Filterra Maintenance

Maintenance is simple, safe and inexpensive. It typically takes less than 30 minutes to maintain 1 unit. Trash and heavy sediments accumulate on top of the mulch and is typically all that is removed. This waste is easily removed and disposed of in trash bags or buckets. Fresh mulch is then replaced on top of the engineered media and not removed until the next maintenance visit. Hardwood mulch is a highly effective and an inexpensive pretreatment layer that protects not only the engineered media but also the plant in all weather conditions.

Filterra currently includes a 1-year free maintenance agreement with the purchase of each unit. The maintenance agreement begins when the system is placed in full operation (complete system installed: curb and gutter and transitions in place, temporary throat protection removed by the Supplier, and plant installation).

Materials and services included in the 1-year maintenance agreement are:

- Overall unit inspection
- Additional mulch as needed
- Addition of engineered media as needed
- Pruning as needed (usually seasonal)
- Visual inspections with appropriate service at six month intervals
- Removal of sediment, litter, and foreign debris
- Maintenance records updated and stored (reports available upon request)

After your first year of free maintenance you may choose from the following options to ensure your units are operating correctly, and help to ensure compliance with local regulatory requirements.

1. Following your observation of the simple maintenance steps during the first year of the included maintenance, you can easily and safely complete the maintenance

yourself! An Operation and Maintenance Manual with photographic instruction is provided to every owner.

2. Extended maintenance service is available from Filterra. For between $325 - $800 per unit, per year, depending on number and size of units, Filterra will maintain your units, contact us at maintenance@filterra.com for details and pricing.

3. Filterra also offers an onsite maintenance demonstration. Included with every standard demonstration is a Filterra maintenance training DVD which covers all aspects of the maintenance steps needed to meet our specifications. Cost varies dependent upon geographic location. Contact us at maintenance@filterra.com for more information or to schedule your demonstration.

It is the responsibility of the owner to provide adequate irrigation year-round to the plant within the Filterra system.

Maintenance Program for Inlet Stenciling

Inspection Frequency/Indications:	Regular Maintenance Inspections ❑ Before wet season begins (September); ❑ After wet season (April).
Maintenance Indications	**Maintenance Activities**
❑ Inlet stenciling/signage begins to weather or fade	❑ Re-stamp signage
❑ Broken or damaged structure	❑ Repair or replace signage structure

Maintenance Program for Roadside Bioretention Areas AND Water Quality Basins

Inspection Frequency/Indications:	Regular Inspections ❑ Before wet season begins (September); ❑ After wet season (April). Performance Inspections ❑ After rainfall events greater than 0.5 inch
Maintenance Indications	**Maintenance Activities**
❑ Damage to slopes, inlet, outlet, or other structures	❑ Repair slopes, inlet, outlet, or other structures
❑ Barren areas or badly established vegetation	❑ Re-plant or re-seed barren areas or badly established vegetation, use erosion control mats if necessary
❑ Over-grown vegetation, emergent woody vegetation and/or weeds	❑ Trim vegetation to 6 inches, remove emergent woody vegetation and weeds
❑ Sediment accumulation over 3 inches	❑ Remove sediment accumulation
❑ Trash and litter present in bioretention area	❑ Remove trash and debris
❑ Rodent burrows that inhibit function of facility	❑ Abate rodents and other vectors as necessary
❑ Standing water in facility	❑ Drain standing water
Waste Disposal	Sediment, other pollutants, and all other waste shall be properly disposed of in a licensed landfill or by another appropriate disposal method in accordance with local, state, and federal regulations.

Maintenance Program for Filterra

Inspection Frequency/Indications:	Regular Inspections ❑ Every six months
Activity	**Schedule**
❑ Inspection of Filterra and surrounding area	❑ Every six months
❑ Removal of tree grate and erosion control stones	❑ Every six months
❑ Removal of debris, trash and mulch	❑ Every six months
❑ Mulch replacement	❑ Every six months

ATTACHMENT G

Treatment Control BMP Certification for DPW Permitted Land Development Projects

After TCBMP construction, complete a TCBMP Certification form to verify with County staff that all constructed TCBMPs on the record plans match the approved TCBMPs in the most current SWMP. TCBMP Certification must be completed and verified for permit closure.

County of San Diego

DEPARTMENT OF PUBLIC WORKS

Treatment Control BMP Certification for DPW Permitted Land Development Projects

Permit Number (e.g. L-grading) _____ HSU Watershed _____

Project Name _____

Location / Address _____

Maintenance Notification/Agreement No.: _____

Responsible Party for Construction Phase

Developer's Name: _____

Address: _____

City _____ State _____ Zip _____

Email Address: _____

Phone Number: _____

Engineer of Work: _____

Engineer's Phone Number: _____

Responsible Party for Perpetual Maintenance

Owner's Name(s)*_____

Address: _____

City _____ State _____ Zip _____

Email Address: _____

Phone Number: _____

*Note: If a corporation or LLC, provide information for principal partner or Agent for Service of Process. If an HOA, provide information for the Board or property manager at time of project closeout.

Treatment Control BMPs (TCBMPs) [1,2] (List all from SWMP)			
Lot Number or Location	**Description/Type**	Sheet	
		TM 5361 (A)	TM 5361 (B)
ROADSIDE BIORETENTION AREAS	TC/LID-BMP	6	6,10
FILTERRA UNITS or Approved Equal	TC-BMP	6,9	6,7,8, 10,11
WQ BASINS	TC-BMP	6,7,9	7,8,10, 11

[1] All Priority Development Projects (PDPs) require a TCBMP.
[2] BMPs designed to treat stormwater (e.g. LID and hydromod) shall be considered TCBMPs.

(Add sheet for all additional BMPs)

For Applicant to submit to PDCI:

- ☐ Copy of the final accepted SWMP an any accepted addendum.
- ☐ Copy of the most current plan showing the Stormwater TCBMP Table, plans/cross-section sheets of the TCBMPs and the location of each verified as-built TCBMP.
- ☐ Photograph of each TCBMP.
- ☐ Copy of the approved TCBMP maintenance agreement associated security

By signing below, I certify that the treatment control BMP(s) for this project have been constructed and all BMPs are in substantial conformance with the approved plans and applicable regulations. I understand the County reserves the right to inspect the above BMPs to verify compliance with the approved plans and Watershed Protection Ordinance. Should it be determined that the BMPs were not constructed to plan or code, corrective actions may be necessary before permits can be closed.

Please sign your name and seal.

Professional Engineer's Printed Name:

_____

Professional Engineer's Signed Name:

_____

Date: _____

[SEAL]

COUNTY – OFFICIAL USE ONLY:

For PDCI:

PDCI Inspector:_____

Date Project has/expects to close:_____

Date Certification received from EOW:_____

By signing below, PDCI Inspector concurs that every noted TCBMP has been installed per plan.

PDCI Inspector's Signature:_____ Date:_____

FOR WPP:

Date Received from PDCI:_____

WPP Submittal Reviewer:_____

WPP Reviewer concurs that the provided for the following TCBMPs is acceptable to enter into the TCBMP Maintenance verification inventory.

List **acceptable** TCBMPs:

WPP Reviewer's Signature: _____Date:_____

☐ Provide a copy of the certification sheet to DPLU.

ATTACHMENT H

HMP STUDY

(Contact County staff to determine if this should be a separate report from the Major SWMP)

1 – Introduction

Table 6-1 from the March 2011 Final Hydromodification Management Plan (HMP), which was prepared for the County of San Diego, exempts the Lower Otay Reservoir from hydromodification mitigation requirements.

In the proposed condition, two road crossings are proposed as part of Strada Piazza, which will traverse two open channels along the southern portion of the project. Both road crossings propose to add new curb, gutter, roadway, and storm drain and will outlet into natural open channels. The slope of these new roads will vary between 5% and 10%.

Since these proposed improvements include developed areas that have the potential to create hydromodification impacts to the open channels, a hydromodification analysis is required. The western culvert crossings are labeled as point of compliance 1 & 7, while the eastern crossings are labeled point of compliance 2 & 8.

In determining the operating level of the Lower Otay Reservoir, we were referred by the City of San Diego to the MSCP Subarea Plan page 35, which indicates they have reserved the right to maintain "*the area of Otay Reservoir and Dam, including the shoreline area within 300 feet horizontally from the high water level of the spillway with gates closed of 490.7 feet for water quality purposes"*.

