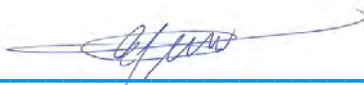


Priority Development Project (PDP) Storm Water Quality Management Plan (SWQMP)

Check if electing for offsite alternative compliance

Engineer of Work:



Provide Wet Signature and Stamp Above Line

Prepared For:

Prepared By:

Date:

Approved by: City of San Diego

Date



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Project Name:

- Attachment 3: Structural BMP Maintenance Plan
 - Maintenance Agreement (Form DS-3247) (when applicable)
- Attachment 4: Copy of Plan Sheets Showing Permanent Storm Water BMPs
- Attachment 5: Project's Drainage Report
- Attachment 6: Project's Geotechnical and Groundwater Investigation Report

Project Name:

Acronyms

APN	Assessor's Parcel Number
ASBS	Area of Special Biological Significance
BMP	Best Management Practice
CEQA	California Environmental Quality Act
CGP	Construction General Permit
DCV	Design Capture Volume
DMA	Drainage Management Areas
ESA	Environmentally Sensitive Area
GLU	Geomorphic Landscape Unit
GW	Ground Water
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
HU	Harvest and Use
INF	Infiltration
LID	Low Impact Development
LUP	Linear Underground/Overhead Projects
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PDP	Priority Development Project
PE	Professional Engineer
POC	Pollutant of Concern
SC	Source Control
SD	Site Design
SDRWQCB	San Diego Regional Water Quality Control Board
SIC	Standard Industrial Classification
SWPPP	Stormwater Pollutant Protection Plan
SWQMP	Storm Water Quality Management Plan
TMDL	Total Maximum Daily Load
WMAA	Watershed Management Area Analysis
WPCP	Water Pollution Control Program
WQIP	Water Quality Improvement Plan

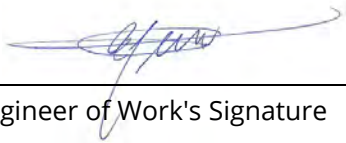
Project Name:

Certification Page

Project Name: Permit Application

I hereby declare that I am the Engineer in Responsible Charge of design of storm water BMPs for this project, and 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 requirements of the Storm Water Standards, which is based on the requirements of SDRWQCB Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100 (MS4 Permit).

I have read and understand that the City Engineer has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the Storm Water Standards. I certify that this PDP SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable source control and site design BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this PDP SWQMP by the City Engineer is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.



Engineer of Work's Signature

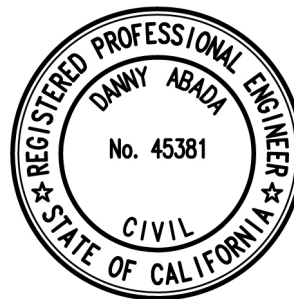
PE#

Expiration Date

Print Name

Company

Date



Engineer's Stamp

Project Name:

