689	0.451	0.728	238.7	0.044
2.2044	0.454	0.744	246.2	0.044

2.2400	0.458	0.761	253.7	0.044
2.2756	0.462	0.777	261.4	0.044
2.3111	0.466	0.793	269.3	0.044
2.3467	0.469	0.810	277.2	0.044
2.3822	0.473	0.827	285.3	0.044
2.4178	0.477	0.844	293.5	0.044
2.4533	0.481	0.861	301.8	0.044
2.4889	0.484	0.878	310.2	0.044
2.5244	0.488	0.895	318.8	0.044
2.5600	0.492	0.913	327.5	0.044
2.5956	0.496	0.930	336.3	0.044
2.6311	0.500	0.948	345.2	0.044
2.6667	0.503	0.966	354.3	0.044
2.7022	0.507	0.984	363.5	0.044
2.7378	0.511	1.002	372.8	0.044
2.7733	0.515	1.020	382.3	0.044
2.8089	0.518	1.039	391.9	0.044
2.8444	0.522	1.057	401.6	0.044
2.8800	0.526	1.076	411.5	0.044
2.9156	0.530	1.095	421.5	0.044
2.9511	0.534	1.113	431.6	0.044
2.9867	0.537	1.133	441.8	0.044
3.0222	0.541	1.152	452.2	0.044
3.0578	0.545	1.171	462.7	0.044
3.0933	0.549	1.191	473.4	0.044
3.1289	0.552	1.210	484.2	0.044
3.1644	0.556	1.230	495.1	0.044
3.2000	0.560	1.250	506.2	0.044
3.2356	0.564	1.270	517.4	0.044

Name : Basin 6
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Urban,Flat(0-5%)	1.45
B,Urban,Very S(>20%)	.28

Impervious Land Use	Acres
Roads,Flat(0-5%)	1.07
Roof Area	0.85
Driveways,Flat(0-5%)	0.27
Sidewalks,Flat(0-5%)	0.2

Element Flows To:

Surface	Interflow	Groundwater
BMP 6 - Bi Surfaceon	BMP 6 - Bi Surfaceon	

Name : Basin 5
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Urban,Flat(0-5%)	8.52
B,Urban,Very S(>20%)	1.39
C D,Urban,Flat(0-5%)	3.97
A,Urban,Flat(0-5%)	1.37
A,Urban,Very S(>20%)	.51
C D,Urban,Very(>20%)	.29
B,Shrub,Very S(>20%)	3.91
B,Forest,Very(>20%)	.8

Impervious Land Use	Acres
Roads,Flat(0-5%)	7.64
Roof Area	8.55
Driveways,Flat(0-5%)	2.51
Sidewalks,Flat(0-5%)	1.37

Element Flows To:

Surface	Interflow	Groundwater
BMP 5 - Detention Ba	BMP 5 - Detention Ba	

Name : BMP 5 - Detention Ba
Depth: 5 ft.
Discharge Structure
Riser Height: 3.5 ft.
Riser Diameter: 66 in.
Notch Type : Rectangular
Notch Width : 5.500 ft.
Notch Height: 0.250 ft.
Orifice 1 Diameter: 4 in. Elevation: 0 ft.
Orifice 2 Diameter: 13 in. Elevation: 2 ft.

Element Flows To:

Outlet 1	Outlet 2
Bioswale 3	

Irregular Pond Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	0.825	0.000	0.000	0.000
0.0556	0.834	0.046	0.099	0.000
0.1111	0.843	0.093	0.140	0.000
0.1667	0.853	0.140	0.171	0.000
0.2222	0.862	0.188	0.198	0.000

0.2778	0.871	0.237	0.221	0.000
0.3333	0.880	0.285	0.242	0.000
0.3889	0.889	0.335	0.262	0.000
0.4444	0.899	0.385	0.280	0.000
0.5000	0.908	0.435	0.297	0.000
0.5556	0.917	0.486	0.313	0.000
0.6111	0.926	0.538	0.328	0.000
0.6667	0.935	0.590	0.343	0.000
0.7222	0.944	0.642	0.357	0.000
0.7778	0.953	0.695	0.370	0.000
0.8333	0.963	0.749	0.383	0.000
0.8889	0.972	0.803	0.396	0.000
0.9444	0.981	0.857	0.408	0.000
1.0000	0.990	0.912	0.420	0.000
1.0556	0.999	0.968	0.431	0.000
1.1111	1.008	1.024	0.443	0.000
1.1667	1.017	1.080	0.453	0.000
1.2222	1.026	1.137	0.464	0.000
1.2778	1.036	1.195	0.475	0.000
1.3333	1.045	1.253	0.485	0.000
1.3889	1.054	1.312	0.495	0.000
1.4444	1.063	1.371	0.505	0.000
1.5000	1.072	1.430	0.514	0.000
1.5556	1.081	1.490	0.524	0.000
1.6111	1.090	1.551	0.533	0.000
1.6667	1.099	1.612	0.542	0.000
1.7222	1.108	1.674	0.551	0.000
1.7778	1.117	1.736	0.560	0.000
1.8333	1.126	1.798	0.569	0.000
1.8889	1.136	1.861	0.577	0.000
1.9444	1.145	1.925	0.586	0.000
2.0000	1.154	1.989	0.594	0.000
2.0556	1.163	2.054	1.648	0.000
2.1111	1.172	2.119	2.090	0.000
2.1667	1.181	2.185	2.430	0.000
2.2222	1.190	2.251	2.718	0.000
2.2778	1.199	2.317	2.973	0.000
2.3333	1.208	2.384	3.204	0.000
2.3889	1.217	2.452	3.417	0.000
2.4444	1.226	2.520	3.616	0.000
2.5000	1.235	2.589	3.803	0.000
2.5556	1.244	2.658	3.980	0.000
2.6111	1.253	2.728	4.148	0.000
2.6667	1.262	2.798	4.310	0.000
2.7222	1.271	2.868	4.465	0.000
2.7778	1.280	2.940	4.614	0.000
2.8333	1.289	3.011	4.759	0.000
2.8889	1.298	3.083	4.899	0.000
2.9444	1.307	3.156	5.034	0.000
3.0000	1.316	3.229	5.166	0.000
3.0556	1.325	3.303	5.294	0.000
3.1111	1.334	3.377	5.419	0.000
3.1667	1.343	3.452	5.542	0.000

3.2222	1.352	3.527	5.661	0.000
3.2778	1.361	3.602	5.862	0.000
3.3333	1.370	3.679	6.333	0.000
3.3889	1.379	3.755	6.952	0.000
3.4444	1.388	3.832	7.684	0.000
3.5000	1.397	3.910	8.511	0.000
3.5556	1.406	3.988	9.319	0.000
3.6111	1.415	4.067	10.70	0.000
3.6667	1.424	4.146	12.46	0.000
3.7222	1.433	4.226	14.53	0.000
3.7778	1.442	4.306	16.86	0.000
3.8333	1.451	4.386	19.43	0.000
3.8889	1.460	4.467	22.20	0.000
3.9444	1.468	4.549	25.18	0.000
4.0000	1.477	4.631	28.34	0.000
4.0556	1.486	4.714	31.68	0.000
4.1111	1.494	4.797	35.18	0.000
4.1667	1.503	4.880	38.83	0.000
4.2222	1.512	4.964	42.64	0.000
4.2778	1.521	5.049	46.59	0.000
4.3333	1.530	5.134	50.69	0.000
4.3889	1.539	5.219	54.92	0.000
4.4444	1.548	5.305	59.27	0.000
4.5000	1.558	5.392	63.76	0.000
4.5556	1.567	5.479	68.37	0.000
4.6111	1.576	5.567	73.10	0.000
4.6667	1.586	5.655	77.94	0.000
4.7222	1.595	5.743	82.90	0.000
4.7778	1.605	5.833	87.97	0.000
4.8333	1.614	5.922	93.15	0.000
4.8889	1.623	6.012	98.43	0.000
4.9444	1.633	6.103	103.8	0.000
5.0000	1.642	6.194	109.3	0.000

Name : Bioswale 3
Bottom Length: 350.00 ft.
Bottom Width : 12.50 ft.
Manning's n : 0.022
Channel bottom slope 1: 0.01 To 1
Channel Left side slope 0: 3 To 1
Channel right side slope 2: 3 To 1
Infiltration On
Infiltration rate : 0.4
Infiltration saftey factor : 0.5
Discharge Structure
Riser Height: 0 ft.
Riser Diameter: 0 in.

Element Flows To:
Outlet 1 **Outlet 2**
Gomez Creek

Channel Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	0.100	0.000	0.000	0.000
0.0356	0.102	0.003	0.326	0.020
0.0711	0.103	0.007	1.038	0.020
0.1067	0.105	0.011	2.045	0.020
0.1422	0.107	0.014	3.312	0.020
0.1778	0.109	0.018	4.817	0.020
0.2133	0.110	0.022	6.544	0.020
0.2489	0.112	0.026	8.485	0.020
0.2844	0.114	0.030	10.63	0.020
0.3200	0.115	0.034	12.97	0.020
0.3556	0.117	0.038	15.50	0.020
0.3911	0.119	0.043	18.23	0.020
0.4267	0.121	0.047	21.14	0.020
0.4622	0.122	0.051	24.23	0.020
0.4978	0.124	0.056	27.50	0.020
0.5333	0.126	0.060	30.95	0.020
0.5689	0.127	0.064	34.57	0.020
0.6044	0.129	0.069	38.37	0.020
0.6400	0.131	0.074	42.34	0.020
0.6756	0.133	0.078	46.49	0.020
0.7111	0.134	0.083	50.81	0.020
0.7467	0.136	0.088	55.30	0.020
0.7822	0.138	0.093	59.96	0.020
0.8178	0.139	0.098	64.79	0.020
0.8533	0.141	0.103	69.79	0.020
0.8889	0.143	0.108	74.96	0.020
0.9244	0.145	0.113	80.30	0.020
0.9600	0.146	0.118	85.81	0.020
0.9956	0.148	0.123	91.50	0.020
1.0311	0.150	0.129	97.35	0.020
1.0667	0.151	0.134	103.3	0.020
1.1022	0.153	0.140	109.5	0.020
1.1378	0.155	0.145	115.9	0.020
1.1733	0.157	0.151	122.4	0.020
1.2089	0.158	0.156	129.1	0.020
1.2444	0.160	0.162	136.0	0.020
1.2800	0.162	0.168	143.1	0.020
1.3156	0.163	0.173	150.3	0.020
1.3511	0.165	0.179	157.7	0.020
1.3867	0.167	0.185	165.3	0.020
1.4222	0.169	0.191	173.0	0.020
1.4578	0.170	0.197	181.0	0.020
1.4933	0.172	0.203	189.1	0.020
1.5289	0.174	0.209	197.3	0.020
1.5644	0.175	0.216	205.8	0.020
1.6000	0.177	0.222	214.4	0.020
1.6356	0.179	0.228	223.3	0.020
1.6711	0.181	0.235	232.2	0.020

1.7067	0.182	0.241	241.4	0.020
1.7422	0.184	0.248	250.8	0.020
1.7778	0.186	0.254	260.3	0.020
1.8133	0.187	0.261	270.0	0.020
1.8489	0.189	0.268	279.9	0.020
1.8844	0.191	0.274	290.0	0.020
1.9200	0.193	0.281	300.3	0.020
1.9556	0.194	0.288	310.8	0.020
1.9911	0.196	0.295	321.4	0.020
2.0267	0.198	0.302	332.3	0.020
2.0622	0.199	0.309	343.3	0.020
2.0978	0.201	0.316	354.5	0.020
2.1333	0.203	0.324	365.9	0.020
2.1689	0.205	0.331	377.5	0.020
2.2044	0.206	0.338	389.3	0.020
2.2400	0.208	0.345	401.2	0.020
2.2756	0.210	0.353	413.4	0.020
2.3111	0.211	0.360	425.8	0.020
2.3467	0.213	0.368	438.3	0.020
2.3822	0.215	0.376	451.1	0.020
2.4178	0.217	0.383	464.0	0.020
2.4533	0.218	0.391	477.2	0.020
2.4889	0.220	0.399	490.5	0.020
2.5244	0.222	0.407	504.1	0.020
2.5600	0.223	0.415	517.8	0.020
2.5956	0.225	0.423	531.7	0.020
2.6311	0.227	0.431	545.9	0.020
2.6667	0.229	0.439	560.2	0.020
2.7022	0.230	0.447	574.8	0.020
2.7378	0.232	0.455	589.5	0.020
2.7733	0.234	0.464	604.5	0.020
2.8089	0.235	0.472	619.7	0.020
2.8444	0.237	0.480	635.0	0.020
2.8800	0.239	0.489	650.6	0.020
2.9156	0.241	0.497	666.4	0.020
2.9511	0.242	0.506	682.4	0.020
2.9867	0.244	0.515	698.6	0.020
3.0222	0.246	0.523	715.0	0.020
3.0578	0.247	0.532	731.7	0.020
3.0933	0.249	0.541	748.5	0.020
3.1289	0.251	0.550	765.6	0.020
3.1644	0.253	0.559	782.8	0.020
3.2000	0.254	0.568	800.3	0.020
3.2356	0.256	0.577	818.0	0.020

Name : Basin 15
Bypass: No

GroundWater: No

Pervious Land Use	Acres
A,Urban,Flat(0-5%)	.62

C D,Urban,Flat(0-5%) .03

Impervious Land Use	Acres
Roads,Flat(0-5%)	2.59
Sidewalks,Flat(0-5%)	0.07

Element Flows To:

Surface	Interflow	Groundwater
Bioswale 3	Bioswale 3	

Name : Gomez Creek
Bottom Length: 1500.00 ft.
Bottom Width : 47.00 ft.
Manning's n : 0.05
Channel bottom slope 1: 0.007 To 1
Channel Left side slope 0: 2 To 1
Channel right side slope 2: 2 To 1
Infiltration On
Infiltration rate : 0.7
Infiltration saftey factor : 0.5
Discharge Structure
Riser Height: 0 ft.
Riser Diameter: 0 in.