All of the proposed storm drain outlets (with the exception of four culverts) that cross Otay Lakes Road have been designed to outlet at or below this 490.7 reservoir elevation. These outfalls are exempt from hydromodification requirements.

A hydromodification analysis has been performed for the proposed culvert crossings at Otay Lakes Road with invert elevations above 490.7 and that also increase the impervious area within their respective watersheds. The culverts that meet these criteria are culverts 1a, 1b, 19, and 20, which are labeled as points of compliance 3, 4, 5, and 6. An analysis was also performed for the anticipated realignment of Wueste Road at the intersection with Otay Lakes Road. The impervious area decreased due to the future widening of Otay Lakes Road therefore no mitigation is required. This is point of compliance #9. Refer to the attached hydromodification exhibit in Appendix 1 for storm drain outlet and point of compliance locations. Table 1 lists each culvert, and the outlet elevation compared with the reservoir water surface elevation.

The project contains type "D" soils, with slopes ranging from 10% to 20%. The existing vegetative cover consists of native shrubs.

The Lower Otay precipitation file was used for this project, which is built into the SDHM program.

TABLE 1 - Summary of Hydromod Requirements Lower Otay Reservoir Culverts

	IMPERVIOUS AREA (AC)		PERVIOUS AREA (AC)		TOTAL TRIBUTARY AREA (AC)		PR CULVERT INV. (FT)	LAKE HIGH WATER LEVEL (FT)	HYDROMOD ANALYSIS REQUIRED?	POC NAME
	EX	PR	EX	PR	EX	PR				
STRADA PIAZZA	0.0	0.0	29.5	22.1	29.5	22.1	N/A	N/A	YES	POC 1
STRADA PIAZZA	0.0	0.0	673.6	654.3	673.6	654.3	N/A	N/A	YES	POC 2
STRADA PIAZZA	0.0	1.7	159.4	160.9	159.4	162.6	N/A	N/A	YES	POC 7
STRADA PIAZZA	0.0	4.7	195.6	183.5	195.6	188.2	N/A	N/A	YES	POC 8
CULVERT 1a	2.0	3.9	26.3	25.7	28.1	29.6	521.0	490.70	YES	POC 3
CULVERT 1b	0.5	1.4	6.1	4.7	6.5	6.2	516.0	490.70	YES	POC 4
CULVERT 2	0.7	2.1	31.4	29.7	32.1	31.8	478.5	490.70	NO	
CULVERT 4	0.0	6.7	117.1	9.1	117.1	15.9	485.0	490.70	NO	
CULVERT 5	0.0	0.0	30.8	0.0	30.8	0.0	N/A	490.70	NO	
CULVERT 6	0.0	60.4	155.8	144.6	155.8	205.0	486.0	490.70	NO	
CULVERT 7	0.0	4.8	461.7	648.2	461.7	653.0	490.7	490.70	NO	
CULVERT 8	0.0	0.0	23.3	0.0	23.3	0.0	N/A	490.70	NO	
CULVERT 9	0.0	118.0	105.5	15.1	105.5	133.1	490.7	490.70	NO	
CULVERT 10	0.0	0.0	12.2	0.0	12.2	0.0	N/A	490.70	NO	
CULVERT 11	0.0	0.0	7.0	0.0	7.0	0.0	N/A	490.70	NO	
CULVERT 12	0.0	2.1	14.5	6.4	14.5	8.5	490.7	490.70	NO	
CULVERT 13	0.0	0.0	9.5	0.0	9.5	0.0	N/A	490.70	NO	
CULVERT 14	0.0	2.5	12.6	8.3	12.6	10.7	490.7	490.70	NO	
CULVERT 15	0.0	4.9	293.5	236.7	293.5	241.6	478.0	490.70	NO	
CULVERT 16a	0.0	0.0	8.4	0.0	8.4	0.0	N/A	490.70	NO	
CULVERT 16	0.0	91.0	86.2	38.6	86.2	129.6	484.0	490.70	NO	
CULVERT 17a	0.0	0.0	6.0	0.0	6.0	0.0	N/A	490.70	NO	
CULVERT 17	0.0	0.0	20.6	0.0	20.6	0.0	N/A	490.70	NO	
CULVERT 18a	0.0	0.0	9.7	0.0	9.7	0.0	N/A	490.70	NO	
CULVERT 18	0.0	62.8	893.9	933.4	893.9	996.2	484.5	490.70	NO	
CULVERT 19	0.9	0.9	57.9	3.5	58.8	4.5	504.0	490.70	YES	POC 5
CULVERT 20	2.0	2.0	61.2	18.5	63.2	20.6	509.0	490.70	YES	POC 6

Note: "N/A" implies a culvert connection to the Lower Otay Reservoir does not exist, or the culvert has been abandoned in the proposed condition.

2 – Methodology

The San Diego Hydrology Model (SDHM) version 2012/9/13 by Clear Creek Solutions was used to generate a continuous simulation hydrologic model over the project site during the existing and proposed conditions.

The Lower Otay precipitation file was used for this project, which is built into the SDHM program.

The analysis incorporated the following criteria, as required by the March 2011 Final Hydromodification Management Plan (HMP):

- Use of a lower threshold of 10% of Q2 (0.1Q2), and an upper threshold of Q10.
- Use of partial-duration series frequency calculations to more accurately estimate flow frequency response.
- Assess the SDHM model so that post-project discharge rates and durations do not deviate above the pre-project discharge rates and durations by more than 10 percent or over more than 10 percent of the length of the flow duration curve.

To generate a continuous simulation model, peak flow frequency, and duration statistics were developed using SDHM. The default method within SDHM determines the flow thresholds by calculating a partial duration series. An alternative method is to us an “annual peak” method, which considers just one annual peak storm event in order to calculate the rainfall recurrence interval. Because of San Diego’s semi-arid climate, in which long periods of time can elapse between significant rainfall events, the use of this peak annual series tends to unrealistically underestimate flow return event values, especially for the 2-year storm. The partial-duration series method is a more applicable rainfall series for the semi-arid climate in San Diego County.

Within SDHM, the partial duration series events have been separated into discrete rainfall events assuming the following criteria:

- For the discrete rainfall events, a lower flow limit was set to a very small value, equal to 0.002 cfs per acres of contributing drainage area.
- A new discrete event is designated when the flow falls below 0.002 cfs per acre for a time period of 24 hours.

This method was used within the model and resulted with threshold values of 0.1*Q2 to Q10 for each point of compliance.

3– Results

Nine POCs were analyzed for hydromodification impacts. Table 2 below summarizes the point of compliance watershed areas and upper and lower thresholds from the partial duration series method results. Table 2 shows that the proposed condition 0.1Q2 and Q10 do not exceed the flow thresholds from the existing condition.

TABLE 2 - Summary of Partial Duration Flow Thresholds for Hydromodification

	Drainage Area (ac)				**SDHM Partial Duration Series Flow Thresholds (cfs)**	
	Existing Condition		**Proposed Condition**		**0.1Q2**	**Q10**
	Impervious area (ac)	Pervious Area (ac)	Impervious area (ac)	Pervious Area (ac)		
POC 1	0.0	29.5	0.0	22.1	0.31	5.92
POC 2	0.0	673.6	0.0	654.3	7.13	135.19
POC 3	2.0	26.3	3.9	25.7	0.33	5.90
POC 4	0.5	6.1	1.4	4.7	0.08	1.38
POC 5	0.9	57.9	0.9	3.6	0.64	11.87
POC 6	2.0	61.2	2.0	18.5	0.69	12.83
POC 7	0.0	159.4	1.7	160.9	1.69	31.99
POC 8	0.0	195.6	4.7	183.5	2.07	39.26
POC 9	0.5	0.0	0.3	0.0	0.02	0.33

Due to the decrease in drainage area to points of compliance 1, 2, 5, 6 and 9, the proposed condition frequency and duration curves do not exceed those during the existing conditions for these points of compliance. Therefore, BMP measures for hydromodification mitigation are not required.