Submittal Record

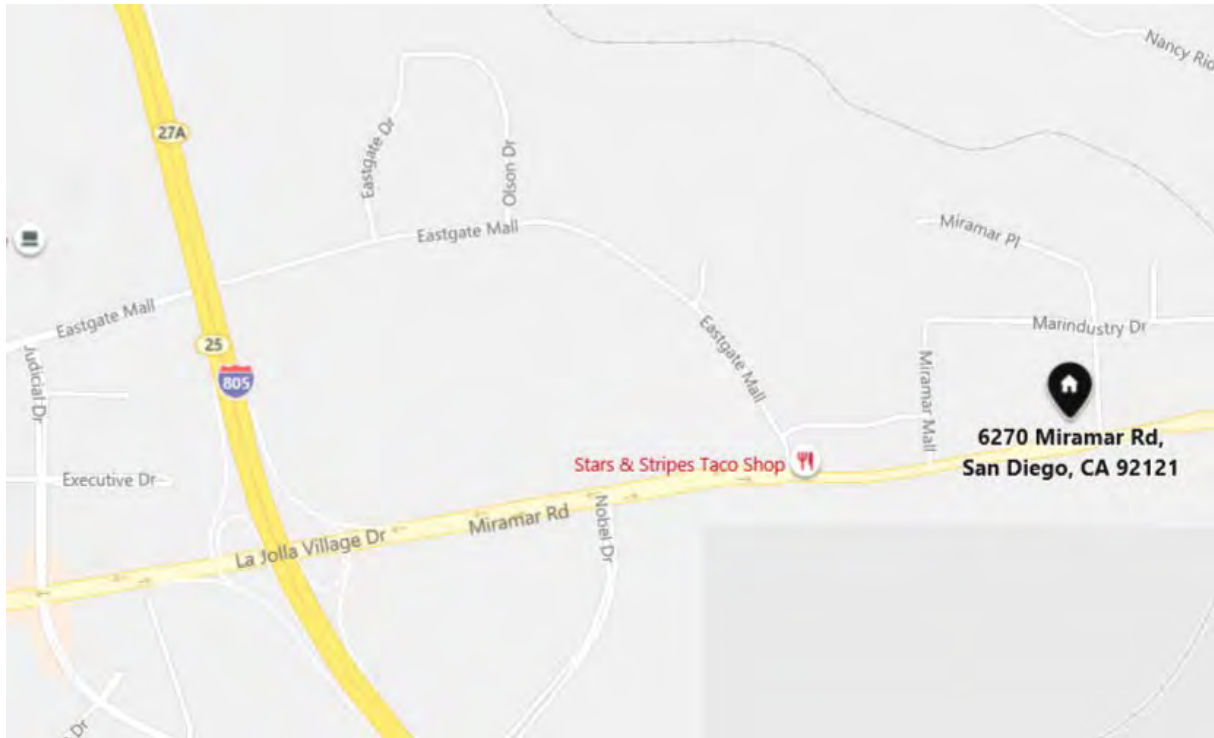
Use this Table to keep a record of submittals of this PDP SWQMP. Each time the PDP SWQMP is re-submitted, provide the date and status of the project. In last column indicate changes that have been made or indicate if response to plancheck comments is included. When applicable, insert response to plancheck comments.

Submittal Number	Date	Project Status	Changes
1		Preliminary Design/Planning/CEQA Final Design	Initial Submittal
2		Preliminary Design/Planning/CEQA Final Design	
3		Preliminary Design/Planning/CEQA Final Design	
4		Preliminary Design/Planning/CEQA Final Design	

Project Name:

Project Vicinity Map

Project Name:
Permit Application



VICINITY MAP
NOT TO SCALE



Project Name:

City of San Diego Form DS-560 Storm Water Requirements Applicability Checklist

Attach DS-560 form.



City of San Diego
Development Services
1222 First Ave., MS-302
San Diego, CA 92101
(619) 446-5000

Storm Water Requirements Applicability Checklist

FORM
DS-560
November 2018

Project Address:

Project Number:

SECTION 1. Construction Storm Water BMP Requirements:

All construction sites are required to implement construction BMPs in accordance with the performance standards in the [Storm Water Standards Manual](#). Some sites are additionally required to obtain coverage under the State Construction General Permit (CGP)¹, which is administered by the State Regional Water Quality Control Board.

For all projects complete PART A: If project is required to submit a SWPPP or WPCP, continue to PART B.

PART A: Determine Construction Phase Storm Water Requirements.

1. Is the project subject to California's statewide General NPDES permit for Storm Water Discharges Associated with Construction Activities, also known as the State Construction General Permit (CGP)? (Typically projects with land disturbance greater than or equal to 1 acre.)

☐ Yes; SWPPP required, skip questions 2-4 ☐ No; next question

2. Does the project propose construction or demolition activity, including but not limited to, clearing, grading, grubbing, excavation, or any other activity resulting in ground disturbance and/or contact with storm water?

☐ Yes; WPCP required, skip questions 3-4 ☐ No; next question

3. Does the project propose routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility? (Projects such as pipeline/utility replacement)

☐ Yes; WPCP required, skip question 4 ☐ No; next question

4. Does the project only include the following Permit types listed below?

- Electrical Permit, Fire Alarm Permit, Fire Sprinkler Permit, Plumbing Permit, Sign Permit, Mechanical Permit, Spa Permit.
- Individual Right of Way Permits that exclusively include only ONE of the following activities: water service, sewer lateral, or utility service.
- Right of Way Permits with a project footprint less than 150 linear feet that exclusively include only ONE of the following activities: curb ramp, sidewalk and driveway apron replacement, pot holing, curb and gutter replacement, and retaining wall encroachments.