Element Flows To:

Outlet 1	Outlet 2

Channel Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	1.618	0.000	0.000	0.000
0.0778	1.629	0.126	1.661	0.571
0.1556	1.639	0.253	5.278	0.571
0.2333	1.650	0.381	10.38	0.571
0.3111	1.661	0.510	16.78	0.571
0.3889	1.672	0.639	24.35	0.571
0.4667	1.682	0.770	33.02	0.571
0.5444	1.693	0.901	42.73	0.571
0.6222	1.704	1.033	53.42	0.571
0.7000	1.714	1.166	65.05	0.571
0.7778	1.725	1.300	77.59	0.571
0.8556	1.736	1.435	91.02	0.571
0.9333	1.747	1.570	105.3	0.571
1.0111	1.757	1.706	120.4	0.571
1.0889	1.768	1.844	136.3	0.571
1.1667	1.779	1.982	153.1	0.571

1.2444	1.789	2.120	170.6	0.571
1.3222	1.800	2.260	188.9	0.571
1.4000	1.811	2.400	208.0	0.571
1.4778	1.822	2.542	227.8	0.571
1.5556	1.832	2.684	248.3	0.571
1.6333	1.843	2.827	269.6	0.571
1.7111	1.854	2.971	291.6	0.571
1.7889	1.864	3.115	314.3	0.571
1.8667	1.875	3.261	337.7	0.571
1.9444	1.886	3.407	361.8	0.571
2.0222	1.897	3.554	386.7	0.571
2.1000	1.907	3.702	412.2	0.571
2.1778	1.918	3.851	438.3	0.571
2.2556	1.929	4.000	465.2	0.571
2.3333	1.939	4.151	492.7	0.571
2.4111	1.950	4.302	520.9	0.571
2.4889	1.961	4.454	549.7	0.571
2.5667	1.972	4.607	579.3	0.571
2.6444	1.982	4.761	609.4	0.571
2.7222	1.993	4.916	640.3	0.571
2.8000	2.004	5.071	671.7	0.571
2.8778	2.014	5.228	703.8	0.571
2.9556	2.025	5.385	736.6	0.571
3.0333	2.036	5.543	770.0	0.571
3.1111	2.047	5.701	804.0	0.571
3.1889	2.057	5.861	838.7	0.571
3.2667	2.068	6.022	874.0	0.571
3.3444	2.079	6.183	910.0	0.571
3.4222	2.089	6.345	946.6	0.571
3.5000	2.100	6.508	983.8	0.571
3.5778	2.111	6.672	1021.	0.571
3.6556	2.122	6.836	1060.	0.571
3.7333	2.132	7.002	1099.	0.571
3.8111	2.143	7.168	1138.	0.571
3.8889	2.154	7.335	1179.	0.571
3.9667	2.164	7.503	1220.	0.571
4.0444	2.175	7.672	1261.	0.571
4.1222	2.186	7.842	1303.	0.571
4.2000	2.197	8.012	1346.	0.571
4.2778	2.207	8.183	1390.	0.571
4.3556	2.218	8.356	1434.	0.571
4.4333	2.229	8.529	1478.	0.571
4.5111	2.239	8.702	1524.	0.571
4.5889	2.250	8.877	1570.	0.571
4.6667	2.261	9.052	1616.	0.571
4.7444	2.272	9.229	1663.	0.571
4.8222	2.282	9.406	1711.	0.571
4.9000	2.293	9.584	1759.	0.571
4.9778	2.304	9.763	1808.	0.571
5.0556	2.314	9.942	1858.	0.571
5.1333	2.325	10.12	1908.	0.571
5.2111	2.336	10.30	1959.	0.571
5.2889	2.347	10.48	2010.	0.571

5.3667	2.357	10.67	2062.	0.571
5.4444	2.368	10.85	2115.	0.571
5.5222	2.379	11.03	2168.	0.571
5.6000	2.389	11.22	2222.	0.571
5.6778	2.400	11.41	2277.	0.571
5.7556	2.411	11.59	2332.	0.571
5.8333	2.422	11.78	2388.	0.571
5.9111	2.432	11.97	2444.	0.571
5.9889	2.443	12.16	2501.	0.571
6.0667	2.454	12.35	2558.	0.571
6.1444	2.464	12.54	2617.	0.571
6.2222	2.475	12.73	2676.	0.571
6.3000	2.486	12.93	2735.	0.571
6.3778	2.497	13.12	2795.	0.571
6.4556	2.507	13.31	2856.	0.571
6.5333	2.518	13.51	2917.	0.571
6.6111	2.529	13.71	2979.	0.571
6.6889	2.540	13.90	3041.	0.571
6.7667	2.550	14.10	3105.	0.571
6.8444	2.561	14.30	3168.	0.571
6.9222	2.572	14.50	3233.	0.571
7.0000	2.582	14.70	3298.	0.571
7.0778	2.593	14.90	3363.	0.571

Name : Basin 16
Bypass: No

GroundWater: No

Pervious Land Use	Acres
A,Forest,Flat(0-5%)	.13
A,Forest,Mod(5-10%)	.01
A,Forest,Stee(10-20)	.05
A,Forest,Very(>20%)	2.41
A,Grass,Flat(0-5%)	.11
A,Shrub,Flat(0-5%)	.15
A,Shrub,Mod(5-10%)	.14
A,Shrub,Stee(10-20%)	1.45
A,Shrub,Very S(>20%)	33.98
B,Forest,Very(>20%)	.11
B,Shrub,Flat(0-5%)	14.1
B,Shrub,Mod(5-10%)	8.85
B,Shrub,Stee(10-20%)	27.2
B,Shrub,Very S(>20%)	92.68
C D,Forest,Flat(0-5)	17.49
C D,Forest,Mod(5-10)	9.02
C D,Forest,St(10-20)	26.56
C D,Forest,Very(>20)	46.4
C D,Shrub,Flat(0-5%)	47.64
C D,Shrub,Mod(5-10%)	128.81
C D,Shrub,St(10-20%)	481.29
C D,Shrub,Very(>20%)	2623.92

C D,Urban,Flat(0-5%)	.04
C D,Urban,Mod(5-10%)	.01
C D,Urban,St(10-20%)	.05
C D,Urban,Very(>20%)	1.03
C D,Grass,Mod(5-10%)	.04
C D,Grass,Flat(0-5%)	.84

Impervious Land Use	Acres

Element Flows To:

Surface	Interflow	Groundwater
Gomez Creek	Gomez Creek	

Name : BMP 7 - Bioretention
Bottom Length: 190.00 ft.
Bottom Width : 25.00 ft.
Trench bottom slope 1: 0.01 To 1
Trench Left side slope 0: 3 To 1
Trench right side slope 2: 3 To 1
Material thickness of first layer : 1.5
Pour Space of material for first layer : 0.39
Material thickness of second layer : 1.5
Pour Space of material for second layer : 0.4
Material thickness of third layer : 0
Pour Space of material for third layer : 0.4
Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 6 in.
Orifice 1 Diameter: 1 in. Elevation: 0 ft.

Element Flows To:

Outlet 1	Outlet 2
Bioswale 1	

Landscape Swale Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
360.00	0.109	0.000	0.000	0.000
360.06	0.110	0.002	0.006	0.000
360.11	0.112	0.004	0.008	0.000
360.17	0.113	0.007	0.010	0.000
360.22	0.114	0.009	0.012	0.000
360.28	0.116	0.012	0.013	0.000
360.33	0.117	0.014	0.015	0.000
360.39	0.119	0.017	0.016	0.000
360.44	0.120	0.019	0.017	0.000
360.50	0.122	0.022	0.018	0.000
360.56	0.123	0.025	0.019	0.000

360.61	0.125	0.027	0.020	0.000
360.67	0.126	0.030	0.021	0.000
360.72	0.128	0.033	0.022	0.000
360.78	0.129	0.036	0.023	0.000
360.83	0.130	0.039	0.024	0.000
360.89	0.132	0.041	0.024	0.000
360.94	0.133	0.044	0.025	0.000
361.00	0.135	0.047	0.026	0.000
361.06	0.136	0.050	0.090	0.000
361.11	0.138	0.053	0.208	0.000
361.17	0.139	0.056	0.359	0.000
361.22	0.141	0.059	0.539	0.000
361.28	0.142	0.062	0.742	0.000
361.33	0.143	0.065	0.967	0.000
361.39	0.145	0.068	1.211	0.000
361.44	0.146	0.072	1.474	0.000
361.50	0.148	0.075	1.753	0.000
361.56	0.149	0.078	2.049	0.000
361.61	0.151	0.082	2.359	0.000
361.67	0.152	0.085	2.684	0.000
361.72	0.154	0.088	3.023	0.000
361.78	0.155	0.092	3.375	0.000
361.83	0.157	0.095	3.739	0.000
361.89	0.158	0.099	4.117	0.000
361.94	0.159	0.102	4.506	0.000
362.00	0.161	0.106	4.906	0.000
362.06	0.162	0.109	5.318	0.000
362.11	0.164	0.113	5.741	0.000
362.17	0.165	0.117	6.174	0.000
362.22	0.167	0.120	6.618	0.000
362.28	0.168	0.124	7.073	0.000
362.33	0.170	0.128	7.537	0.000
362.39	0.171	0.132	8.011	0.000
362.44	0.173	0.136	8.494	0.000
362.50	0.174	0.139	8.987	0.000
362.56	0.175	0.143	9.489	0.000
362.61	0.177	0.147	10.00	0.000
362.67	0.178	0.151	10.52	0.000
362.72	0.180	0.155	11.04	0.000
362.78	0.181	0.159	11.58	0.000
362.83	0.183	0.163	12.13	0.000
362.89	0.184	0.167	12.68	0.000
362.94	0.186	0.172	13.24	0.000
363.00	0.187	0.176	13.81	0.000
363.06	0.189	0.186	14.39	0.000
363.11	0.190	0.197	14.98	0.000
363.17	0.192	0.207	15.57	0.000
363.22	0.193	0.218	16.17	0.000
363.28	0.194	0.229	16.78	0.000
363.33	0.196	0.240	17.40	0.000
363.39	0.197	0.251	18.02	0.000
363.44	0.199	0.262	18.65	0.000
363.50	0.200	0.273	19.29	0.000

363.56	0.202	0.284	19.94	0.000
363.61	0.203	0.295	20.59	0.000
363.67	0.205	0.307	21.25	0.000
363.72	0.206	0.318	21.92	0.000
363.78	0.208	0.329	22.59	0.000
363.83	0.209	0.341	23.27	0.000
363.89	0.210	0.353	23.96	0.000
363.94	0.212	0.365	24.65	0.000
364.00	0.213	0.376	25.35	0.000
364.06	0.215	0.388	26.06	0.000
364.11	0.216	0.400	26.77	0.000
364.17	0.218	0.412	27.49	0.000
364.22	0.219	0.425	28.21	0.000
364.28	0.221	0.437	28.95	0.000
364.33	0.222	0.449	29.69	0.000
364.39	0.224	0.461	30.43	0.000
364.44	0.225	0.474	31.18	0.000
364.50	0.226	0.487	31.94	0.000
364.56	0.228	0.499	32.70	0.000
364.61	0.229	0.512	33.47	0.000
364.67	0.231	0.525	34.24	0.000
364.72	0.232	0.538	35.02	0.000
364.78	0.234	0.551	35.81	0.000
364.83	0.235	0.564	36.60	0.000
364.89	0.237	0.577	37.40	0.000
364.94	0.238	0.590	38.20	0.000
365.00	0.240	0.603	39.01	0.000
365.06	0.241	0.617	39.82	0.000

Name : BMP 6 - Bioretention
Bottom Length: 400.00 ft.
Bottom Width : 20.00 ft.
Trench bottom slope 1: 0.01 To 1
Trench Left side slope 0: 3 To 1
Trench right side slope 2: 3 To 1
Material thickness of first layer : 1.5
Pour Space of material for first layer : 0.39
Material thickness of second layer : 1.5
Pour Space of material for second layer : 0.4
Material thickness of third layer : 0
Pour Space of material for third layer : 0.4
Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 6 in.
Orifice 1 Diameter: 2 in. **Elevation:** 0 ft.

Element Flows To:
Outlet 1 **Outlet 2**
Bioswale 1

Landscape Swale Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
370.00	0.183	0.000	0.000	0.000
370.06	0.186	0.004	0.024	0.000
370.11	0.189	0.008	0.035	0.000
370.17	0.192	0.012	0.042	0.000
370.22	0.195	0.016	0.049	0.000
370.28	0.199	0.020	0.055	0.000
370.33	0.202	0.025	0.060	0.000
370.39	0.205	0.029	0.065	0.000
370.44	0.208	0.034	0.070	0.000
370.50	0.211	0.038	0.074	0.000
370.56	0.214	0.043	0.078	0.000
370.61	0.217	0.047	0.082	0.000
370.67	0.220	0.052	0.085	0.000
370.72	0.223	0.057	0.089	0.000
370.78	0.226	0.062	0.092	0.000
370.83	0.229	0.067	0.095	0.000
370.89	0.232	0.072	0.099	0.000
370.94	0.235	0.077	0.102	0.000
371.00	0.238	0.082	0.105	0.000
371.06	0.241	0.087	0.171	0.000
371.11	0.244	0.092	0.291	0.000
371.17	0.247	0.098	0.444	0.000
371.22	0.251	0.103	0.626	0.000
371.28	0.254	0.109	0.831	0.000
371.33	0.257	0.114	1.058	0.000
371.39	0.260	0.120	1.304	0.000
371.44	0.263	0.125	1.569	0.000
371.50	0.266	0.131	1.850	0.000
371.56	0.269	0.137	2.147	0.000
371.61	0.272	0.143	2.459	0.000
371.67	0.275	0.149	2.786	0.000
371.72	0.278	0.156	3.126	0.000
371.78	0.281	0.162	3.480	0.000
371.83	0.284	0.168	3.846	0.000
371.89	0.287	0.174	4.225	0.000
371.94	0.290	0.181	4.615	0.000
372.00	0.293	0.187	5.018	0.000
372.06	0.296	0.194	5.431	0.000
372.11	0.300	0.201	5.855	0.000
372.17	0.303	0.207	6.290	0.000
372.22	0.306	0.214	6.736	0.000
372.28	0.309	0.221	7.192	0.000
372.33	0.312	0.228	7.657	0.000
372.39	0.315	0.235	8.132	0.000
372.44	0.318	0.242	8.617	0.000
372.50	0.321	0.249	9.112	0.000
372.56	0.324	0.256	9.615	0.000
372.61	0.327	0.263	10.12	0.000

372.67	0.330	0.271	10.64	0.000
372.72	0.333	0.278	11.17	0.000
372.78	0.336	0.285	11.71	0.000
372.83	0.339	0.293	12.26	0.000
372.89	0.342	0.301	12.82	0.000
372.94	0.345	0.308	13.38	0.000
373.00	0.349	0.316	13.95	0.000
373.06	0.352	0.335	14.53	0.000
373.11	0.355	0.355	15.12	0.000
373.17	0.358	0.375	15.71	0.000
373.22	0.361	0.395	16.32	0.000
373.28	0.364	0.415	16.93	0.000
373.33	0.367	0.435	17.54	0.000
373.39	0.370	0.456	18.17	0.000
373.44	0.373	0.476	18.80	0.000
373.50	0.376	0.497	19.44	0.000
373.56	0.379	0.518	20.09	0.000
373.61	0.382	0.539	20.74	0.000
373.67	0.385	0.561	21.40	0.000
373.72	0.388	0.582	22.07	0.000
373.78	0.391	0.604	22.74	0.000
373.83	0.394	0.626	23.42	0.000
373.89	0.398	0.648	24.11	0.000
373.94	0.401	0.670	24.81	0.000
374.00	0.404	0.692	25.51	0.000
374.06	0.407	0.715	26.22	0.000
374.11	0.410	0.738	26.93	0.000
374.17	0.413	0.761	27.65	0.000
374.22	0.416	0.784	28.38	0.000
374.28	0.419	0.807	29.11	0.000
374.33	0.422	0.830	29.85	0.000
374.39	0.425	0.854	30.59	0.000
374.44	0.428	0.877	31.35	0.000
374.50	0.431	0.901	32.10	0.000
374.56	0.434	0.925	32.87	0.000
374.61	0.437	0.950	33.64	0.000
374.67	0.440	0.974	34.41	0.000
374.72	0.443	0.999	35.19	0.000
374.78	0.446	1.023	35.98	0.000
374.83	0.450	1.048	36.77	0.000
374.89	0.453	1.073	37.57	0.000
374.94	0.456	1.099	38.38	0.000
375.00	0.459	1.124	39.19	0.000
375.06	0.462	1.150	40.00	0.000

Name : BMP 3 - Bioretention
Bottom Length: 85.00 ft.
Bottom Width : 80.00 ft.
Trench bottom slope 1: 0.01 To 1
Trench Left side slope 0: 3 To 1
Trench right side slope 2: 3 To 1

Material thickness of first layer : 1.5
Pour Space of material for first layer : 0.39
Material thickness of second layer : 1.5
Pour Space of material for second layer : 0.4
Material thickness of third layer : 0
Pour Space of material for third layer : 0.4

Discharge Structure

Riser Height: 1 ft.
Riser Diameter: 6 in.
Orifice 1 Diameter: 1 in. Elevation: 0 ft.