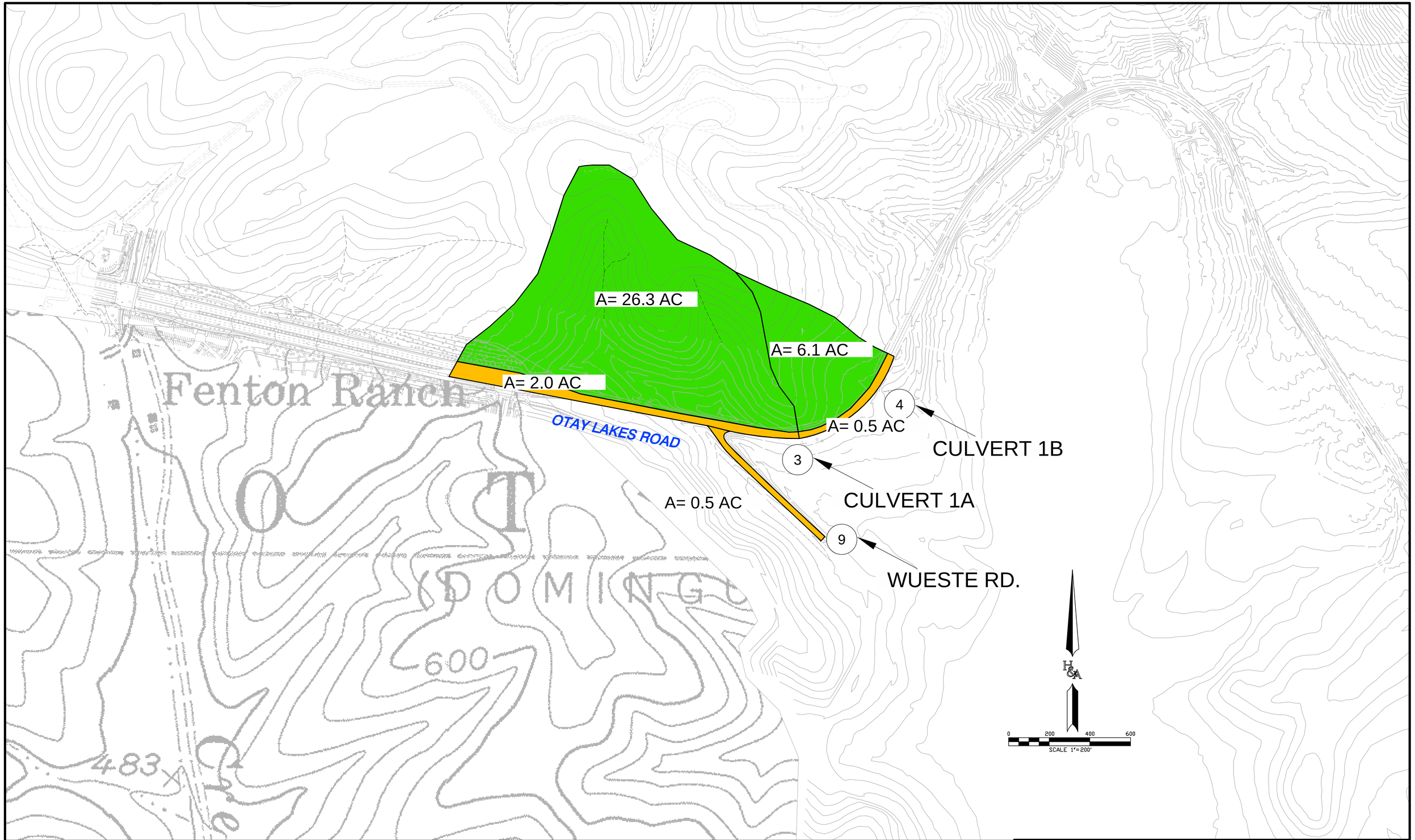
Vegetated roadside bioretention areas were used as mitigation measures for points of compliance 3-4 and 7-8 within the SDHM model. The final design criteria for each bioretention area that was used in SDHM is listed in Table 3. These results can be found in Appendix 2 as part of the SDHM input criteria. SDHM modeling results can also be found in Appendix 2.

TABLE 3 – Proposed Roadside Bioretention Area Design

	POC 3	POC 4	POC 7	POC 8
Length (ft)	900	300	500 each side	500 each side
Bottom Width (ft)	3	3	2.68	2.68
Bioretention Depth (ft)	1.5	1.5	1	1
Side Slopes	3:1	3:1	3:1	3:1
Longitudinal Slope (%)	2*	2*	2*	2*
Riser Diameter (in)	7	4	6	6
Riser Height (ft)	1	1	0.83	0.83
Orifice Diameter (in)	3.5	1.7	2	2
Orifice Height (ft)	0	0	0	0
Subdrain Diameter (in)	4	4	4	4
Subdrain Orifice Diameter (in)	1	1	1	1

*Check dams where required to maintain inundation of bioretention bottom along entire design length.

Appendix 1 – Hydromodification Exhibit



LEGEND

WATERSHED AREA-VEGETATED

WATERSHED AREA-ROAD

POINT OF COMPLIANCE (1)

PREPARED BY:

HUNSAKER & ASSOCIATES SAN DIEGO, INC

PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 FX(858)558-1414

EXISTING CONDITION
HYDROMODIFICATION MAP

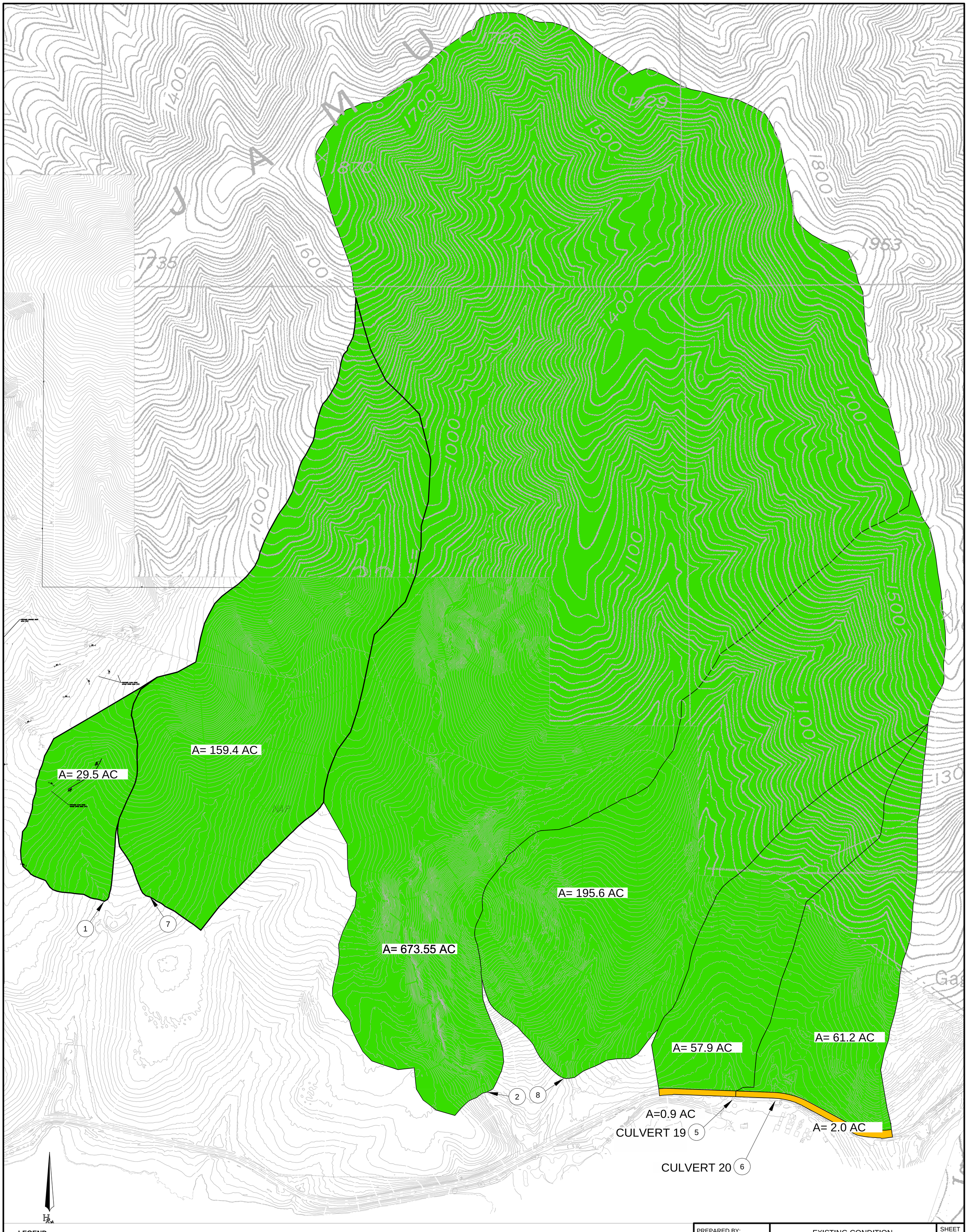
OTAY VILLAGE 13

CITY OF CHULA VISTA, CALIFORNIA

SHEET 1 OF 2

W.O.#3825-0001

R:\0982\Hyd\ACAD\0982$ Hydromod Watershed Map.dwg[JAug-17-2014:13:12



LEGEND

WATERSHED AREA-VEGETATED

WATERSHED AREA-ROAD

POINT OF COMPLIANCE 1

PREPARED BY:

HUNSAKER & ASSOCIATES SAN DIEGO, INC.

PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 FX(858)558-1414

EXISTING CONDITION
HYDROMODIFICATION MAP

OTAY VILLAGE 13

CITY OF CHULA VISTA, CALIFORNIA

SHEET 2 OF 2

W.O.#2825-0001

R:\0982\Hyd\ACAD\0982$ Hydromod Watershed Map.dwg[]Aug-17-2014:13:17

A=25.7AC

A=4.7AC

A=3.9AC

A=1.4AC

OTAY LAKES ROAD

A=0.3AC

4

CULVERT 1B

3

CULVERT 1A

9

WUESTE RD.
(RE-ALIGNED)

Fenton Ranch

OTAY (DOMINGO)

600

483

0 200 400 600
SCALE 1"=200'

LEGEND

WATERSHED AREA-VEGETATED

WATERSHED AREA-ROAD

POINT OF COMPLIANCE 1

PREPARED BY:

HUNSAKER & ASSOCIATES SAN DIEGO, INC
PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 FX(858)558-1414

PROPOSED CONDITION
HYDROMODIFICATION MAP

OTAY VILLAGE 13

CITY OF CHULA VISTA, CALIFORNIA

SHEET 1 OF 2

W.O.#2825-0001 & 2807-0002

R:\0982\Hyd\ACAD\0982$ Hydromod Watershed Map.dwg[]Oct-07-2014:17:23

A=652.4 AC

A=128.1 AC

A=158.3 AC

A=21.7 AC

A=0.9 AC

A=1.7 AC

A=0.4 AC

A=1.0 AC

A=0.7 AC

A=17.1 AC

A=0.4 AC

A=3.8 AC

A=29.24 AC

A=2.0 AC

A=1.6 AC

A=3.1 AC

A=2.6 AC

A=1.2 AC

A=1.1 AC

A=3.6 AC

A=18.5 AC

A= 0.9 AC

A=2.0 AC

CULVERT 19 5

CULVERT 20 6

1 7 2 8

LEGEND

WATERSHED AREA-VEGETATED

WATERSHED AREA-SELF MITIGATING

WATERSHED AREA-ROAD

POINT OF COMPLIANCE 1

PREPARED BY:

HUNSAKER & ASSOCIATES SAN DIEGO, INC

PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 FX(858)558-1414

PROPOSED CONDITION
HYDROMODIFICATION MAP

OTAY VILLAGE 13

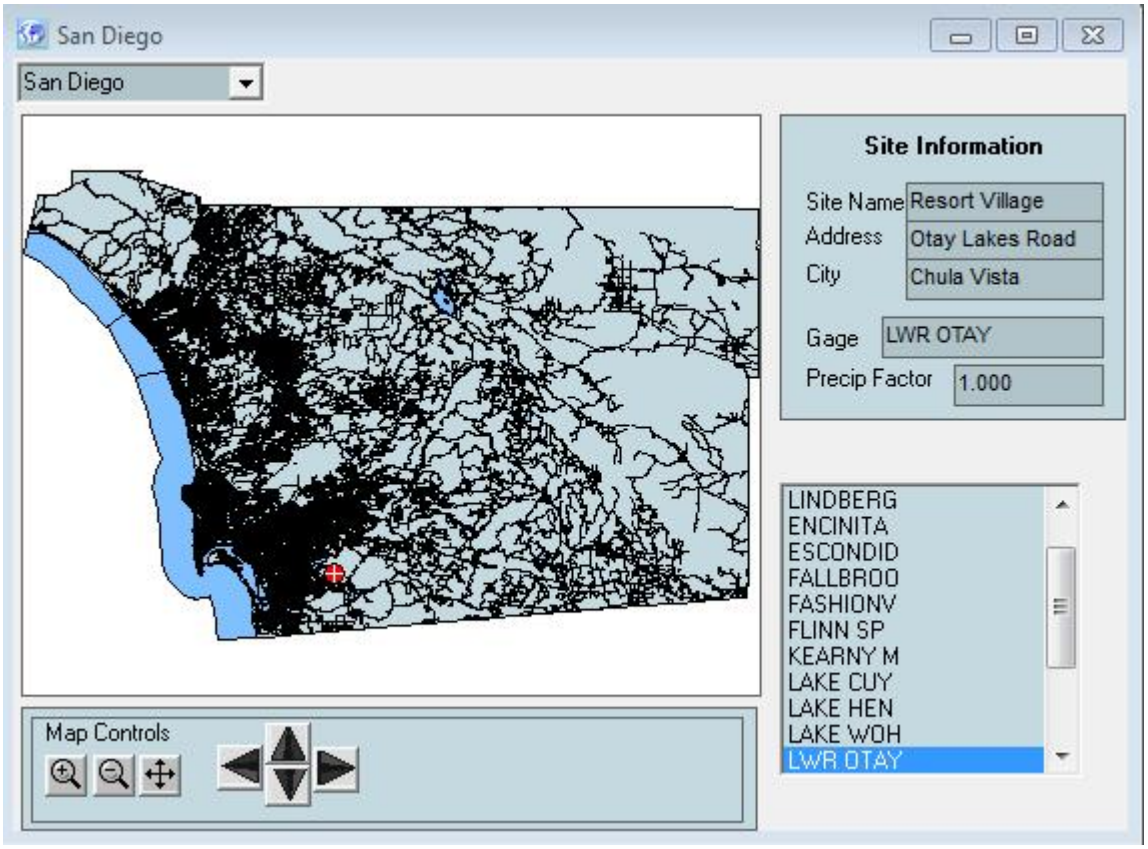
CITY OF CHULA VISTA, CALIFORNIA

SHEET 2 OF 2

W.O.#2825-0001

R:\0982\Hyd\ACAD\0982$ Hydromod Watershed Map.dwg[JAug-17-2014:13:39

Appendix 2 – SDHM Hydromodification Results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San Diego
Site Information
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Chula Vista
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Precip Factor
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ENCINITA
ESCONDID
FALLBROO
FASHIONV
FLINN SP
KEARNY M
LAKE CUY
LAKE HEN
LAKE WOH
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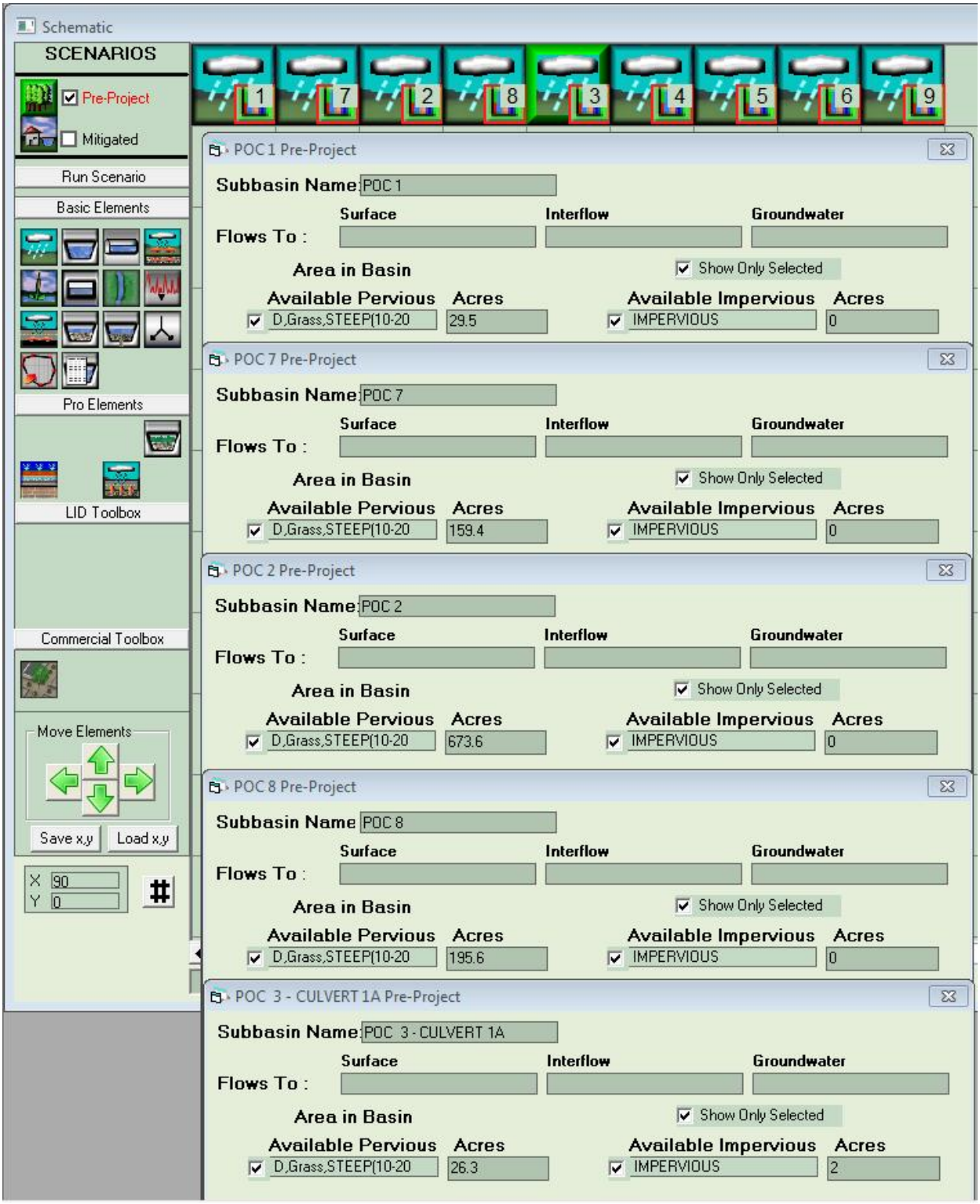
Schematic
SCENARIOS
Pre-Project
Mitigated
Run Scenario
Basic Elements
Pro Elements
LID Toolbox
Commercial Toolbox
Move Elements
Save x,y
Load x,y
X 90
Y 0
1
7
2
8
3
4
5
6
9
POC 1 Pre-Project
Subbasin Name: POC 1
Flows To :
Surface
Interflow
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
29.5
Available Impervious
Acres
IMPERVIOUS
0
POC 7 Pre-Project
Subbasin Name: POC 7
Flows To :
Surface
Interflow
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
159.4
Available Impervious
Acres
IMPERVIOUS
0
POC 2 Pre-Project
Subbasin Name: POC 2
Flows To :
Surface
Interflow
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
673.6
Available Impervious
Acres
IMPERVIOUS
0
POC 8 Pre-Project
Subbasin Name: POC 8
Flows To :
Surface
Interflow
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
195.6
Available Impervious
Acres
IMPERVIOUS
0
POC 3 - CULVERT 1A Pre-Project
Subbasin Name: POC 3 - CULVERT 1A
Flows To :
Surface
Interflow
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
26.3
Available Impervious
Acres
IMPERVIOUS
2