☐ Yes; no document required

Check one of the boxes below, and continue to PART B:

☐ If you checked "Yes" for question 1,
a SWPPP is REQUIRED. Continue to PART B

☐ If you checked "No" for question 1, and checked "Yes" for question 2 or 3,
a WPCP is REQUIRED. If the project proposes less than 5,000 square feet of ground disturbance AND has less than a 5-foot elevation change over the entire project area, a Minor WPCP may be required instead. **Continue to PART B.**

☐ If you checked "No" for all questions 1-3, and checked "Yes" for question 4
PART B does not apply and no document is required. Continue to Section 2.

1. More information on the City's construction BMP requirements as well as CGP requirements can be found at: www.sandiego.gov/stormwater/regulations/index.shtml

PART B: Determine Construction Site Priority

This prioritization must be completed within this form, noted on the plans, and included in the SWPPP or WPCP. The city reserves the right to adjust the priority of projects both before and after construction. Construction projects are assigned an inspection frequency based on if the project has a "high threat to water quality." The City has aligned the local definition of "high threat to water quality" to the risk determination approach of the State Construction General Permit (CGP). The CGP determines risk level based on project specific sediment risk and receiving water risk. Additional inspection is required for projects within the Areas of Special Biological Significance (ASBS) watershed. **NOTE:** The construction priority does **NOT** change construction BMP requirements that apply to projects; rather, it determines the frequency of inspections that will be conducted by city staff.

Complete PART B and continued to Section 2

1. ☐ **ASBS**
 - a. Projects located in the ASBS watershed.
2. **High Priority**
 - a. Projects that qualify as Risk Level 2 or Risk Level 3 per the Construction General Permit (CGP) and not located in the ASBS watershed.
 - b. Projects that qualify as LUP Type 2 or LUP Type 3 per the CGP and not located in the ASBS watershed.
3. ☐ **Medium Priority**
 - a. Projects that are not located in an ASBS watershed or designated as a High priority site.
 - b. Projects that qualify as Risk Level 1 or LUP Type 1 per the CGP and not located in an ASBS watershed.
 - c. WPCP projects (>5,000sf of ground disturbance) located within the Los Penasquitos watershed management area.
4. ☐ **Low Priority**
 - a. Projects not subject to a Medium or High site priority designation and are not located in an ASBS watershed.

SECTION 2. Permanent Storm Water BMP Requirements.

Additional information for determining the requirements is found in the [Storm Water Standards Manual](#).

PART C: Determine if Not Subject to Permanent Storm Water Requirements.

Projects that are considered maintenance, or otherwise not categorized as "new development projects" or "redevelopment projects" according to the [Storm Water Standards Manual](#) are not subject to Permanent Storm Water BMPs.

If "yes" is checked for any number in Part C, proceed to Part F and check "Not Subject to Permanent Storm Water BMP Requirements".

If "no" is checked for all of the numbers in Part C continue to Part D.

1. Does the project only include interior remodels and/or is the project entirely within an existing enclosed structure and does not have the potential to contact storm water? ☐ Yes ☐ No
2. Does the project only include the construction of overhead or underground utilities without creating new impervious surfaces? ☐ Yes ☐ No
3. Does the project fall under routine maintenance? Examples include, but are not limited to: roof or exterior structure surface replacement, resurfacing or reconfiguring surface parking lots or existing roadways without expanding the impervious footprint, and routine replacement of damaged pavement (grinding, overlay, and pothole repair). ☐ Yes ☐ No

PART D: PDP Exempt Requirements.

PDP Exempt projects are required to implement site design and source control BMPs.

If “yes” was checked for any questions in Part D, continue to Part F and check the box labeled “PDP Exempt.”

If “no” was checked for all questions in Part D, continue to Part E.