Element Flows To:

Outlet 1	Outlet 2
Bioswale 2	

Landscape Swale Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
380.00	0.156	0.000	0.000	0.000
380.06	0.156	0.003	0.006	0.000
380.11	0.157	0.006	0.008	0.000
380.17	0.158	0.010	0.010	0.000
380.22	0.158	0.013	0.012	0.000
380.28	0.159	0.017	0.013	0.000
380.33	0.160	0.020	0.015	0.000
380.39	0.160	0.024	0.016	0.000
380.44	0.161	0.027	0.017	0.000
380.50	0.162	0.031	0.018	0.000
380.56	0.162	0.034	0.019	0.000
380.61	0.163	0.038	0.020	0.000
380.67	0.163	0.041	0.021	0.000
380.72	0.164	0.045	0.022	0.000
380.78	0.165	0.048	0.023	0.000
380.83	0.165	0.052	0.024	0.000
380.89	0.166	0.055	0.024	0.000
380.94	0.167	0.059	0.025	0.000
381.00	0.167	0.063	0.026	0.000
381.06	0.168	0.066	0.090	0.000
381.11	0.169	0.070	0.208	0.000
381.17	0.169	0.074	0.359	0.000
381.22	0.170	0.077	0.539	0.000
381.28	0.171	0.081	0.742	0.000
381.33	0.171	0.085	0.967	0.000
381.39	0.172	0.089	1.211	0.000
381.44	0.173	0.092	1.474	0.000
381.50	0.173	0.096	1.753	0.000
381.56	0.174	0.100	2.049	0.000
381.61	0.175	0.104	2.359	0.000
381.67	0.175	0.108	2.684	0.000
381.72	0.176	0.112	3.023	0.000
381.78	0.177	0.116	3.375	0.000

381.83	0.177	0.120	3.739	0.000
381.89	0.178	0.123	4.117	0.000
381.94	0.178	0.127	4.506	0.000
382.00	0.179	0.131	4.906	0.000
382.06	0.180	0.135	5.318	0.000
382.11	0.180	0.139	5.741	0.000
382.17	0.181	0.143	6.174	0.000
382.22	0.182	0.148	6.618	0.000
382.28	0.182	0.152	7.073	0.000
382.33	0.183	0.156	7.537	0.000
382.39	0.184	0.160	8.011	0.000
382.44	0.184	0.164	8.494	0.000
382.50	0.185	0.168	8.987	0.000
382.56	0.186	0.172	9.489	0.000
382.61	0.186	0.176	10.00	0.000
382.67	0.187	0.180	10.52	0.000
382.72	0.188	0.185	11.04	0.000
382.78	0.188	0.189	11.58	0.000
382.83	0.189	0.193	12.13	0.000
382.89	0.190	0.197	12.68	0.000
382.94	0.190	0.201	13.24	0.000
383.00	0.191	0.206	13.81	0.000
383.06	0.191	0.216	14.39	0.000
383.11	0.192	0.227	14.98	0.000
383.17	0.193	0.238	15.57	0.000
383.22	0.193	0.248	16.17	0.000
383.28	0.194	0.259	16.78	0.000
383.33	0.195	0.270	17.40	0.000
383.39	0.195	0.281	18.02	0.000
383.44	0.196	0.292	18.65	0.000
383.50	0.197	0.303	19.29	0.000
383.56	0.197	0.314	19.94	0.000
383.61	0.198	0.325	20.59	0.000
383.67	0.199	0.336	21.25	0.000
383.72	0.199	0.347	21.92	0.000
383.78	0.200	0.358	22.59	0.000
383.83	0.201	0.369	23.27	0.000
383.89	0.201	0.380	23.96	0.000
383.94	0.202	0.392	24.65	0.000
384.00	0.203	0.403	25.35	0.000
384.06	0.203	0.414	26.06	0.000
384.11	0.204	0.425	26.77	0.000
384.17	0.205	0.437	27.49	0.000
384.22	0.205	0.448	28.21	0.000
384.28	0.206	0.460	28.95	0.000
384.33	0.206	0.471	29.69	0.000
384.39	0.207	0.483	30.43	0.000
384.44	0.208	0.494	31.18	0.000
384.50	0.208	0.506	31.94	0.000
384.56	0.209	0.517	32.70	0.000
384.61	0.210	0.529	33.47	0.000
384.67	0.210	0.541	34.24	0.000
384.72	0.211	0.552	35.02	0.000

384.78	0.212	0.564	35.81	0.000
384.83	0.212	0.576	36.60	0.000
384.89	0.213	0.588	37.40	0.000
384.94	0.214	0.600	38.20	0.000
385.00	0.214	0.612	39.01	0.000
385.06	0.215	0.624	39.82	0.000

Name : Basin 8
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Urban,Flat(0-5%)	.17
C D,Urban,Flat(0-5%)	.39
C D,Urban,Very(>20%)	.11

Impervious Land Use	Acres
Roads,Flat(0-5%)	0.27
Roof Area	0.49

Element Flows To:

Surface	Interflow	Groundwater
BMP 8 - Bi Surfaceon	BMP 8 - Bi Surfaceon	

Name : Basin 9
Bypass: No

GroundWater: No

Pervious Land Use	Acres
A,Urban,Very S(>20%)	1.44

Impervious Land Use	Acres

Element Flows To:

Surface	Interflow	Groundwater
Bioswale 2	Bioswale 2	

Name : BMP 8 - Bioretention
Bottom Length: 140.00 ft.
Bottom Width : 35.00 ft.
Trench bottom slope 1: 0.01 To 1
Trench Left side slope 0: 3 To 1
Trench right side slope 2: 3 To 1

Material thickness of first layer : 1.5
Pour Space of material for first layer : 0.39
Material thickness of second layer : 1.5
Pour Space of material for second layer : 0.4
Material thickness of third layer : 0
Pour Space of material for third layer : 0.4

Discharge Structure

Riser Height: 1 ft.
Riser Diameter: 6 in.
Orifice 1 Diameter: 1 in. Elevation: 0 ft.

Element Flows To:

Outlet 1	Outlet 2
Bioswale 2	

Landscape Swale Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
402.00	0.112	0.000	0.000	0.000
402.06	0.113	0.002	0.006	0.000
402.11	0.114	0.004	0.008	0.000
402.17	0.115	0.007	0.010	0.000
402.22	0.116	0.009	0.012	0.000
402.28	0.117	0.012	0.013	0.000
402.33	0.118	0.015	0.015	0.000
402.39	0.120	0.017	0.016	0.000
402.44	0.121	0.020	0.017	0.000
402.50	0.122	0.022	0.018	0.000
402.56	0.123	0.025	0.019	0.000
402.61	0.124	0.028	0.020	0.000
402.67	0.125	0.030	0.021	0.000
402.72	0.126	0.033	0.022	0.000
402.78	0.127	0.036	0.023	0.000
402.83	0.128	0.039	0.024	0.000
402.89	0.129	0.042	0.024	0.000
402.94	0.130	0.044	0.025	0.000
403.00	0.131	0.047	0.026	0.000
403.06	0.132	0.050	0.090	0.000
403.11	0.133	0.053	0.208	0.000
403.17	0.135	0.056	0.359	0.000
403.22	0.136	0.059	0.539	0.000
403.28	0.137	0.062	0.742	0.000
403.33	0.138	0.065	0.967	0.000
403.39	0.139	0.068	1.211	0.000
403.44	0.140	0.071	1.474	0.000
403.50	0.141	0.074	1.753	0.000
403.56	0.142	0.077	2.049	0.000
403.61	0.143	0.080	2.359	0.000
403.67	0.144	0.083	2.684	0.000
403.72	0.145	0.087	3.023	0.000
403.78	0.146	0.090	3.375	0.000

403.83	0.147	0.093	3.739	0.000
403.89	0.148	0.096	4.117	0.000
403.94	0.150	0.100	4.506	0.000
404.00	0.151	0.103	4.906	0.000
404.06	0.152	0.107	5.318	0.000
404.11	0.153	0.110	5.741	0.000
404.17	0.154	0.113	6.174	0.000
404.22	0.155	0.117	6.618	0.000
404.28	0.156	0.120	7.073	0.000
404.33	0.157	0.124	7.537	0.000
404.39	0.158	0.127	8.011	0.000
404.44	0.159	0.131	8.494	0.000
404.50	0.160	0.134	8.987	0.000
404.56	0.161	0.138	9.489	0.000
404.61	0.162	0.142	10.00	0.000
404.67	0.163	0.145	10.52	0.000
404.72	0.165	0.149	11.04	0.000
404.78	0.166	0.152	11.58	0.000
404.83	0.167	0.156	12.13	0.000
404.89	0.168	0.160	12.68	0.000
404.94	0.169	0.164	13.24	0.000
405.00	0.170	0.167	13.81	0.000
405.06	0.171	0.177	14.39	0.000
405.11	0.172	0.186	14.98	0.000
405.17	0.173	0.196	15.57	0.000
405.22	0.174	0.206	16.17	0.000
405.28	0.175	0.216	16.78	0.000
405.33	0.176	0.225	17.40	0.000
405.39	0.177	0.235	18.02	0.000
405.44	0.179	0.245	18.65	0.000
405.50	0.180	0.255	19.29	0.000
405.56	0.181	0.265	19.94	0.000
405.61	0.182	0.275	20.59	0.000
405.67	0.183	0.285	21.25	0.000
405.72	0.184	0.296	21.92	0.000
405.78	0.185	0.306	22.59	0.000
405.83	0.186	0.316	23.27	0.000
405.89	0.187	0.327	23.96	0.000
405.94	0.188	0.337	24.65	0.000
406.00	0.189	0.347	25.35	0.000
406.06	0.190	0.358	26.06	0.000
406.11	0.191	0.369	26.77	0.000
406.17	0.192	0.379	27.49	0.000
406.22	0.194	0.390	28.21	0.000
406.28	0.195	0.401	28.95	0.000
406.33	0.196	0.412	29.69	0.000
406.39	0.197	0.423	30.43	0.000
406.44	0.198	0.434	31.18	0.000
406.50	0.199	0.445	31.94	0.000
406.56	0.200	0.456	32.70	0.000
406.61	0.201	0.467	33.47	0.000
406.67	0.202	0.478	34.24	0.000
406.72	0.203	0.489	35.02	0.000

406.78	0.204	0.501	35.81	0.000
406.83	0.205	0.512	36.60	0.000
406.89	0.206	0.524	37.40	0.000
406.94	0.207	0.535	38.20	0.000
407.00	0.209	0.547	39.01	0.000
407.06	0.210	0.558	39.82	0.000

Name : Basin 11
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Shrub,Stee(10-20%)	1.81
C D,Shrub,Very(>20%)	7.68
B,Shrub,Flat(0-5%)	.04
B,Shrub,Mod(5-10%)	.23
B,Shrub,Very S(>20%)	.77
B,Urban,Stee(10-20%)	.01
B,Urban,Very S(>20%)	.65
C D,Shrub,Flat(0-5%)	.03
C D,Shrub,Mod(5-10%)	.09
C D,Shrub,St(10-20%)	2.1
C D,Urban,Very(>20%)	.78

Impervious Land Use	Acres

Element Flows To:

Surface	Interflow	Groundwater
Bioswale 1	Bioswale 1	

Name : Basin 10
Bypass: No

GroundWater: No

Pervious Land Use	Acres
A,Urban,Flat(0-5%)	.26
A,Urban,Very S(>20%)	.98
B,Urban,Flat(0-5%)	.16
C D,Urban,Flat(0-5%)	.02

Impervious Land Use	Acres
Roads,Flat(0-5%)	0.5
Sidewalks,Flat(0-5%)	0.07

Element Flows To:

Surface	Interflow	Groundwater
Bioswale 1	Bioswale 1	

Name : Basin 17
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Shrub,Stee(10-20%)	.43
B,Grass,Very S(>20%)	.35
B,Grass,Stee(10-20%)	.34
B,Grass,Mod(5-10%)	.35
A,Grass,Flat(0-5%)	.61

Impervious Land Use	Acres

Element Flows To:

Surface	Interflow	Groundwater
Culvert 2	Culvert 2	

Name : Culvert 2
Discharge Structure
Riser Height: 0 ft.
Riser Diameter: 0 in.

Element Flows To:

Outlet 1	Outlet 2
Bioswale 2	

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	654.759155
5 year	1889.200834
10 year	2405.490349
25 year	2628.084752

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	652.152222
5 year	1845.479229
10 year	2360.597394
25 year	2568.009691

Yearly Peaks for Predeveloped and Mitigated. POC#1

Year	Predeveloped	Mitigated
1959	1081.193	1055.635
1960	0.3422765	2.021625
1961	654.7592	638.5154
1962	15.44898	39.17114
1963	22.25984	37.36028
1964	322.5231	316.682
1965	1633.046	1599.96
1966	2285.463	2276.747
1967	654.6273	652.1522
1968	2084.392	2046.458
1969	638.8546	624.9839
1970	794.3021	769.0964
1971	812.6219	812.199
1972	1620.728	1563.389
1973	794.4695	782.2207
1974	61.37566	60.39404
1975	400.5204	385.6841
1976	274.8431	268.8464
1977	5206.893	5165.293
1978	1405.271	1358.556
1979	2494.774	2483.358
1980	22.94777	24.42793
1981	2684.977	2604.136
1982	1784.06	1729.475

1983	478.7769	463.1219
1984	899.6305	876.2397
1985	2143.865	2077.24
1986	9.942201	15.52449
1987	345.8388	343.4304
1988	167.825	168.9874
1989	5.504023	16.66916
1990	1460.442	1439.513
1991	1968.707	1914.865
1992	1798.552	1766.369
1993	172.6198	169.7512
1994	2481.296	2472.158
1995	238.5508	237.2584
1996	868.6955	852.006
1997	2400.332	2353.005
1998	0.3744088	1.431055
1999	4.213601	7.484876
2000	0.5661935	14.50207
2001	0.042820845	1.247335
2002	0	0.00163861
2003	428.8498	424.6595
2004	0	0

POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
65.4759	1447	1478	102	Pass
89.1124	1244	1262	101	Pass
112.7489	1108	1110	100	Pass
136.3854	994	991	99	Pass
160.0220	887	893	100	Pass
183.6585	818	822	100	Pass
207.2950	755	750	99	Pass
230.9315	695	691	99	Pass
254.5680	637	638	100	Pass
278.2045	596	595	99	Pass
301.8410	556	551	99	Pass
325.4775	526	526	100	Pass
349.1140	493	494	100	Pass
372.7505	463	457	98	Pass
396.3870	426	423	99	Pass
420.0236	394	391	99	Pass
443.6601	366	367	100	Pass
467.2966	346	345	99	Pass