Schematic
SCENARIOS
Pre-Project
Mitigated
Run Scenario
Basic Elements
Pro Elements
LID Toolbox
Commercial Toolbox
Move Elements
Save x,y
Load x,y
X 90
Y 12
1
7
2
8
3
4
5
6
9
POC 4 - CULVERT 1B Pre-Project
Subbasin Name POC 4 - CULVERT 1B
Flows To :
Surface
Interflow
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
6.1
Available Impervious
Acres
IMPERVIOUS
.5
POC 5 - CULVERT 19 Pre-Project
Subbasin Name POC 5 - CULVERT 19
Flows To :
Surface
Interflow
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
57.9
Available Impervious
Acres
IMPERVIOUS
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POC 6 - CULVERT 20 Pre-Project
Subbasin Name POC 6 - CULVERT 20
Flows To :
Surface
Interflow
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
61.2
Available Impervious
Acres
IMPERVIOUS
2
POC 9 - WUESTE RD Pre-Project
Subbasin Name POC 9 - WUESTE RD
Flows To :
Surface
Interflow
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
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0
Available Impervious
Acres
IMPERVIOUS
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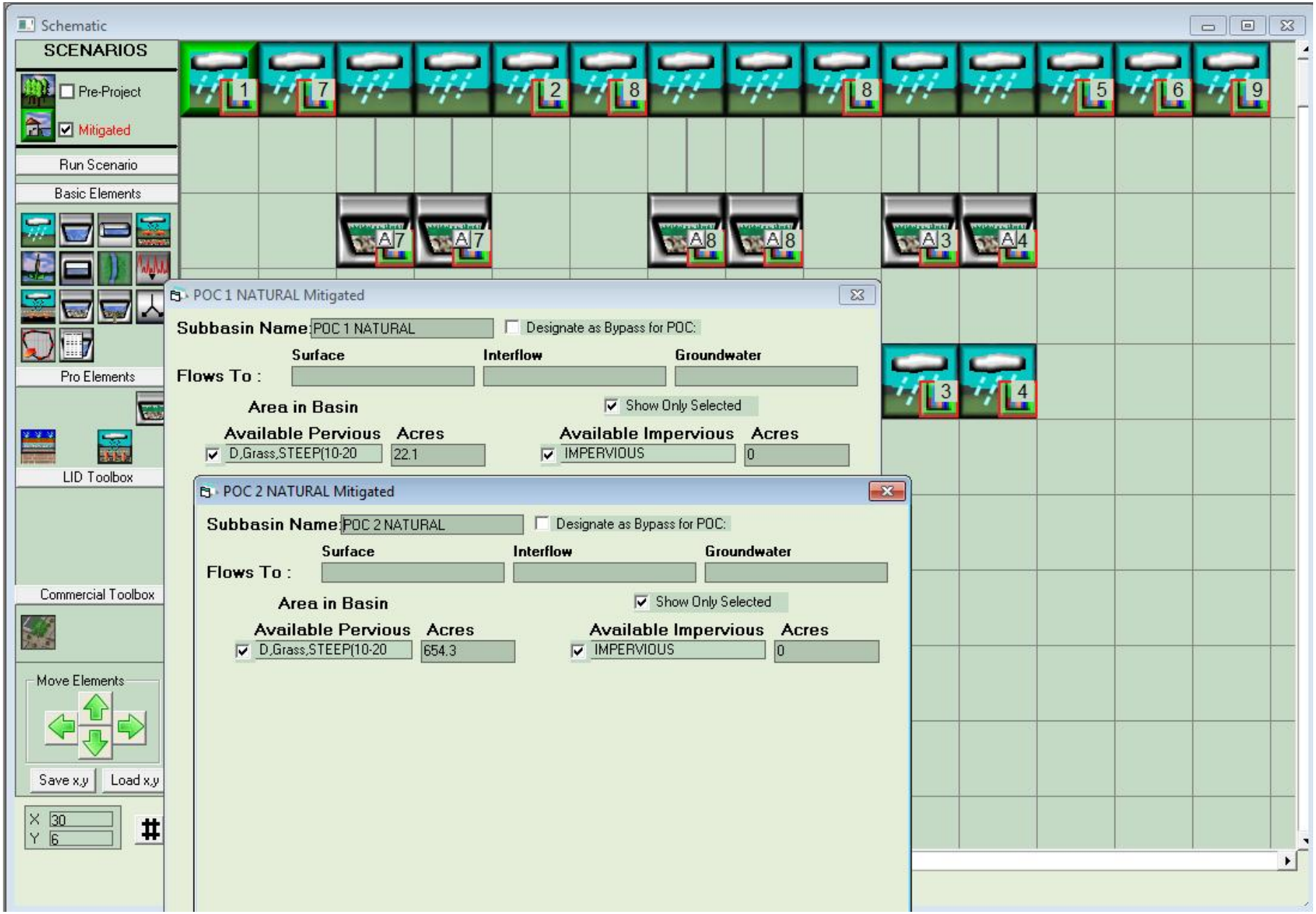
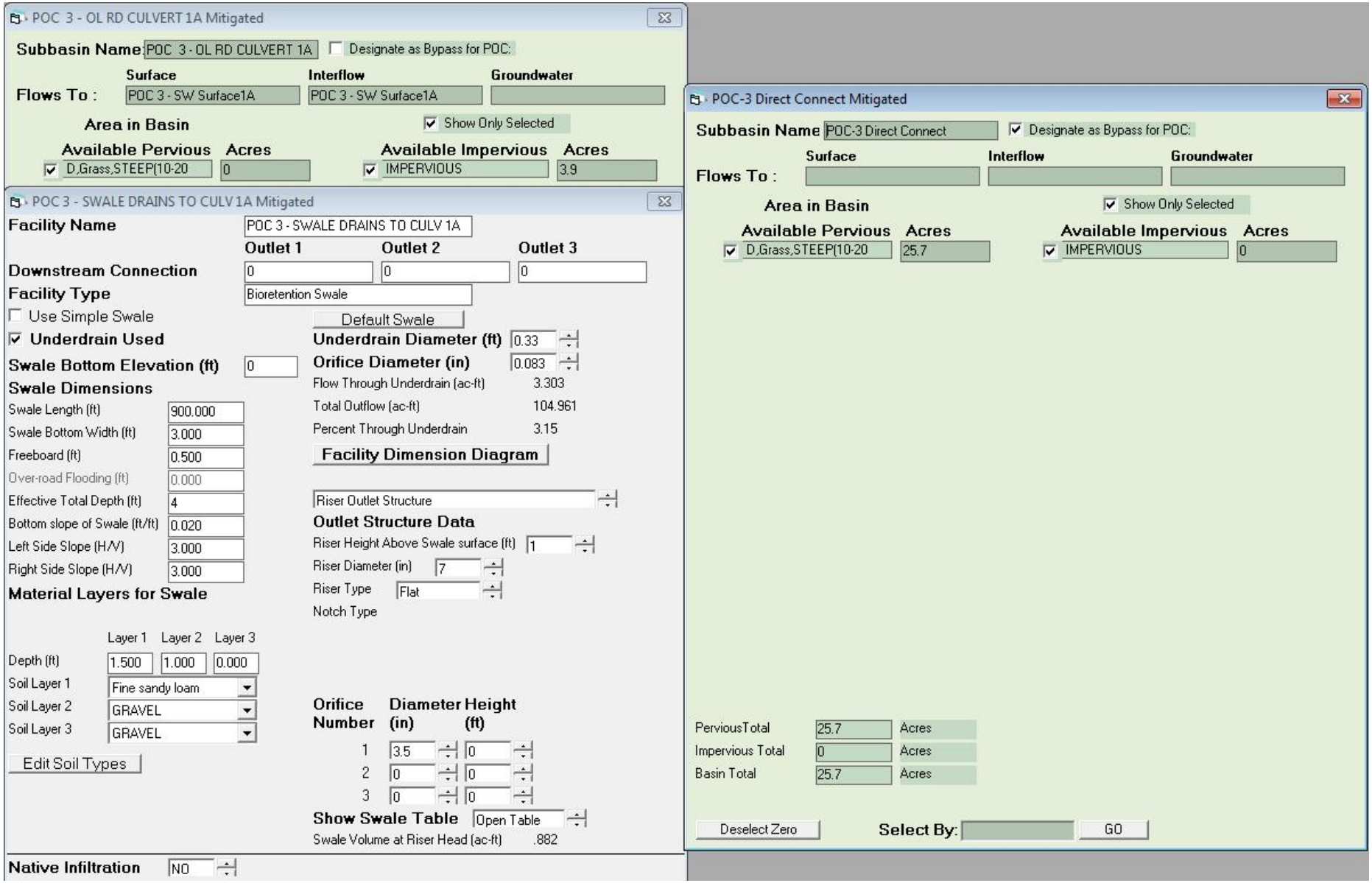
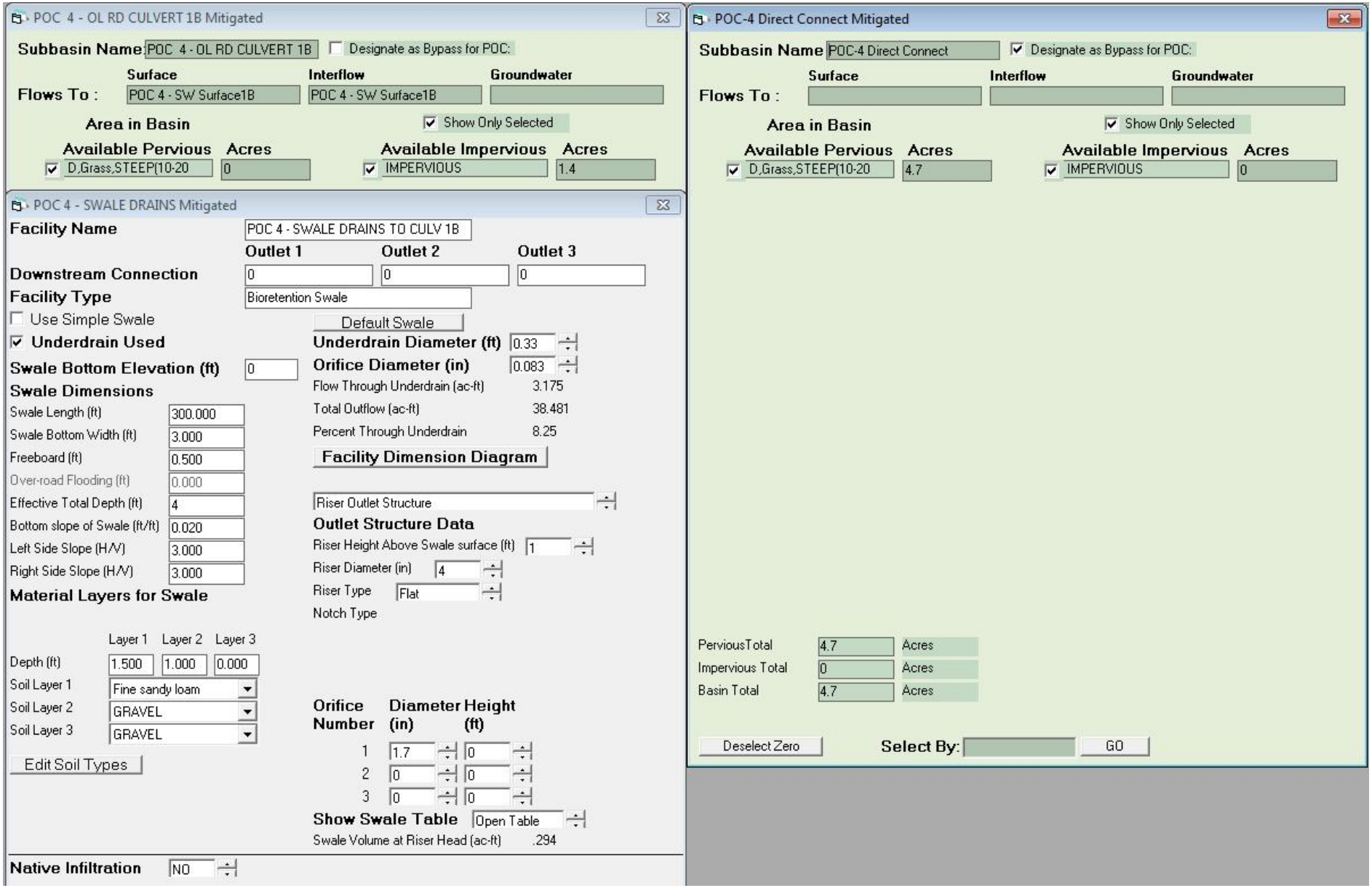
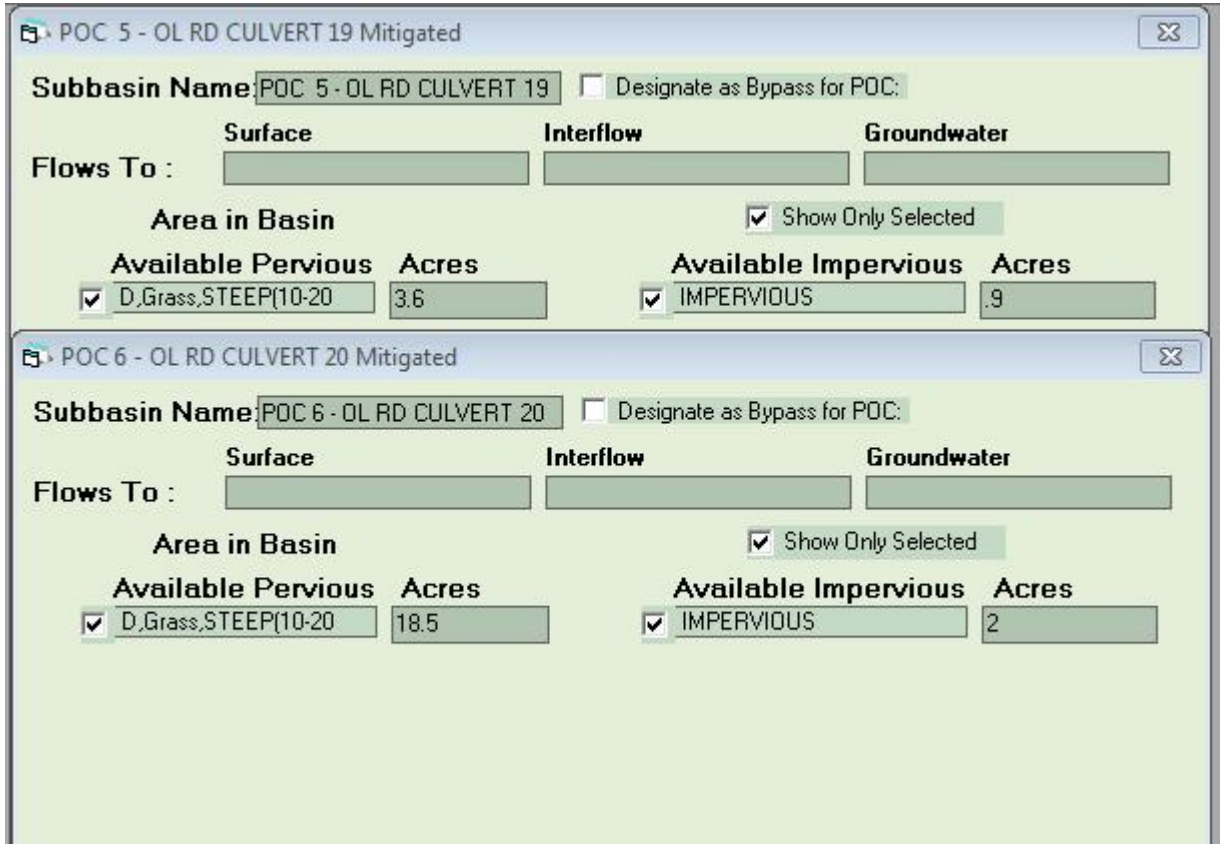
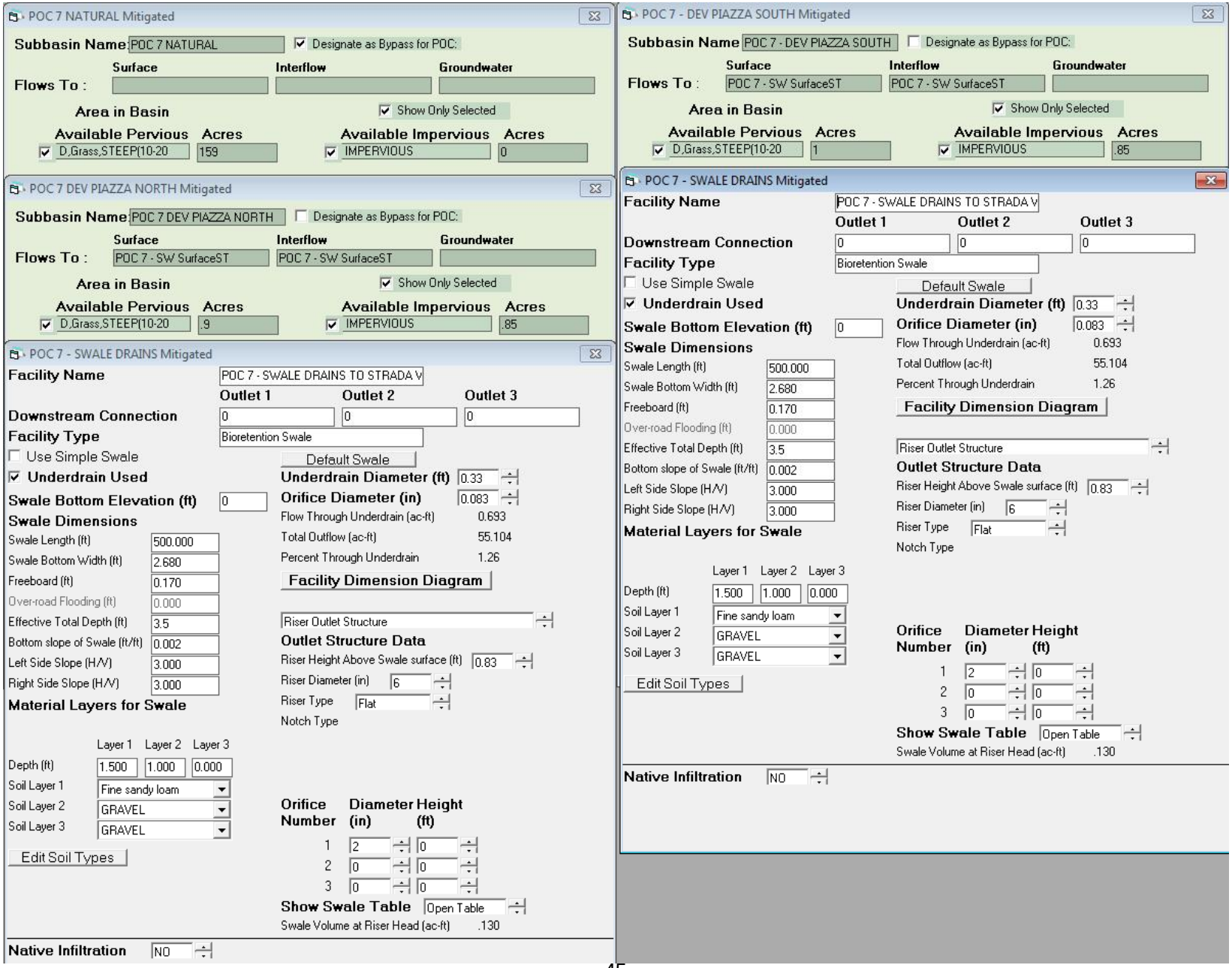