1. Does the project ONLY include new or retrofit sidewalks, bicycle lanes, or trails that:

- **Are designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas? Or;**
- **Are designed and constructed to be hydraulically disconnected from paved streets and roads? Or;**
- **Are designed and constructed with permeable pavements or surfaces in accordance with the Green Streets guidance in the City’s Storm Water Standards manual?**

☐ Yes; PDP exempt requirements apply

☐ No; next question

2. Does the project ONLY include retrofitting or redeveloping existing paved alleys, streets or roads designed and constructed in accordance with the Green Streets guidance in the [City’s Storm Water Standards Manual](#)?

☐ Yes; PDP exempt requirements apply

☐ No; project not exempt.

PART E: Determine if Project is a Priority Development Project (PDP).

Projects that match one of the definitions below are subject to additional requirements including preparation of a Storm Water Quality Management Plan (SWQMP).

If “yes” is checked for any number in PART E, continue to PART F and check the box labeled “Priority Development Project”.

If “no” is checked for every number in PART E, continue to PART F and check the box labeled “Standard Development Project”.

1. New Development that creates 10,000 square feet or more of impervious surfaces collectively over the project site. This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.

☐ Yes ☐ No

2. Redevelopment project that creates and/or replaces 5,000 square feet or more of impervious surfaces on an existing site of 10,000 square feet or more of impervious surfaces. This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.

☐ Yes ☐ No

3. New development or redevelopment of a restaurant. Facilities that sell prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC 5812), and where the land development creates and/or replace 5,000 square feet or more of impervious surface.

☐ Yes ☐ No

4. New development or redevelopment on a hillside. The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site) and where the development will grade on any natural slope that is twenty-five percent or greater.

☐ Yes ☐ No

5. New development or redevelopment of a parking lot that creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site).

☐ Yes ☐ No

6. New development or redevelopment of streets, roads, highways, freeways, and driveways. The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site).

☐ Yes ☐ No

7. **New development or redevelopment discharging directly to an Environmentally Sensitive Area.** The project creates and/or replaces 2,500 square feet of impervious surface (collectively over project site), and discharges directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands). ☐ Yes ☐ No
8. **New development or redevelopment projects of a retail gasoline outlet (RGO) that create and/or replaces 5,000 square feet of impervious surface.** The development project meets the following criteria: (a) 5,000 square feet or more or (b) has a projected Average Daily Traffic (ADT) of 100 or more vehicles per day. ☐ Yes ☐ No
9. **New development or redevelopment projects of an automotive repair shops that creates and/or replaces 5,000 square feet or more of impervious surfaces.** Development projects categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014, 5541, 7532-7534, or 7536-7539. ☐ Yes ☐ No
10. **Other Pollutant Generating Project.** The project is not covered in the categories above, results in the disturbance of one or more acres of land and is expected to generate pollutants post construction, such as fertilizers and pesticides. This does not include projects creating less than 5,000 sf of impervious surface and where added landscaping does not require regular use of pesticides and fertilizers, such as slope stabilization using native plants. Calculation of the square footage of impervious surface need not include linear pathways that are for infrequent vehicle use, such as emergency maintenance access or bicycle pedestrian use, if they are built with pervious surfaces or if they sheet flow to surrounding pervious surfaces. ☐ Yes ☐ No

PART F: Select the appropriate category based on the outcomes of PART C through PART E.

1. The project is **NOT SUBJECT TO PERMANENT STORM WATER REQUIREMENTS.** ☐
2. The project is a **STANDARD DEVELOPMENT PROJECT.** Site design and source control BMP requirements apply. See the [Storm Water Standards Manual](#) for guidance. ☐
3. The project is **PDP EXEMPT.** Site design and source control BMP requirements apply. See the [Storm Water Standards Manual](#) for guidance. ☐
4. The project is a **PRIORITY DEVELOPMENT PROJECT.** Site design, source control, and structural pollutant control BMP requirements apply. See the [Storm Water Standards Manual](#) for guidance on determining if project requires a hydromodification plan management ☐

Name of Owner or Agent (Please Print)

Title

Signature

Date

Project Name:

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Project Name:

Applicability of Permanent, Post-Construction Storm Water BMP Requirements		Form I-1
Project Identification		
Project Name:		
Permit Application Number:		Date:
Determination of Requirements		
<p>The purpose of this form is to identify permanent, post-construction requirements that apply to the project. This form serves as a short <u>summary</u> of applicable requirements, in some cases referencing separate forms that will serve as the backup for the determination of requirements.</p> <p>Answer each step below, starting with Step 1 and progressing through each step until reaching "Stop". Refer to the manual sections and/or separate forms referenced in each step below.</p>		
Step	Answer	Progression
Step 1: Is the project a "development project"? See Section 1.3 of the manual (Part 1 of Storm Water Standards) for guidance.	<input type="checkbox"/> Yes	Go to Step 2 .
	<input type="checkbox"/> No	Stop. Permanent BMP requirements do not apply. No SWQMP will be required. Provide discussion below.
Discussion / justification if the project is <u>not</u> a "development project" (e.g., the project includes <i>only</i> interior remodels within an existing building):		
Step 2: Is the project a Standard Project, PDP, or PDP Exempt? To answer this item, see Section 1.4 of the manual in its entirety for guidance AND complete Form DS-560, Storm Water Requirements Applicability Checklist.	<input type="checkbox"/> Standard Project	Stop. Standard Project requirements apply
	<input type="checkbox"/> PDP	PDP requirements apply, including PDP SWQMP. Go to Step 3 .
	PDP Exempt	Stop. Standard Project requirements apply. Provide discussion and list any additional requirements below.
Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:		

Project Name:

Form I-1 Page 2 of 2		
Step	Answer	Progression
Step 3. Is the project subject to earlier PDP requirements due to a prior lawful approval? See Section 1.10 of the manual (Part 1 of Storm Water Standards) for guidance.	<input type="checkbox"/> Yes	Consult the City Engineer to determine requirements. Provide discussion and identify requirements below. Go to Step 4.
	<input type="checkbox"/> No	BMP Design Manual PDP requirements apply. Go to Step 4.
Discussion / justification of prior lawful approval, and identify requirements (<u>not required if prior lawful approval does not apply</u>):		
Step 4. Do hydromodification control requirements apply? See Section 1.6 of the manual (Part 1 of Storm Water Standards) for guidance.	<input type="checkbox"/> Yes	PDP structural BMPs required for pollutant control (Chapter 5) and hydromodification control (Chapter 6). Go to Step 5.
	<input type="checkbox"/> No	Stop. PDP structural BMPs required for pollutant control (Chapter 5) only. Provide brief discussion of exemption to hydromodification control below.
Discussion / justification if hydromodification control requirements do <u>not</u> apply:		
Step 5. Does protection of critical coarse sediment yield areas apply? See Section 6.2 of the manual (Part 1 of Storm Water Standards) for guidance.	<input type="checkbox"/> Yes	Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2). Stop.
	<input type="checkbox"/> No	Management measures not required for protection of critical coarse sediment yield areas. Provide brief discussion below. Stop.
Discussion / justification if protection of critical coarse sediment yield areas does <u>not</u> apply:		

Project Name:

HMP Exemption Exhibit

Attach a HMP Exemption Exhibit that shows direct storm water runoff discharge from the project site to HMP exempt area. Include project area, applicable underground storm drain line and/or concrete lined channels, outfall information and exempt waterbody.
Reference applicable drawing number(s).

Exhibit must be provided on 11"x17" or larger paper.

Project Name:

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Project Name:

Site Information Checklist For PDPs		Form I-3B
Project Summary Information		
Project Name		
Project Address		
Assessor's Parcel Number(s) (APN(s))		
Permit Application Number		
Project Watershed	Select One: <input type="checkbox"/> San Dieguito River <input type="checkbox"/> Penasquitos <input type="checkbox"/> Mission Bay <input type="checkbox"/> San Diego River <input type="checkbox"/> San Diego Bay <input type="checkbox"/> Tijuana River	
Hydrologic subarea name with Numeric Identifier up to two decimal places (9XX.XX)		
Project Area (total area of Assessor's Parcel(s) associated with the project or total area of the right-of-way)	_____ Acres (_____ Square Feet)	
Area to be disturbed by the project (Project Footprint)	_____ Acres (_____ Square Feet)	
Project Proposed Impervious Area (subset of Project Footprint)	_____ Acres (_____ Square Feet)	
Project Proposed Pervious Area (subset of Project Footprint)	_____ Acres (_____ Square Feet)	
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Project Area.		
The proposed increase or decrease in impervious area in the proposed condition as compared to the pre-project condition	_____ % Decrease	