490.9331	329	326	99	Pass
514.5696	306	306	100	Pass
538.2061	289	287	99	Pass
561.8426	279	276	98	Pass
585.4791	267	267	100	Pass
609.1156	253	255	100	Pass
632.7521	245	239	97	Pass
656.3887	231	226	97	Pass
680.0252	214	211	98	Pass
703.6617	207	200	96	Pass
727.2982	194	189	97	Pass
750.9347	183	182	99	Pass
774.5712	174	169	97	Pass
798.2077	162	159	98	Pass
821.8442	153	151	98	Pass
845.4807	149	148	99	Pass
869.1172	145	142	97	Pass
892.7537	137	132	96	Pass
916.3903	127	129	101	Pass
940.0268	125	124	99	Pass
963.6633	119	120	100	Pass
987.2998	118	113	95	Pass
1010.9363	107	110	102	Pass
1034.5728	102	101	99	Pass
1058.2093	95	94	98	Pass
1081.8458	92	90	97	Pass
1105.4823	87	84	96	Pass
1129.1188	83	83	100	Pass
1152.7553	81	77	95	Pass
1176.3919	73	74	101	Pass
1200.0284	70	71	101	Pass
1223.6649	70	69	98	Pass
1247.3014	69	68	98	Pass
1270.9379	68	68	100	Pass
1294.5744	67	68	101	Pass
1318.2109	67	65	97	Pass
1341.8474	67	64	95	Pass
1365.4839	63	61	96	Pass
1389.1204	61	60	98	Pass
1412.7570	59	57	96	Pass
1436.3935	55	55	100	Pass
1460.0300	55	52	94	Pass
1483.6665	53	51	96	Pass
1507.3030	50	49	98	Pass
1530.9395	48	47	97	Pass
1554.5760	46	46	100	Pass
1578.2125	46	43	93	Pass
1601.8490	45	40	88	Pass
1625.4855	41	40	97	Pass
1649.1220	40	38	95	Pass
1672.7586	39	38	97	Pass
1696.3951	38	38	100	Pass
1720.0316	38	35	92	Pass

1743.6681	37	34	91	Pass
1767.3046	37	33	89	Pass
1790.9411	32	30	93	Pass
1814.5776	28	28	100	Pass
1838.2141	27	27	100	Pass
1861.8506	27	27	100	Pass
1885.4871	27	27	100	Pass
1909.1237	26	26	100	Pass
1932.7602	26	23	88	Pass
1956.3967	25	22	88	Pass
1980.0332	23	21	91	Pass
2003.6697	23	21	91	Pass
2027.3062	22	20	90	Pass
2050.9427	20	18	90	Pass
2074.5792	19	18	94	Pass
2098.2157	18	17	94	Pass
2121.8522	18	17	94	Pass
2145.4887	16	15	93	Pass
2169.1253	16	14	87	Pass
2192.7618	14	14	100	Pass
2216.3983	14	14	100	Pass
2240.0348	14	14	100	Pass
2263.6713	14	13	92	Pass
2287.3078	12	12	100	Pass
2310.9443	12	12	100	Pass
2334.5808	12	10	83	Pass
2358.2173	12	8	66	Pass
2381.8538	11	7	63	Pass
2405.4903	8	6	75	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

Perlnd and Implnd Changes
No changes have been made.

This program and accompanying documentation is provided 'as-is' without warranty of any kind. The entire risk regarding the performance and results of this program is assumed by the user. Clear Creek Solutions, Inc. disclaims all warranties, either expressed or implied, including but not limited to implied warranties of program and accompanying documentation. In no event shall Clear Creek Solutions, Inc. be liable for any damages whatsoever (including without limitation to damages for loss of business profits, loss of business information, business interruption, and the like) arising out of the use of, or inability to use this program even if Clear Creek Solutions, Inc. has been advised of the possibility of such damages.

Drawdown Analysis Results

BMP 1 – Detention Basin

Analysis

Drawdown Analysis

Select analysis for 1041 BMP 1 - Detention Ba STAGE Mitigated

Analyze Stage Pond: BMP 1 - Detention Ba

Drain Time (days)	Stage (feet)	Percent of Total Run Time
1	1.403915	1.3362
2	N/A	N/A
3	N/A	N/A
4	N/A	N/A
5	N/A	N/A

Max Stage (ft) 4.152682

Drawdown Time (dd hh:mm:ss) 01 12:19:50

Pond drains in less than 2 days.

Durations | Flow Frequency | Water Quality | Hydrograph
Wetland Fluctuation | Recharge Duration | Recharge Predeveloped | Recharge Mitigated

BMP 2 – Detention Basin

Analysis

Drawdown Analysis

Select analysis for 1045 BMP 2 - Detention Ba STAGE Mitigated

Analyze Stage Pond: BMP 2 - Detention Ba

Drain Time (days)	Stage (feet)	Percent of Total Run Time
1	0.305513	3.3793
2	0.579247	1.5646
3	1.229358	0.2139
4	N/A	N/A
5	N/A	N/A

Max Stage (ft) 3.200056

Drawdown Time (dd hh:mm:ss) 03 16:04:30

Pond drains in less than 4 days.

Durations | Flow Frequency | Water Quality | Hydrograph
Wetland Fluctuation | Recharge Duration | Recharge Predeveloped | Recharge Mitigated

BMP 4 – Detention Basin

Analysis

Drawdown Analysis

Select analysis for 1043 BMP 4 - Detention Ba STAGE Mitigated

Analyze Stage Pond: BMP 4 - Detention Ba

Drain Time (days)	Stage (feet)	Percent of Total Run Time
1	1.801761	1.0555
2	N/A	N/A
3	N/A	N/A
4	N/A	N/A
5	N/A	N/A

Max Stage (ft) 4.045049

Drawdown Time (dd hh:mm:ss) 01 06:01:60

Pond drains in less than 2 days.

Durations | Flow Frequency | Water Quality | Hydrograph
Wetland Fluctuation | Recharge Duration | Recharge Predeveloped | Recharge Mitigated

BMP 5 – Detention Basin

Analysis

Drawdown Analysis

Select analysis for 1041 BMP 5 - Detention Ba STAGE Mitigated

Analyze Stage Pond: BMP 5 - Detention Ba

Drain Time (days)	Stage (feet)	Percent of Total Run Time
1	0.793782	2.5674
2	1.775204	0.8822
3	N/A	N/A
4	N/A	N/A
5	N/A	N/A

Max Stage (ft) 3.681676

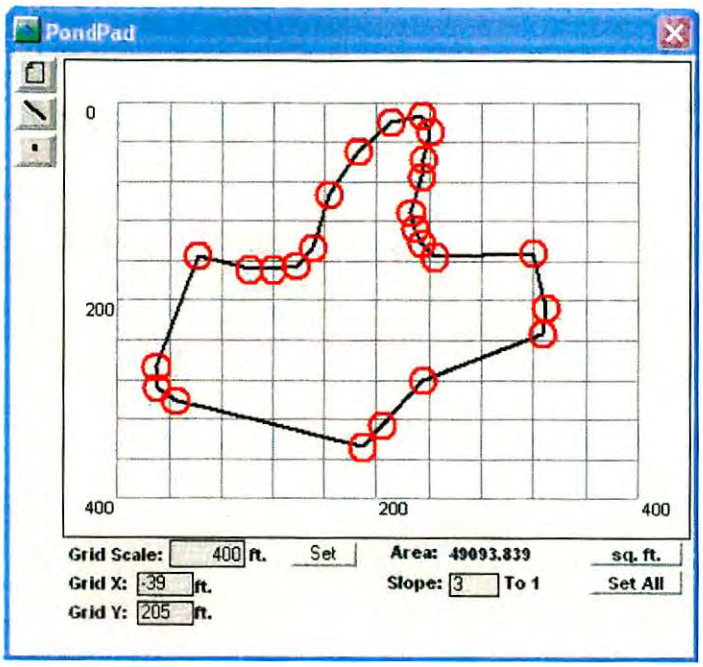
Drawdown Time (dd hh:mm:ss) 02 09:24:30

Pond drains in less than 3 days.

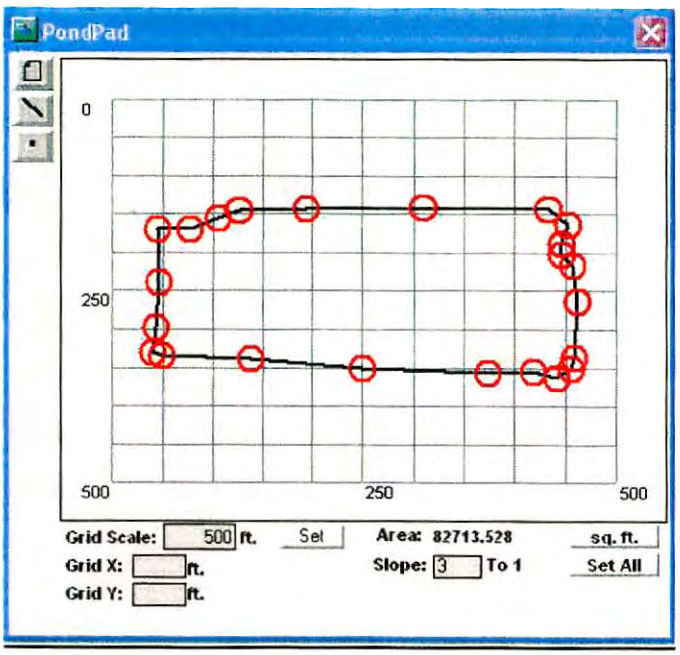
Durations | Flow Frequency | Drawdown | Hydrograph
Recharge Duration | Recharge Predeveloped | Recharge Mitigated

Irregular Detention Pond Shapes

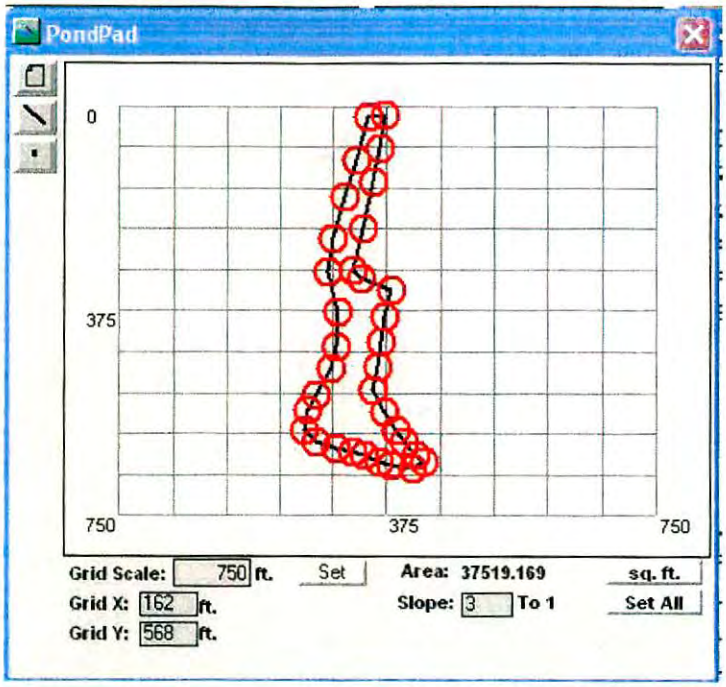
BMP 1 – Detention Basin



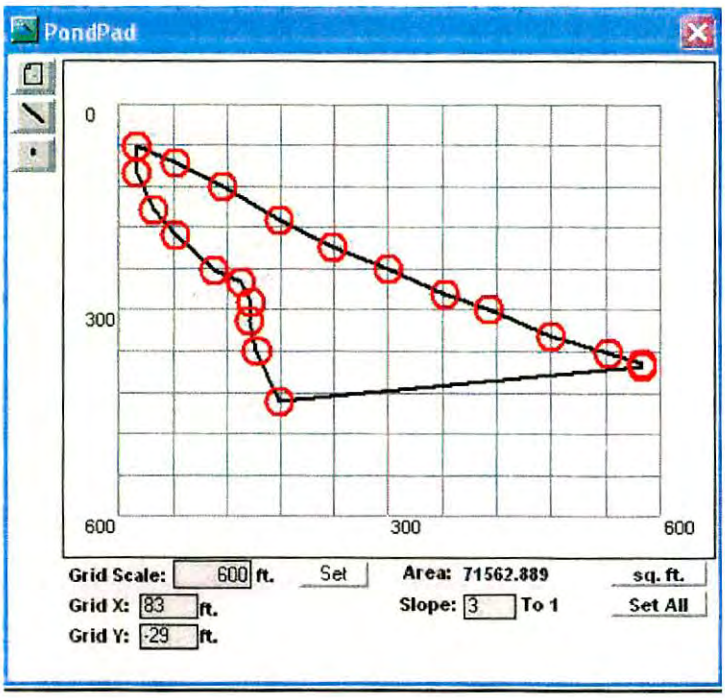
BMP 2 – Detention Basin

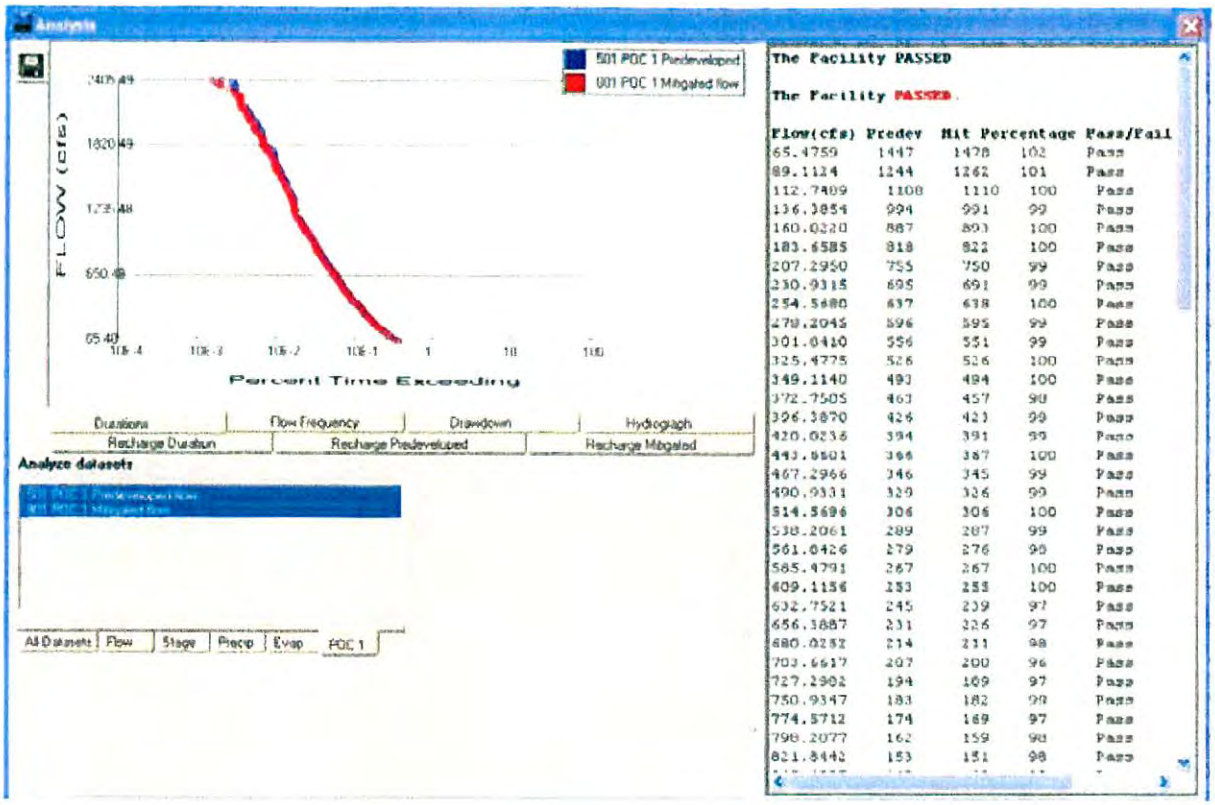


BMP 4 – Detention Basin



BMP 5 – Detention Basin





Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
65.4759	1447	1478	102	Pass
89.1124	1244	1262	101	Pass
112.7489	1108	1110	100	Pass
136.3854	994	991	99	Pass
160.0220	887	893	100	Pass
183.6585	818	822	100	Pass
207.2950	755	750	99	Pass
230.9315	695	691	99	Pass
254.5680	637	638	100	Pass
278.2045	596	595	99	Pass
301.8410	556	551	99	Pass
325.4775	526	526	100	Pass
349.1140	493	494	100	Pass
372.7505	463	457	98	Pass
396.3870	424	421	99	Pass
420.0236	394	391	99	Pass
443.6601	366	367	100	Pass
467.2966	346	345	99	Pass
490.9331	329	326	99	Pass
514.5696	306	306	100	Pass
538.2061	289	287	99	Pass
561.8426	279	276	98	Pass
585.4791	267	267	100	Pass
609.1156	253	253	100	Pass
632.7521	245	239	97	Pass
656.3887	231	226	97	Pass
680.0252	214	211	98	Pass
703.6617	207	200	96	Pass
727.2982	194	189	97	Pass
750.9347	183	182	99	Pass
774.5712	174	169	97	Pass
798.2077	162	159	98	Pass
821.8442	153	151	98	Pass