Schematic
SCENARIOS
Pre-Project
Mitigated
Run Scenario
Basic Elements
Pro Elements
LID Toolbox
Commercial Toolbox
Move Elements
Save x,y
Load x,y
X 30
Y 6
POC 1 NATURAL Mitigated
Subbasin Name: POC 1 NATURAL
Designate as Bypass for POC:
Flows To :
Surface
Interflow
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
22.1
Available Impervious
Acres
IMPERVIOUS
0
POC 2 NATURAL Mitigated
Subbasin Name: POC 2 NATURAL
Designate as Bypass for POC:
Flows To :
Surface
Interflow
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
654.3
Available Impervious
Acres
IMPERVIOUS
0


POC 3 - OL RD CULVERT 1A Mitigated
Subbasin Name: POC 3 - OL RD CULVERT 1A
Designate as Bypass for POC:
Surface
Interflow
Groundwater
Flows To :
POC 3 - SW Surface1A
POC 3 - SW Surface1A
Area in Basin
Show Only Selected
Available Pervious
Acres
Available Impervious
Acres
D,Grass,STEEP(10-20
0
IMPERVIOUS
3.9
POC 3 - SWALE DRAINS TO CULV 1A Mitigated
Facility Name
POC 3 - SWALE DRAINS TO CULV 1A
Outlet 1
Outlet 2
Outlet 3
Downstream Connection
0
0
0
Facility Type
Bioretention Swale
Use Simple Swale
Default Swale
Underdrain Used
Underdrain Diameter (ft)
0.33
Swale Bottom Elevation (ft)
0
Orifice Diameter (in)
0.083
Swale Dimensions
Flow Through Underdrain (ac-ft)
3.303
Swale Length (ft)
900.000
Total Outflow (ac-ft)
104.961
Swale Bottom Width (ft)
3.000
Percent Through Underdrain
3.15
Freeboard (ft)
0.500
Facility Dimension Diagram
Over-road Flooding (ft)
0.000
Effective Total Depth (ft)
4
Riser Outlet Structure
Bottom slope of Swale (ft/ft)
0.020
Outlet Structure Data
Left Side Slope (H/V)
3.000
Riser Height Above Swale surface (ft)
1
Right Side Slope (H/V)
3.000
Riser Diameter (in)
7
Material Layers for Swale
Riser Type
Flat
Notch Type
Layer 1
Layer 2
Layer 3
Depth (ft)
1.500
1.000
0.000
Soil Layer 1
Fine sandy loam
Soil Layer 2
GRAVEL
Soil Layer 3
GRAVEL
Orifice Number
Diameter (in)
Height (ft)
1
3.5
0
2
0
0
3
0
0
Edit Soil Types
Show Swale Table
Open Table
Swale Volume at Riser Head (ac-ft)
.882
Native Infiltration
NO
POC-3 Direct Connect Mitigated
Subbasin Name
POC-3 Direct Connect
Designate as Bypass for POC:
Surface
Interflow
Groundwater
Flows To :
Area in Basin
Show Only Selected
Available Pervious
Acres
Available Impervious
Acres
D,Grass,STEEP(10-20
25.7
IMPERVIOUS
0
PerviousTotal
25.7
Acres
Impervious Total
0
Acres
Basin Total
25.7
Acres
Deselect Zero
Select By:
GO


POC 4 - OL RD CULVERT 1B Mitigated
Subbasin Name: POC 4 - OL RD CULVERT 1B
Designate as Bypass for POC:
Flows To :
Surface
Interflow
Groundwater
POC 4 - SW Surface1B
POC 4 - SW Surface1B
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
0
Available Impervious
Acres
IMPERVIOUS
1.4
POC 4 - SWALE DRAINS Mitigated
Facility Name
POC 4 - SWALE DRAINS TO CULV 1B
Outlet 1
Outlet 2
Outlet 3
Downstream Connection
0
0
0
Facility Type
Bioretention Swale
Use Simple Swale
Default Swale
Underdrain Used
Underdrain Diameter (ft)
0.33
Swale Bottom Elevation (ft)
0
Orifice Diameter (in)
0.083
Swale Dimensions
Flow Through Underdrain (ac-ft)
3.175
Swale Length (ft)
300.000
Total Outflow (ac-ft)
38.481
Swale Bottom Width (ft)
3.000
Percent Through Underdrain
8.25
Freeboard (ft)
0.500
Facility Dimension Diagram
Over-road Flooding (ft)
0.000
Effective Total Depth (ft)
4
Riser Outlet Structure
Bottom slope of Swale (ft/ft)
0.020
Outlet Structure Data
Left Side Slope (H/V)
3.000
Riser Height Above Swale surface (ft)
1
Right Side Slope (H/V)
3.000
Riser Diameter (in)
4
Material Layers for Swale
Riser Type
Flat
Notch Type
Layer 1
Layer 2
Layer 3
Depth (ft)
1.500
1.000
0.000
Soil Layer 1
Fine sandy loam
Soil Layer 2
GRAVEL
Soil Layer 3
GRAVEL
Orifice Number
Diameter (in)
Height (ft)
1
1.7
0
2
0
0
3
0
0
Edit Soil Types
Show Swale Table
Open Table
Swale Volume at Riser Head (ac-ft)
.294
Native Infiltration
NO
POC-4 Direct Connect Mitigated
Subbasin Name
POC-4 Direct Connect
Designate as Bypass for POC:
Flows To :
Surface
Interflow
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
4.7
Available Impervious
Acres
IMPERVIOUS
0
PerviousTotal
4.7
Acres
Impervious Total
0
Acres
Basin Total
4.7
Acres
Deselect Zero
Select By:
GO


POC 5 - OL RD CULVERT 19 Mitigated
Subbasin Name: POC 5 - OL RD CULVERT 19
Designate as Bypass for POC:
Surface
Interflow
Groundwater
Flows To :
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
3.6
Available Impervious
Acres
IMPERVIOUS
.9
POC 6 - OL RD CULVERT 20 Mitigated
Subbasin Name: POC 6 - OL RD CULVERT 20
Designate as Bypass for POC:
Surface
Interflow
Groundwater
Flows To :
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
18.5
Available Impervious
Acres
IMPERVIOUS
2


POC 7 NATURAL Mitigated
Subbasin Name: POC 7 NATURAL
Designate as Bypass for POC:
Flows To :
Surface
Interflow
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
159
Available Impervious
Acres
IMPERVIOUS
0
POC 7 DEV PIAZZA NORTH Mitigated
Subbasin Name: POC 7 DEV PIAZZA NORTH
Designate as Bypass for POC:
Flows To :
Surface
POC 7 - SW SurfaceST
Interflow
POC 7 - SW SurfaceST
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
.9
Available Impervious
Acres
IMPERVIOUS
.85
POC 7 - SWALE DRAINS Mitigated
Facility Name
POC 7 - SWALE DRAINS TO STRADA V
Outlet 1
Outlet 2
Outlet 3
Downstream Connection
0
0
0
Facility Type
Bioretention Swale
Use Simple Swale
Default Swale
Underdrain Used
Underdrain Diameter (ft) 0.33
Swale Bottom Elevation (ft) 0
Orifice Diameter (in) 0.083
Swale Dimensions
Flow Through Underdrain (ac-ft) 0.693
Swale Length (ft) 500.000
Total Outflow (ac-ft) 55.104
Swale Bottom Width (ft) 2.680
Percent Through Underdrain 1.26
Freeboard (ft) 0.170
Facility Dimension Diagram
Over-road Flooding (ft) 0.000
Effective Total Depth (ft) 3.5
Riser Outlet Structure
Bottom slope of Swale (ft/ft) 0.002
Outlet Structure Data
Left Side Slope (H/V) 3.000
Riser Height Above Swale surface (ft) 0.83
Right Side Slope (H/V) 3.000
Riser Diameter (in) 6
Material Layers for Swale
Riser Type Flat
Notch Type
Layer 1
Layer 2
Layer 3
Depth (ft)
1.500
1.000
0.000
Soil Layer 1
Fine sandy loam
Soil Layer 2
GRAVEL
Soil Layer 3
GRAVEL
Orifice Number
Diameter (in)
Height (ft)
1
2
0
2
0
0
3
0
0
Edit Soil Types
Show Swale Table
Open Table
Swale Volume at Riser Head (ac-ft) .130
Native Infiltration
NO
POC 7 - DEV PIAZZA SOUTH Mitigated
Subbasin Name: POC 7 - DEV PIAZZA SOUTH
Designate as Bypass for POC:
Flows To :
Surface
POC 7 - SW SurfaceST
Interflow
POC 7 - SW SurfaceST
Groundwater
Area in Basin
Show Only Selected
Available Pervious
Acres
D,Grass,STEEP(10-20
1
Available Impervious
Acres
IMPERVIOUS
85
POC 7 - SWALE DRAINS Mitigated
Facility Name
POC 7 - SWALE DRAINS TO STRADA V
Outlet 1
Outlet 2
Outlet 3
Downstream Connection
0
0
0
Facility Type
Bioretention Swale
Use Simple Swale
Default Swale
Underdrain Used
Underdrain Diameter (ft) 0.33
Swale Bottom Elevation (ft) 0
Orifice Diameter (in) 0.083
Swale Dimensions
Flow Through Underdrain (ac-ft) 0.693
Swale Length (ft) 500.000
Total Outflow (ac-ft) 55.104
Swale Bottom Width (ft) 2.680
Percent Through Underdrain 1.26
Freeboard (ft) 0.170
Facility Dimension Diagram
Over-road Flooding (ft) 0.000
Effective Total Depth (ft) 3.5
Riser Outlet Structure
Bottom slope of Swale (ft/ft) 0.002
Outlet Structure Data
Left Side Slope (H/V) 3.000
Riser Height Above Swale surface (ft) 0.83
Right Side Slope (H/V) 3.000
Riser Diameter (in) 6
Material Layers for Swale
Riser Type Flat
Notch Type
Layer 1
Layer 2
Layer 3
Depth (ft)
1.500
1.000
0.000
Soil Layer 1
Fine sandy loam
Soil Layer 2
GRAVEL
Soil Layer 3
GRAVEL
Orifice Number
Diameter (in)
Height (ft)
1
2
0
2
0
0
3
0
0
Edit Soil Types
Show Swale Table
Open Table
Swale Volume at Riser Head (ac-ft) .130
Native Infiltration
NO