Figure 4-2 – Duration Analysis at POC1

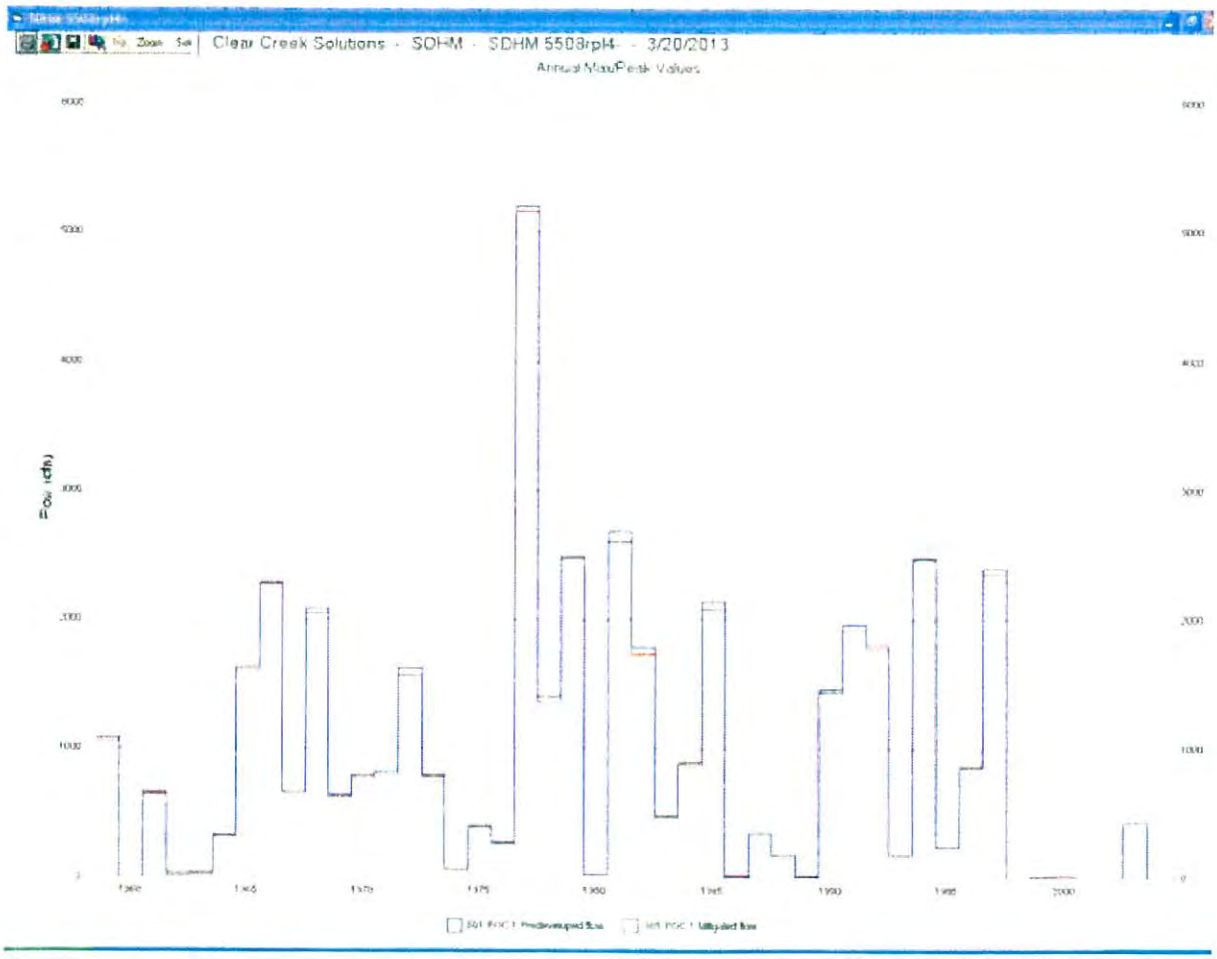


Figure 4-3 – Yearly Peak Values (Gomez Creek)

Project Summary

Project Name	Project - 5508rpl4
Project Applicant	Shapouri & associates
Jurisdiction	County of San Diego
Parcel (APN)	110-090-01
Hydrologic Unit	San Luis Rey

Compliance Basin Summary

Basin Name:	DMA/BASIN 1
Receiving Water:	1
Rainfall Basin	Lake Wohlford
Mean Annual Precipitation (inches)	19.5
Project Basin Area (acres):	37.82
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
21868	Drains to Pond	BMP 1	Soil Type B Landscape (0-5%)	5.98	Pervious (Pre)		Type B (moderate infiltration)	Flat - slope (less ...
21869	Drains to Pond	BMP 1	Soil Type B Landscape (>10%)	1.84	Pervious (Pre)		Type B (moderate infiltration)	Steep (greater 10%)
21870	Drains to Pond	BMP 1	Soil Type C Landscape (0-5%)	9.89	Pervious (Pre)		Type C (slow infiltration)	Flat - slope (less ...
21871	Drains to Pond	BMP 1	Soil Type C Landscape (>10%)	1.96	Pervious (Pre)		Type C (slow infiltration)	Steep (greater 10%)
21872	Drains to Pond	BMP 1	Roads, Sidewalks, Dwy (0-5%)	7.25	Pervious (Pre)		Type C (slow infiltration)	Flat - slope (less ...
21873	Drains to Pond	BMP 1	Roads, Sidewalks, Dwy (5-10%)	2.16	Pervious (Pre)		Type C (slow infiltration)	Moderate (5 - 10%)
21874	Drains to Pond	BMP 1	Roofs	8.74	Pervious (Pre)		Type C (slow infiltration)	Flat - slope (less ...

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	BMP 1 - Detention Basin	34000	45963	5	199908.6	4.5	0.00	18.00	2.25	5.00	4.5	B	28.00

Note: The BMP Sizing calculator is based on three Rain Basins: Oceanside, Lake Wohlford and Lindbergh Field. The applicable Rain Basin for this project is part of Lake Wohlford.

Refer to: BMP Sizing Calculator (v3.0) per Brown and Caldwell on-line software. This calculator provides the minimum capacity requirements, the proposed capacity is greater than this recommendation.

The Rain gage for this project is based on Fallbrook Station as described on page 1-4, Rainfall Data Section.

Project Summary

Project Name	Project - 5508rpl4
Project Applicant	Shapouri & associates
Jurisdiction	County of San Diego
Parcel (APN)	110-090-01
Hydrologic Unit	San Luis Rey

Compliance Basin Summary

Basin Name:	DMA/BASIN 2
Receiving Water:	1
Rainfall Basin	Lake Wohlford
Mean Annual Precipitation (inches)	19.5
Project Basin Area (acres):	29.48
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
21877	Drains to Pond	BMP 2	Soil Type A Landscape (0-5%)	2.8	Pervious (Pre)		Type A (low runoff - sandy soi...	Flat - slope (less ...
21878	Drains to Pond	BMP 2	Soil Type A Landscape (>10%)	0.66	Pervious (Pre)		Type A (low runoff - sandy soi...	Steep (greater 10%)
21879	Drains to Pond	BMP 2	Soil Type B Landscape (0-5%)	3.43	Pervious (Pre)		Type B (moderate infiltration)	Flat - slope (less ...
21880	Drains to Pond	BMP 2	Soil Type B Landscape (>10%)	1.56	Pervious (Pre)		Type B (moderate infiltration)	Steep (greater 10%)
21881	Drains to Pond	BMP 2	Soil type C Landscape (0-5%)	2.63	Pervious (Pre)		Type C (slow infiltration)	Flat - slope (less ...
21882	Drains to Pond	BMP 2	Soil Type C Landscape (>10%)	1.97	Pervious (Pre)		Type C (slow infiltration)	Steep (greater 10%)
21883	Drains to Pond	BMP 2	Soil Type D Landscape (0-5%)	1.57	Pervious (Pre)		Type D (high runoff - clay soi...	Flat - slope (less ...
21884	Drains to Pond	BMP 2	Roads, Sidewalks, Dwy (0-5%)	5.85	Pervious (Pre)		Type C (slow infiltration)	Flat - slope (less ...
21885	Drains to Pond	BMP 2	Roads, Sidewalks, Dwy (5-10%)	2.36	Pervious (Pre)		Type C (slow infiltration)	Moderate (5 - 10%)
21886	Drains to Pond	BMP 2	Roof	6.66	Pervious (Pre)		Type C (slow infiltration)	Flat - slope (less ...

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	BMP 2 - Detention Basin	26000	36574	5	156436.7	3.00	0.00	8.00	0.8	5.00	4.5	A	11.00

Project Summary

Project Name	Project - 5508rp4
Project Applicant	Shapouri & associates
Jurisdiction	County of San Diego
Parcel (APN)	110-090-01
Hydrologic Unit	San Luis Rey

Compliance Basin Summary

Basin Name:	DMA/BASIN 3
Receiving Water:	1
Rainfall Basin	Lake Wohlford
Mean Annual Precipitation (inches)	19.5
Project Basin Area (acres):	2.45
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
21889	Drains to LID	BMP 3	Soil Type B Landscape (0-5%)	0.25	Pervious (Pre)	Landscaping	Type B (moderate infiltration)	Flat - slope (less ...
21890	Drains to LID	BMP 3	Soil type B Landscape (>10%)	0.05	Pervious (Pre)	Landscaping	Type B (moderate infiltration)	Moderate (5 - 10%)
21891	Drains to LID	BMP 3	Soil Type C Landscape (0-5%)	0.5	Pervious (Pre)	Landscaping	Type C (slow infiltration)	Flat - slope (less ...
21892	Drains to LID	BMP 3	Soil Type C Landscape (>10%)	0.08	Pervious (Pre)	Landscaping	Type C (slow infiltration)	Moderate (5 - 10%)
21893	Drains to LID	BMP 3	Roads, Sidewalks, Dwy (0-5%)	0.72	Pervious (Pre)	Concrete or asphalt	Type C (slow infiltration)	Moderate (5 - 10%)
21896	Drains to LID	BMP 3	Roof	0.85	Pervious (Pre)	Roofs	Type C (slow infiltration)	Moderate (5 - 10%)

LID Facility Summary

BMP ID	Type	Description	Plan Area (sqft)	Volume 1(cft)	Volume 2(cft)	Orifice Flow (cfs)	Orifice Size (inch)
BMP 3	Bioretention	BMP 3 - Bioretention	7760	6469	4183	0.060	1.00

Project Summary

Project Name	Project - 5508rpl4
Project Applicant	Shapouri & associates
Jurisdiction	County of San Diego
Parcel (APN)	110-090-01
Hydrologic Unit	San Luis Rey

Compliance Basin Summary

Basin Name:	DMA/BASIN 4
Receiving Water:	1
Rainfall Basin	Lake Wohlford
Mean Annual Precipitation (inches)	19.5
Project Basin Area (acres):	14.04
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
21898	Drains to Pond	BMP 4	Soil Type B Landscape (0-5%)	1.04	Pervious (Pre)		Type B (moderate infiltration)	Flat - slope (less ...
21899	Drains to Pond	BMP 4	Soil Type B Landscape (>10%)	0.43	Pervious (Pre)		Type B (moderate infiltration)	Steep (greater 10%)
21900	Drains to Pond	BMP 4	Soil Type C Landscape (0-5%)	2.05	Pervious (Pre)		Type C (slow infiltration)	Flat - slope (less ...
21901	Drains to Pond	BMP 4	Soil Type C Landscape (>10%)	0.04	Pervious (Pre)		Type C (slow infiltration)	Steep (greater 10%)
21902	Drains to Pond	BMP 4	Soil Type D Landscape (0-5%)	1.22	Pervious (Pre)		Type D (high runoff - clay soi...	Flat - slope (less ...
21903	Drains to Pond	BMP 4	Soil Type D Landscape (>10%)	0.79	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
21904	Drains to Pond	BMP 4	Roads, Sidewalks, Dwy (0-5%)	5.63	Pervious (Pre)		Type C (slow infiltration)	Flat - slope (less ...
21905	Drains to Pond	BMP 4	Roof	2.84	Pervious (Pre)		Type C (slow infiltration)	Flat - slope (less ...

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	BMP 4 - Detention Basin	19309	28547	5	119642.7	2.5	0.00	12.00	2.00	5.00	4.5	B	35.00

Project Summary

Project Name	Project - 5508rpl4
Project Applicant	Shapouri & associates
Jurisdiction	County of San Diego
Parcel (APN)	110-090-01
Hydrologic Unit	San Luis Rey

Compliance Basin Summary

Basin Name:	DMA/BASIN 5
Receiving Water:	1
Rainfall Basin	Lake Wohlford
Mean Annual Precipitation (inches)	19.5
Project Basin Area (acres):	40.83
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
21963	Drains to Pond	BMP 5	Soil Type A Landscape (0-5%)	1.37	Pervious (Pre)		Type A (low runoff - sandy soi...	Flat - slope (less ...
21964	Drains to Pond	BMP 5	Soil Type A Landscape (>10%)	0.51	Pervious (Pre)		Type A (low runoff - sandy soi...	Steep (greater 10%)
21965	Drains to Pond	BMP 5	Soil Type B Landscape (0-5%)	8.52	Pervious (Pre)		Type B (moderate infiltration)	Flat - slope (less ...
21966	Drains to Pond	BMP 5	Soil Type B Landscape (>10%)	1.39	Pervious (Pre)		Type B (moderate infiltration)	Steep (greater 10%)
21967	Drains to Pond	BMP 5	Soil Type D Landscape (0-5%)	3.97	Pervious (Pre)		Type D (high runoff - clay soi...	Flat - slope (less ...
21968	Drains to Pond	BMP 5	Soil Type D Landscape (>10%)	0.29	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
21969	Drains to Pond	BMP 5	Roads, Sidewalks, Dwy (0-5%)	11.52	Pervious (Pre)		Type B (moderate infiltration)	Flat - slope (less ...
21970	Drains to Pond	BMP 5	Roofs	8.55	Pervious (Pre)		Type B (moderate infiltration)	Flat - slope (less ...
21971	Drains to Pond	BMP 5	Soil Type B Shrubs (>10%)	3.91	Pervious (Pre)		Type B (moderate infiltration)	Steep (greater 10%)
21972	Drains to Pond	BMP 5	Soil Type B Forest (>10%)	0.8	Pervious (Pre)		Type B (moderate infiltration)	Steep (greater 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	BMP 5 - Detention Basin	53000	67713	5	301782.5	4.00	0.00	13.00	2.00	5.00	4.5	B	38.00

Project Summary

Project Name	Project - 5508rpl4
Project Applicant	Shapouri & associates
Jurisdiction	County of San Diego
Parcel (APN)	110-090-01
Hydrologic Unit	San Luis Rey

Compliance Basin Summary

Basin Name:	DMA/BASIN 6
Receiving Water:	1
Rainfall Basin	Lake Wohlford
Mean Annual Precipitation (inches)	19.5
Project Basin Area (acres):	4.12
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
21975	Drains to LID	BMP 6	Soil Type B Landscape (0-5%)	1.45	Pervious (Pre)	Landscaping	Type B (moderate infiltration)	Flat - slope (less ...
21976	Drains to LID	BMP 6	Soil Type B Landscape (>10%)	0.28	Pervious (Pre)	Landscaping	Type B (moderate infiltration)	Flat - slope (less ...
21977	Drains to LID	BMP 6	Roads, Sidewalks, Dwy (0-5%)	1.54	Pervious (Pre)	Concrete or asphalt	Type B (moderate infiltration)	Flat - slope (less ...
21978	Drains to LID	BMP 6	Roofs	0.85	Pervious (Pre)	Roofs	Type B (moderate infiltration)	Flat - slope (less ...

LID Facility Summary

BMP ID	Type	Description	Plan Area (sqft)	Volume 1(cft)	Volume 2(cft)	Orifice Flow (cfs)	Orifice Size (inch)
BMP 6	Bioretention	BMP 6 - Bioretention	10048	8373	0.00	0.085	2.00

Project Summary

Project Name	Project - 5508rpl4
Project Applicant	Shapouri & associates
Jurisdiction	County of San Diego
Parcel (APN)	110-090-01
Hydrologic Unit	San Luis Rey

Compliance Basin Summary

Basin Name:	DMA/BASIN 7
Receiving Water:	1
Rainfall Basin	Lake Wohlford
Mean Annual Precipitation (inches)	19.5
Project Basin Area (acres):	4.16
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
21981	Drains to LID	BMP 7	Soil Type A Landscape (0-5%)	1.71	Pervious (Pre)	Landscaping	Type A (low runoff - sandy soi...	Flat - slope (less ...
21982	Drains to LID	BMP 7	Soil Type A Landscape (>10%)	0.05	Pervious (Pre)	Landscaping	Type A (low runoff - sandy soi...	Flat - slope (less ...
21983	Drains to LID	BMP 7	Soil Type B Landscape (0-5%)	0.79	Pervious (Pre)	Landscaping	Type B (moderate infiltration)	Flat - slope (less ...
21984	Drains to LID	BMP 7	Soil Type B Landscape (>10%)	0.39	Pervious (Pre)	Landscaping	Type B (moderate infiltration)	Flat - slope (less ...
21985	Drains to LID	BMP 7	Soil Type D Landscape (0-5%)	0.07	Pervious (Pre)	Landscaping	Type D (high runoff - clay soi...	Flat - slope (less ...
21986	Drains to LID	BMP 7	Soil Type D Landscape (>10%)	0.06	Pervious (Pre)	Landscaping	Type D (high runoff - clay soi...	Flat - slope (less ...
21987	Drains to LID	BMP 7	Roads, Sidewalks, Dwy (0-5%)	0.46	Pervious (Pre)	Concrete or asphalt	Type B (moderate infiltration)	Flat - slope (less ...
21988	Drains to LID	BMP 7	Roads, Sidewalks, Dwy (5-10%)	0.27	Pervious (Pre)	Concrete or asphalt	Type B (moderate infiltration)	Moderate (5 - 10%)
21989	Drains to LID	BMP 7	Roofs	0.02	Pervious (Pre)	Roofs	Type B (moderate infiltration)	Flat - slope (less ...
21990	Drains to LID	BMP 7	Parking Lots (0-5%)	0.35	Pervious (Pre)	Concrete or asphalt	Type B (moderate infiltration)	Flat - slope (less ...

LID Facility Summary

BMP ID	Type	Description	Plan Area (sqft)	Volume 1(cft)	Volume 2(cft)	Orifice Flow (cfs)	Orifice Size (inch)
BMP 7	Bioretention	BMP 7 - Bioretention	4480	3734	114	0.075	1.00

Project Summary

Project Name	Project - 5508rpl4
Project Applicant	Shapouri & associates
Jurisdiction	County of San Diego
Parcel (APN)	110-090-01
Hydrologic Unit	San Luis Rey

Compliance Basin Summary

Basin Name:	DMA/BASIN 8
Receiving Water:	1
Rainfall Basin	Lake Wohlford
Mean Annual Precipitation (inches)	19.5
Project Basin Area (acres):	1.42
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

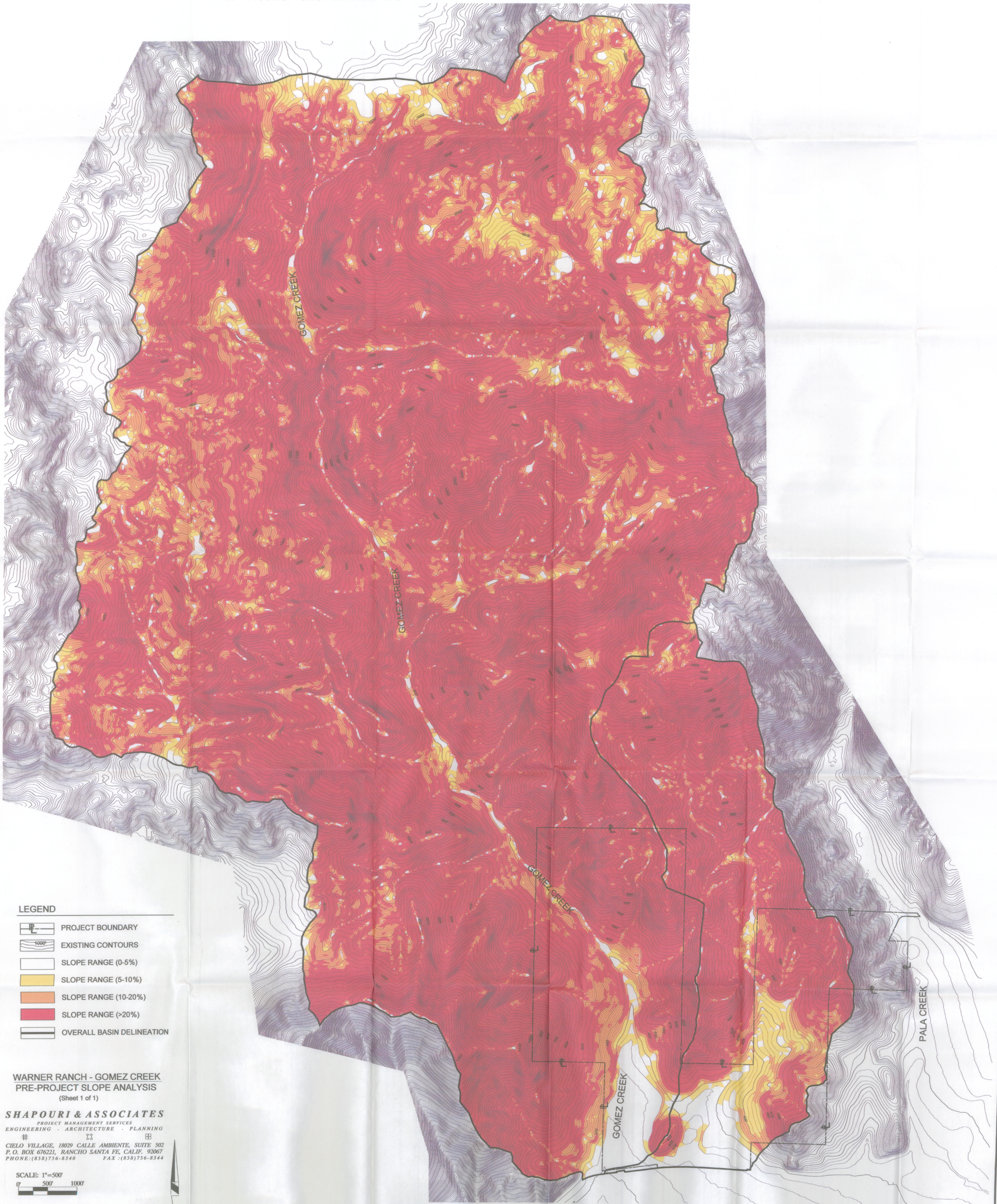
Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
21993	Drains to LID	BMP 8	Soil Type B Landscape (0-5%)	0.17	Pervious (Pre)	Landscaping	Type B (moderate infiltration)	Flat - slope (less ...
21994	Drains to LID	BMP 8	Soil Type C Landscape (0-5%)	0.39	Pervious (Pre)	Landscaping	Type C (slow infiltration)	Flat - slope (less ...
21995	Drains to LID	BMP 8	Soil Type C Landscape (>10%)	0.11	Pervious (Pre)	Landscaping	Type C (slow infiltration)	Flat - slope (less ...
21996	Drains to LID	BMP 8	Roads (0-5%)	0.27	Pervious (Pre)	Concrete or asphalt	Type C (slow infiltration)	Flat - slope (less ...
21997	Drains to LID	BMP 8	Roofs	0.49	Pervious (Pre)	Roofs	Type C (slow infiltration)	Flat - slope (less ...

LID Facility Summary

BMP ID	Type	Description	Plan Area (sqft)	Volume 1(cft)	Volume 2(cft)	Orifice Flow (cfs)	Orifice Size (inch)
BMP 8	Bioretention	BMP 8 - Bioretention	3877	3231	2095	0.034	0.9

WARNER RANCH - GOMEZ CREEK
PRE-PROJECT SLOPE ANALYSIS



LEGEND

- PROJECT BOUNDARY
- EXISTING CONTOURS
- SLOPE RANGE (0-5%)
- SLOPE RANGE (5-10%)
- SLOPE RANGE (10-20%)
- SLOPE RANGE (>20%)
- OVERALL BASIN DELINEATION

WARNER RANCH - GOMEZ CREEK
PRE-PROJECT SLOPE ANALYSIS
(Sheet 1 of 1)

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PROJECT MANAGEMENT SERVICES
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PHONE:(858)756-8340 FAX :(858)756-8344

SCALE: 1"=500'
0' 500' 1000'

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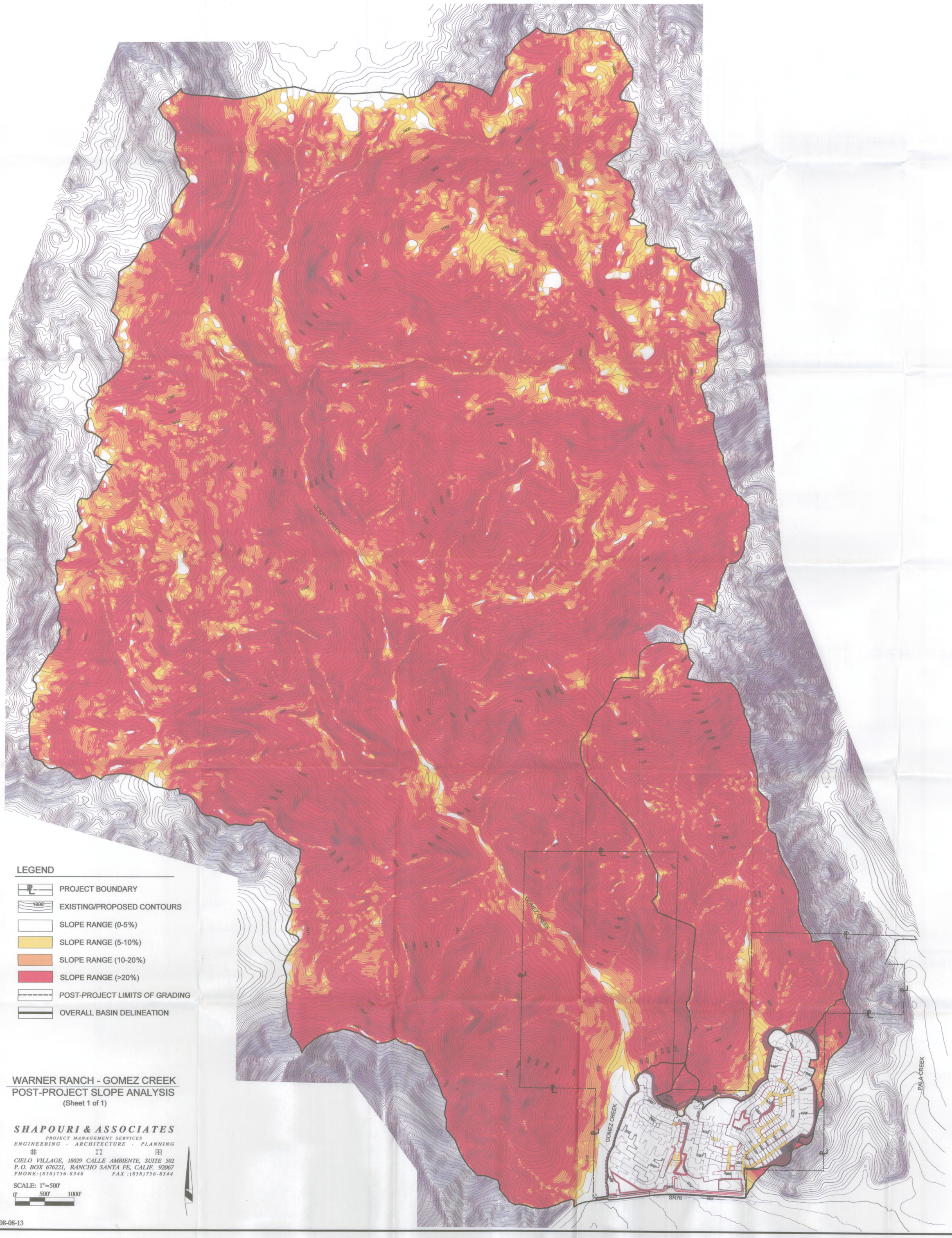
WARNER RANCH - GOMEZ CREEK
POST-PROJECT SLOPE ANALYSIS



LEGEND

- PROJECT BOUNDARY
- EXISTING/PROPOSED CONTOURS
- SLOPE RANGE (0-5%)
- SLOPE RANGE (5-10%)
- SLOPE RANGE (10-20%)
- SLOPE RANGE (>20%)
- POST-PROJECT LIMITS OF GRADING
- OVERALL BASIN DELINEATION

WARNER RANCH - GOMEZ CREEK
POST-PROJECT SLOPE ANALYSIS
(Sheet 1 of 1)

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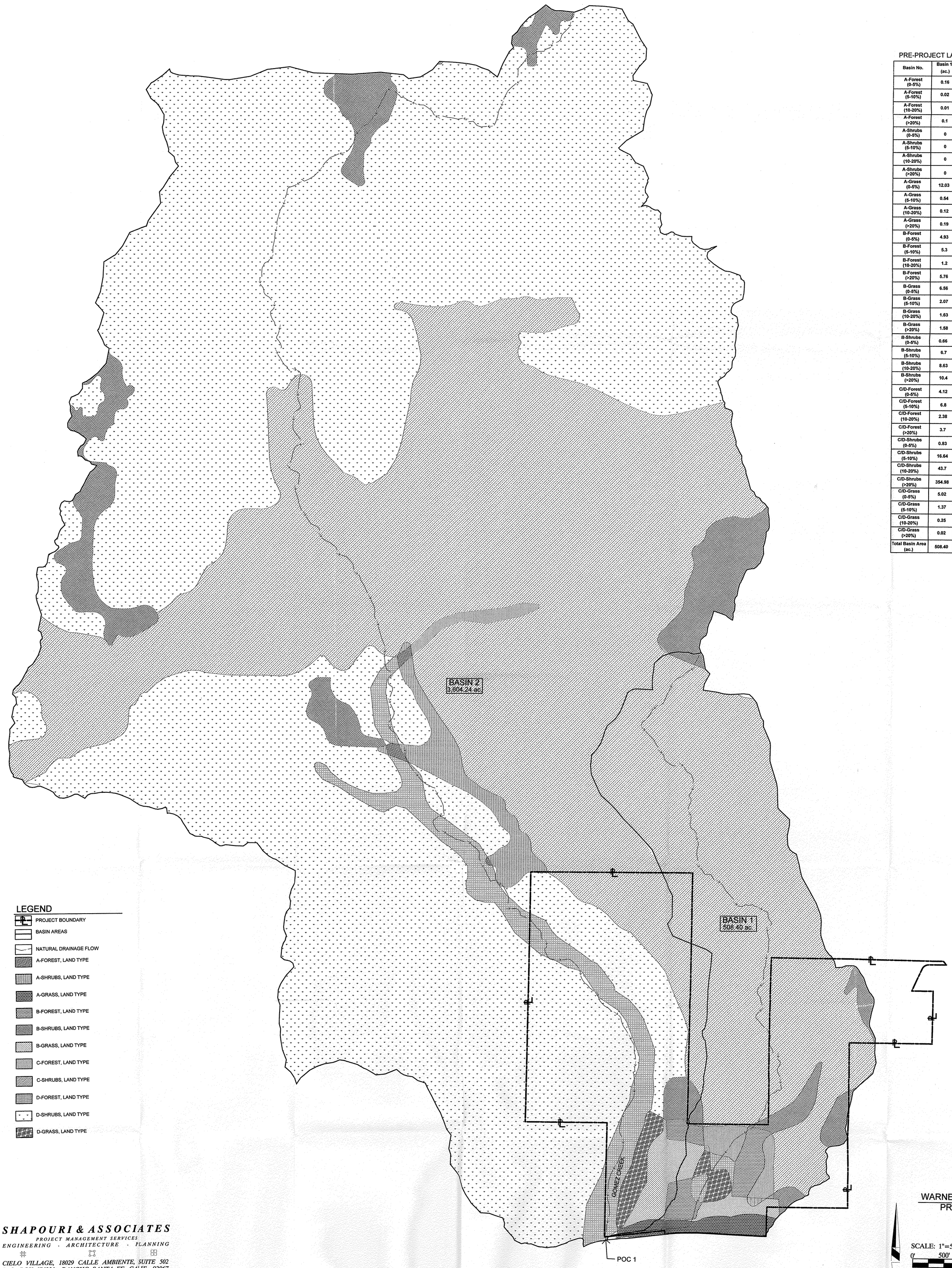
WARNER RANCH (GOMEZ CREEK)
PRE-PROJECT LAND USE AREA BREAKDOWN
(Sheet 1 of 1)



PRE-PROJECT LAND USE BREAKDOWN

Basin No.	Basin 1 (ac.)	Basin 2 (ac.)	Total Land Use Area (ac.)
A-Forest (0-5%)	0.16	0.07	0.23
A-Forest (5-10%)	0.02	0	0.02
A-Forest (10-20%)	0.01	0.04	0.05
A-Forest (>20%)	0.1	2.45	2.55
A-Shrubs (0-5%)	0	0	0.00
A-Shrubs (5-10%)	0	0.01	0.01
A-Shrubs (10-20%)	0	1.32	1.32
A-Shrubs (>20%)	0	34.39	34.39
A-Grass (0-5%)	12.03	1.58	13.61
A-Grass (5-10%)	0.54	0.02	0.56
A-Grass (10-20%)	0.12	0	0.12
A-Grass (>20%)	0.19	0	0.19
B-Forest (0-5%)	4.93	0	4.93
B-Forest (5-10%)	5.3	0	5.30
B-Forest (10-20%)	1.2	0.01	1.21
B-Forest (>20%)	5.76	3.99	9.75
B-Grass (0-5%)	6.56	9.4	15.96
B-Grass (5-10%)	2.07	2.08	4.15
B-Grass (10-20%)	1.63	2.18	3.81
B-Grass (>20%)	1.58	3.63	5.21
B-Shrubs (0-5%)	0.66	3.24	3.90
B-Shrubs (5-10%)	6.7	8.54	15.24
B-Shrubs (10-20%)	8.63	29	37.63
B-Shrubs (>20%)	10.4	106.46	116.86
C/D-Forest (0-5%)	4.12	9.95	14.07
C/D-Forest (5-10%)	6.8	8.96	15.76
C/D-Forest (10-20%)	2.38	28.97	31.35
C/D-Forest (>20%)	3.7	51.67	55.37
C/D-Shrubs (0-5%)	0.83	9.85	10.68
C/D-Shrubs (5-10%)	16.64	111.68	128.32
C/D-Shrubs (10-20%)	43.7	482.84	526.54
C/D-Shrubs (>20%)	354.98	2680.24	3035.22
C/D-Grass (0-5%)	5.02	10.33	15.35
C/D-Grass (5-10%)	1.37	1.3	2.67
C/D-Grass (10-20%)	0.25	0.04	0.29
C/D-Grass (>20%)	0.02	0	0.02
Total Basin Area (ac.)	508.40	3604.24	4112.64

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WARNER RANCH (GOMEZ CREEK)
PRE-PROJECT LAND USE
AREA BREAKDOWN
(Sheet 1 of 1)

SCALE: 1"=500'
0' 500' 1000'

SHEET 1 OF 1

08-08-13

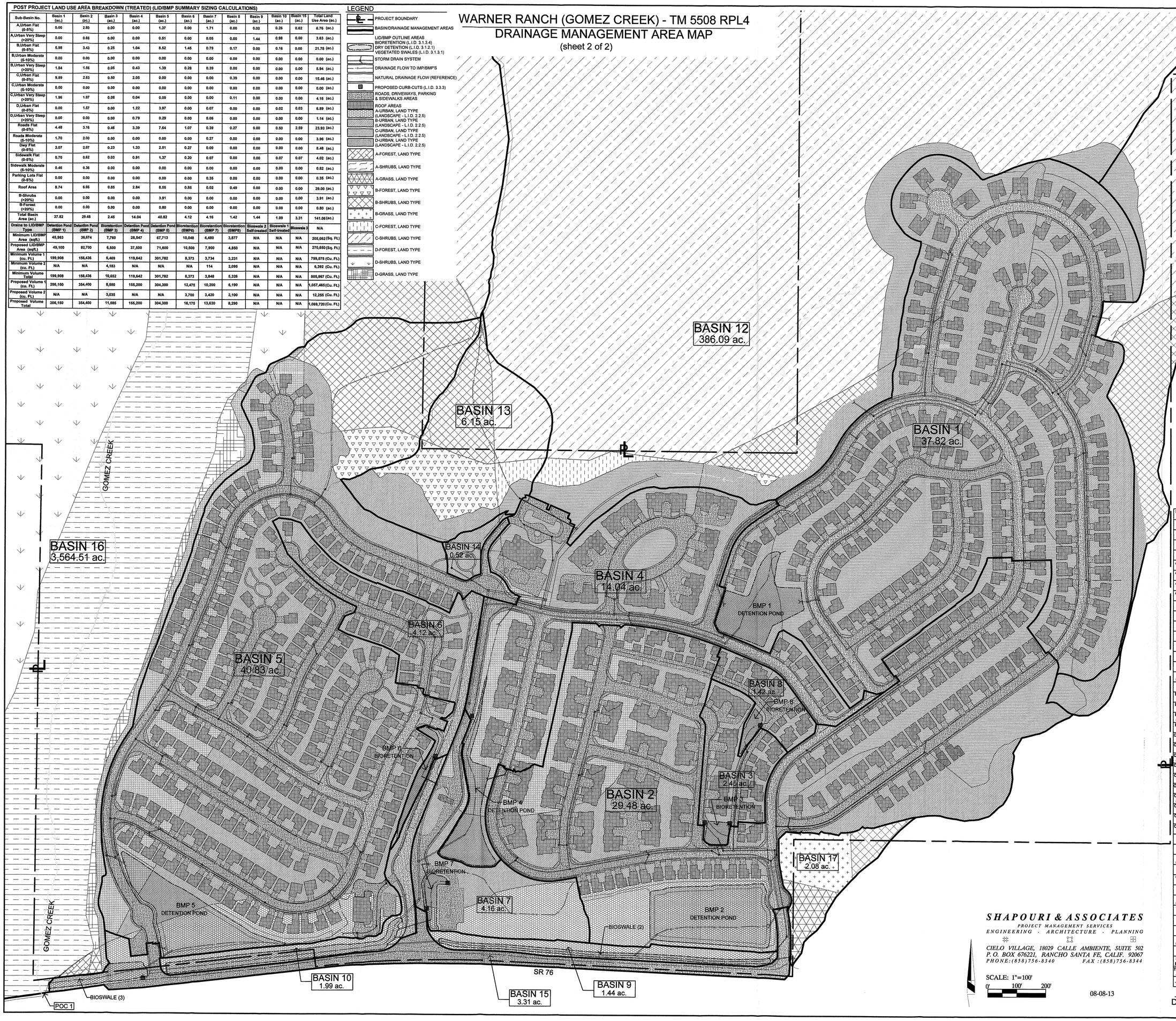
WARNER RANCH (GOMEZ CREEK) - TM 5508 RPL4
DRAINAGE MANAGEMENT AREA MAP
(sheet 2 of 2)

POST PROJECT LAND USE AREA BREAKDOWN (TREATED) (LID/BMP SUMMARY SIZING CALCULATIONS)

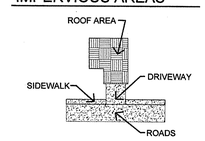
Sub-Basin No.	Basin 1 (ac.)	Basin 2 (ac.)	Basin 3 (ac.)	Basin 4 (ac.)	Basin 5 (ac.)	Basin 6 (ac.)	Basin 7 (ac.)	Basin 8 (ac.)	Basin 9 (ac.)	Basin 10 (ac.)	Basin 15 (ac.)	Total Land Use Area (ac.)
A,Urban Flat (0-5%)	0.00	2.80	0.00	0.00	1.37	0.00	1.71	0.00	0.00	0.26	0.62	6.76 (ac.)
A,Urban Very Steep (>20%)	0.00	0.66	0.00	0.00	0.51	0.00	0.05	0.00	1.44	0.98	0.00	3.63 (ac.)
B,Urban Flat (0-5%)	5.98	3.43	0.25	1.04	8.52	1.45	0.79	0.17	0.00	0.16	0.00	21.78 (ac.)
B,Urban Moderate (5-10%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 (ac.)
B,Urban Very Steep (>20%)	1.84	1.56	0.05	0.43	1.39	0.28	0.39	0.00	0.00	0.00	0.00	5.94 (ac.)
C,Urban Flat (0-5%)	9.89	2.63	0.50	2.05	0.00	0.00	0.00	0.39	0.00	0.00	0.00	15.46 (ac.)
C,Urban Moderate (5-10%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 (ac.)
C,Urban Very Steep (>20%)	1.96	1.97	0.08	0.04	0.00	0.00	0.00	0.11	0.00	0.00	0.00	4.16 (ac.)
D,Urban Flat (0-5%)	0.00	1.57	0.00	1.22	3.97	0.00	0.07	0.00	0.00	0.02	0.03	6.89 (ac.)
D,Urban Very Steep (>20%)	0.00	0.00	0.00	0.79	0.29	0.00	0.06	0.00	0.00	0.00	0.00	1.14 (ac.)
Roads Flat (0-5%)	4.48	3.16	0.46	3.39	7.64	1.07	0.39	0.27	0.00	0.50	2.59	23.93 (ac.)
Roads Moderate (5-10%)	1.70	2.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	3.96 (ac.)
Dwy Flat (0-5%)	2.07	2.07	0.23	1.33	2.51	0.27	0.00	0.00	0.00	0.00	0.00	8.48 (ac.)
Sidewalk Flat (0-5%)	0.70	0.62	0.03	0.91	1.37	0.20	0.07	0.00	0.00	0.07	0.07	4.02 (ac.)
Sidewalk Moderate (5-10%)	0.46	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.82 (ac.)
Parking Lots Flat (0-5%)	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.00	0.00	0.35 (ac.)
Roof Area	8.74	6.66	0.85	2.84	8.55	0.85	0.02	0.49	0.00	0.00	0.00	29.00 (ac.)
B-Shrubs (>20%)	0.00	0.00	0.00	0.00	3.91	0.00	0.00	0.00	0.00	0.00	0.00	3.91 (ac.)
B-Forest (>20%)	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.80 (ac.)
Total Basin Area (ac.)	37.82	29.48	2.45	14.04	40.82	4.12	4.16	1.42	1.44	1.99	3.31	141.06(ac.)
Drains to LID/BMP Type	Detention Pond (BMP 1)	Detention Pond (BMP 2)	Bioretention (BMP 3)	Detention Pond (BMP 4)	Detention Pond (BMP 5)	Bioretention (BMP6)	Bioretention (BMP 7)	Bioretention (BMP8)	Bioswale 2 Self-treated	Bioswale 1 Self-treated	Bioswale 3	N/A
Minimum LID/BMP Area (sqft.)	45,963	35,874	7,760	28,547	67,713	10,048	4,480	3,877	N/A	N/A	N/A	205,062(Sq. Ft.)
Proposed LID/BMP Area (sqft.)	49,100	82,700	6,500	37,500	71,600	10,500	7,900	4,850	N/A	N/A	N/A	270,650(Sq. Ft.)
Minimum Volume 1 (cu. Ft.)	199,908	156,436	6,469	119,642	301,782	8,373	3,734	3,231	N/A	N/A	N/A	799,575 (Cu. Ft.)
Minimum Volume 2 (cu. Ft.)	N/A	N/A	4,183	N/A	N/A	N/A	114	2,095	N/A	N/A	N/A	6,392 (Cu. Ft.)
Minimum Volume Total	199,908	156,436	10,652	119,642	301,782	8,373	3,848	5,326	N/A	N/A	N/A	805,967 (Cu. Ft.)
Proposed Volume 1 (cu. Ft.)	206,150	354,400	8,550	155,200	304,300	12,475	10,200	6,190	N/A	N/A	N/A	1,057,465(Cu. Ft.)
Proposed Volume 2 (cu. Ft.)	N/A	N/A	3,035	N/A	N/A	3,700	3,420	2,100	N/A	N/A	N/A	12,255 (Cu. Ft.)
Proposed Volume Total	206,150	354,400	11,585	155,200	304,300	16,175	13,620	8,290	N/A	N/A	N/A	1,069,720(Cu. Ft.)

LEGEND

- PROJECT BOUNDARY
- BASIN/DRAINAGE MANAGEMENT AREAS
- LID/BMP OUTLINE AREAS
  BIORETENTION (L.I.D. 3.1.3.4)
  DRY DETENTION (L.I.D. 3.1.2.1)
  VEGETATED SWALES (L.I.D. 3.1.3.1)
- STORM DRAIN SYSTEM
- DRAINAGE FLOW TO IMP/BMP'S
- NATURAL DRAINAGE FLOW (REFERENCE)
- PROPOSED CURB-CUTS (L.I.D. 3.3.3)
- ROADS, DRIVEWAYS, PARKING & SIDEWALKS AREAS
- ROOF AREAS
- A-URBAN, LAND TYPE (LANDSCAPE - L.I.D. 2.2.5)
- B-URBAN, LAND TYPE (LANDSCAPE - L.I.D. 2.2.5)
- C-URBAN, LAND TYPE (LANDSCAPE - L.I.D. 2.2.5)
- D-URBAN, LAND TYPE (LANDSCAPE - L.I.D. 2.2.5)
- A-FOREST, LAND TYPE
- A-SHRUBS, LAND TYPE
- A-GRASS, LAND TYPE
- B-FOREST, LAND TYPE
- B-SHRUBS, LAND TYPE
- B-GRASS, LAND TYPE
- C-FOREST, LAND TYPE
- C-SHRUBS, LAND TYPE
- D-FOREST, LAND TYPE
- D-SHRUBS, LAND TYPE
- D-GRASS, LAND TYPE



IMPERVIOUS AREAS



POST-PROJECT LAND USE AREA BREAKDOWN (SELF-TREATED)

Sub-Basin No.	Basin 11 (ac.)	Basin 12 (ac.)	Basin 13 (ac.)	Basin 14 (ac.)	Basin 16 (ac.)	Basin 17 (ac.)	Total Land Use Area (ac.)
A-Forest (0-5%)	0.00	0.00	0.00	0.00	0.13	0.00	0.13
A-Forest (5-10%)	0.00	0.00	0.00	0.00	0.01	0.00	0.01
A-Forest (10-20%)	0.00	0.00	0.00	0.00	0.05	0.00	0.05
A-Forest (>20%)	0.00	0.00	0.00	0.00	2.41	0.00	2.41
A-Shrubs (0-5%)	0.00	0.00	0.00	0.00	0.15	0.00	0.15
A-Shrubs (5-10%)	0.00	0.00	0.00	0.00	0.14	0.00	0.14
A-Shrubs (10-20%)	0.00	0.00	0.00	0.00	1.45	0.00	1.45
A-Shrubs (>20%)	0.00	0.00	0.00	0.00	33.98	0.00	33.98
A-Grass (0-5%)	0.00	0.00	0.00	0.00	0.11	0.61	0.72
B-Forest (0-5%)	0.00	0.08	0.00	0.00	0	0.00	0.08
B-Forest (5-10%)	0.00	0.00	0.01	0.00	0	0.00	0.01
B-Forest (10-20%)	0.00	0.00	0.01	0.00	0	0.00	0.01
B-Forest (>20%)	0.00	0.00	1.40	0.00	0.11	0.00	1.51
B-Grass (0-5%)	0.00	0.00	0.00	0.00	0	0.00	0
B-Grass (5-10%)	0.00	0.00	0.00	0.00	0	0.35	0.35
B-Grass (10-20%)	0.00	0.00	0.00	0.00	0	0.34	0.34
B-Grass (>20%)	0.00	0.00	0.00	0.00	0	0.35	0.35
B-Shrubs (0-5%)	0.04	0.31	0.01	0.00	14.1	0.00	14.46
B-Shrubs (5-10%)	0.23	1.41	0.00	0.00	8.85	0.00	10.49
B-Shrubs (10-20%)	1.81	0.77	0.07	0.00	27.2	0.43	30.28
B-Shrubs (>20%)	0.77	4.16	1.53	0.00	92.68	0.00	99.14
C/D-Forest (0-5%)	0.00	0.00	0.00	0.00	17.49	0.00	17.49
C/D-Forest (5-10%)	0.00	0.00	0.00	0.00	9.02	0.00	9.02
C/D-Forest (10-20%)	0.00	0.00	0.01	0.00	26.56	0.00	26.57
C/D-Forest (>20%)	0.00	0.60	0.30	0.00	46.4	0.00	47.31
C/D-Shrubs (0-5%)	0.03	3.23	0.00	0.00	47.64	0.00	50.90
C/D-Shrubs (5-10%)	0.09	10.44	0.00	0.00	128.81	0.00	139.34
C/D-Shrubs (10-20%)	2.10	34.49	0.00	0.00	481.29	0.00	517.87
C/D-Shrubs (>20%)	7.68	325.79	1.32	0.00	2623.92	0.00	2958.70
C/D-Grass (0-5%)	0.00	0.00	0.00	0.00	0.84	0.00	0.84
C/D-Grass (5-10%)	0.00	0.00	0.00	0.00	0.04	0.00	0.04
B,Urban (0-5%)	0.00	0.15	0.00	0.14	0	0.00	0.29
B,Urban (5-10%)	0.00	0.06	0.00	0.08	0	0.00	0.13
B,Urban (10-20%)	0.01	0.03	0.05	0.05	0	0.00	0.14
B,Urban (>20%)	0.65	1.04	1.26	0.19	0	0.00	3.14
C,Urban (0-5%)	0.00	0.36	0.01	0.00	0	0.00	0.37
C,Urban (5-10%)	0.00	0.06	0.00	0.02	0	0.00	0.08
C,Urban (10-20%)	0.00	0.11	0.00	0.00	0	0.00	0.11
C,Urban (>20%)	0.78	3.00	0.17	0.00	0	0.00	3.95
D,Urban (0-5%)	0.00	0.00	0.00	0.00	0.04	0.00	0.04
D,Urban (5-10%)	0.00	0.00	0.00	0.00	0.01	0.00	0.01
D,Urban (10-20%)	0.00	0.00	0.00	0.00	0.05	0.00	0.05
D,Urban (>20%)	0.00	0.00	0.00	0.00	1.03	0.00	1.03
Sidewalks Flat (0-5%)	0.00	0.00	0.00	0.03	0	0.00	0.03
Total Basin Area (ac.)	14.18	386.09	6.15	0.52	3564.51	2.08	3973.54
Drains Thruough	Bioswale 1	Bioswale 1	Bioswale 1	Bioswale 1	Gomez Creek	Bioswale 2	

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SCALE: 1"=100'
0' 100' 200'

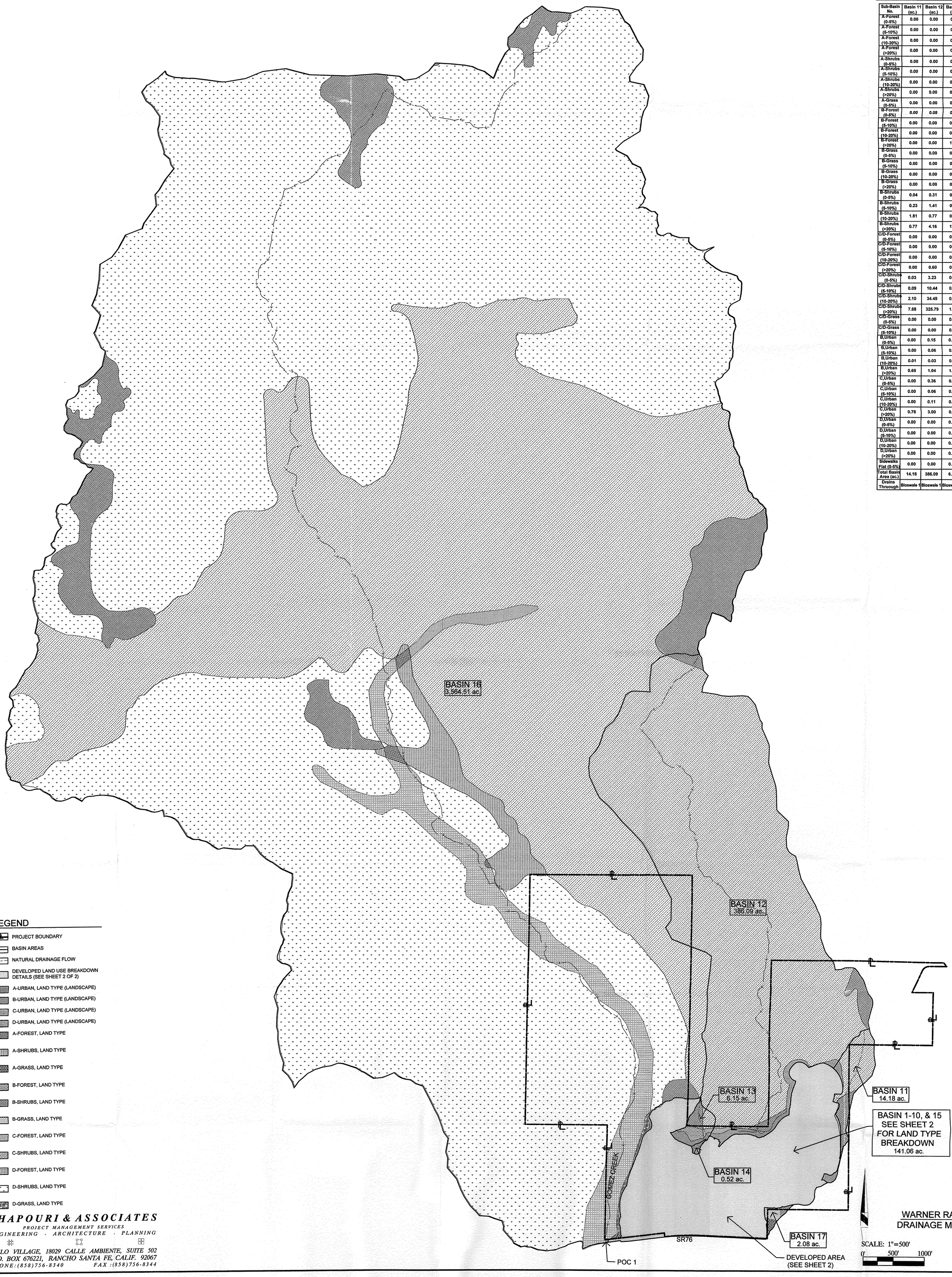
08-08-13

WARNER RANCH (GOMEZ CREEK)
DRAINAGE MANAGEMENT AREA MAP

WARNER RANCH (GOMEZ CREEK) - TM 5508 RPL4

DRAINAGE MANAGEMENT AREA MAP

(sheet 1 of 2)



POST-PROJECT LAND USE AREA BREAKDOWN (SELF-TREATED)

Sub-Basin No.	Basin 11 (ac.)	Basin 12 (ac.)	Basin 13 (ac.)	Basin 14 (ac.)	Basin 16 (ac.)	Basin 17 (ac.)	Total Land Use Area (ac.)
A-Forest (0-5%)	0.00	0.00	0.00	0.00	0.13	0.00	0.13
A-Forest (5-10%)	0.00	0.00	0.00	0.00	0.01	0.00	0.01
A-Forest (10-20%)	0.00	0.00	0.00	0.00	0.05	0.00	0.05
A-Forest (>20%)	0.00	0.00	0.00	0.00	2.41	0.00	2.41
A-Shrubs (0-5%)	0.00	0.00	0.00	0.00	0.15	0.00	0.15
A-Shrubs (5-10%)	0.00	0.00	0.00	0.00	0.14	0.00	0.14
A-Shrubs (10-20%)	0.00	0.00	0.00	0.00	1.45	0.00	1.45
A-Shrubs (>20%)	0.00	0.00	0.00	0.00	33.98	0.00	33.98
A-Grass (0-5%)	0.00	0.00	0.00	0.00	0.11	0.61	0.72
B-Forest (0-5%)	0.00	0.08	0.00	0.00	0	0.00	0.08
B-Forest (5-10%)	0.00	0.00	0.01	0.00	0	0.00	0.01
B-Forest (10-20%)	0.00	0.00	0.01	0.00	0	0.00	0.01
B-Forest (>20%)	0.00	0.00	1.40	0.00	0.11	0.00	1.51
B-Grass (0-5%)	0.00	0.00	0.00	0.00	0	0.00	0
B-Grass (5-10%)	0.00	0.00	0.00	0.00	0	0.35	0.35
B-Grass (10-20%)	0.00	0.00	0.00	0.00	0	0.34	0.34
B-Grass (>20%)	0.00	0.00	0.00	0.00	0	0.35	0.35
B-Shrubs (0-5%)	0.04	0.31	0.01	0.00	14.1	0.00	14.46
B-Shrubs (5-10%)	0.23	1.41	0.00	0.00	8.85	0.00	10.49
B-Shrubs (10-20%)	1.81	0.77	0.07	0.00	27.2	0.43	30.28
B-Shrubs (>20%)	0.77	4.16	1.53	0.00	92.68	0.00	99.14
C/D-Forest (0-5%)	0.00	0.00	0.00	0.00	17.49	0.00	17.49
C/D-Forest (5-10%)	0.00	0.00	0.00	0.00	9.02	0.00	9.02
C/D-Forest (10-20%)	0.00	0.00	0.01	0.00	26.56	0.00	26.57
C/D-Forest (>20%)	0.00	0.60	0.30	0.00	46.4	0.00	47.31
C/D-Shrubs (0-5%)	0.03	3.23	0.00	0.00	47.64	0.00	50.90
C/D-Shrubs (5-10%)	0.09	10.44	0.00	0.00	128.81	0.00	139.34
C/D-Shrubs (10-20%)	2.10	34.49	0.00	0.00	481.29	0.00	517.87
C/D-Shrubs (>20%)	7.68	325.79	1.32	0.00	2623.92	0.00	2958.70
C/D-Grass (0-5%)	0.00	0.00	0.00	0.00	0.84	0.00	0.84
C/D-Grass (5-10%)	0.00	0.00	0.00	0.00	0.04	0.00	0.04
B,Urban (0-5%)	0.00	0.15	0.00	0.14	0	0.00	0.29
B,Urban (5-10%)	0.00	0.06	0.00	0.08	0	0.00	0.13
B,Urban (10-20%)	0.01	0.03	0.05	0.05	0	0.00	0.14
B,Urban (>20%)	0.65	1.04	1.26	0.19	0	0.00	3.14
C,Urban (0-5%)	0.00	0.36	0.01	0.00	0	0.00	0.37
C,Urban (5-10%)	0.00	0.06	0.00	0.02	0	0.00	0.08
C,Urban (10-20%)	0.00	0.11	0.00	0.00	0	0.00	0.11
C,Urban (>20%)	0.78	3.00	0.17	0.00	0	0.00	3.95
D,Urban (0-5%)	0.00	0.00	0.00	0.00	0.04	0.00	0.04
D,Urban (5-10%)	0.00	0.00	0.00	0.00	0.01	0.00	0.01
D,Urban (10-20%)	0.00	0.00	0.00	0.00	0.05	0.00	0.05
D,Urban (>20%)	0.00	0.00	0.00	0.00	1.03	0.00	1.03
Sidewalks Flat (0-5%)	0.00	0.00	0.00	0.03	0	0.00	0.03
Total Basin Area (ac.)	14.18	386.09	6.15	0.52	3564.51	2.08	3973.54
Drains Thruough	Bioswale 1	Bioswale 1	Bioswale 1	Bioswale 1	Gomez Creek	Bioswale 2	

LEGEND

- PROJECT BOUNDARY
- BASIN AREAS
- NATURAL DRAINAGE FLOW
- DEVELOPED LAND USE BREAKDOWN DETAILS (SEE SHEET 2 OF 2)
- A-URBAN, LAND TYPE (LANDSCAPE)
- B-URBAN, LAND TYPE (LANDSCAPE)
- C-URBAN, LAND TYPE (LANDSCAPE)
- D-URBAN, LAND TYPE (LANDSCAPE)
- A-FOREST, LAND TYPE
- A-SHRUBS, LAND TYPE
- A-GRASS, LAND TYPE
- B-FOREST, LAND TYPE
- B-SHRUBS, LAND TYPE
- B-GRASS, LAND TYPE
- C-FOREST, LAND TYPE
- C-SHRUBS, LAND TYPE
- D-FOREST, LAND TYPE
- D-SHRUBS, LAND TYPE
- D-GRASS, LAND TYPE

SHAPOURI & ASSOCIATES

PROJECT MANAGEMENT SERVICES

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WARNER RANCH (GOMEZ CREEK)
DRAINAGE MANAGEMENT AREA MAP
(sheet 1 of 2)

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