Project Name:

Form I-3B Page 2 of 11
Description of Existing Site Condition and Drainage Patterns
<p>Current Status of the Site (select all that apply):</p> <ul style="list-style-type: none"><input type="checkbox"/> Existing development<input type="checkbox"/> Previously graded but not built out<input type="checkbox"/> Agricultural or other non-impervious use<input type="checkbox"/> Vacant, undeveloped/natural <p>Description / Additional Information:</p>
<p>Existing Land Cover Includes (select all that apply):</p> <ul style="list-style-type: none"><input type="checkbox"/> Vegetative Cover<input type="checkbox"/> Non-Vegetated Pervious Areas<input type="checkbox"/> Impervious Areas <p>Description / Additional Information:</p>
<p>Underlying Soil belongs to Hydrologic Soil Group (select all that apply):</p> <ul style="list-style-type: none"><input type="checkbox"/> NRCS Type A<input type="checkbox"/> NRCS Type B<input type="checkbox"/> NRCS Type C<input type="checkbox"/> NRCS Type D
<p>Approximate Depth to Groundwater:</p> <ul style="list-style-type: none"><input type="checkbox"/> Groundwater Depth < 5 feet<input type="checkbox"/> 5 feet < Groundwater Depth < 10 feet<input type="checkbox"/> 10 feet < Groundwater Depth < 20 feet<input type="checkbox"/> Groundwater Depth > 20 feet
<p>Existing Natural Hydrologic Features (select all that apply):</p> <ul style="list-style-type: none"><input type="checkbox"/> Watercourses<input type="checkbox"/> Seeps<input type="checkbox"/> Springs<input type="checkbox"/> Wetlands<input type="checkbox"/> None <p>Description / Additional Information:</p>

Project Name:

Form I-3B Page 3 of 11							
Description of Existing Site Topography and Drainage							
<p>How is storm water runoff conveyed from the site? At a minimum, this description should answer:</p> <ol style="list-style-type: none">1. Whether existing drainage conveyance is natural or urban;2. If runoff from offsite is conveyed through the site? If yes, quantification of all offsite drainage areas, design flows, and locations where offsite flows enter the project site and summarize how such flows are conveyed through the site;3. Provide details regarding existing project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, and natural and constructed channels;4. Identify all discharge locations from the existing project along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide summary of the pre-project drainage areas and design flows to each of the existing runoff discharge locations.							
Descriptions/Additional Information							
<div><p>Summary of flow rates (see Hydrology Report)</p><table border="1"><thead><tr><th><i>Storm Event</i></th><th><i>100-yr cfs</i></th></tr></thead><tbody><tr><td>Pre-Development</td><td>2.9</td></tr><tr><td>Post-Development</td><td>2.4</td></tr></tbody></table></div>		<i>Storm Event</i>	<i>100-yr cfs</i>	Pre-Development	2.9	Post-Development	2.4
<i>Storm Event</i>	<i>100-yr cfs</i>						
Pre-Development	2.9						
Post-Development	2.4						



Project Name:

Form I-3B Page 4 of 11
Description of Proposed Site Development and Drainage Patterns
Project Description / Proposed Land Use and/or Activities:
List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features):
List/describe proposed pervious features of the project (e.g., landscape areas):
Does the project include grading and changes to site topography? <input type="checkbox"/> Yes <input type="checkbox"/> No Description / Additional Information:

Project Name:

Form I-3B Page 5 of 11

Does the project include changes to site drainage (e.g., installation of new storm water conveyance systems)?

- ☐ Yes
☐ No

If yes, provide details regarding the proposed project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural and constructed channels, and the method for conveying offsite flows through or around the proposed project site. Identify all discharge locations from the proposed project site along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide a summary of pre and post-project drainage areas and design flows to each of the runoff discharge locations. Reference the drainage study for detailed calculations.

Description / Additional Information:

Summary of flow rates (see Hydrology Report)

<i>Storm Event</i>	<i>100-yr cfs</i>
Pre-Development	2.9
Post-Development	2.4

Project Name:

Form I-3B Page 6 of 11

Identify whether any of the following features, activities, and/or pollutant source areas will be present (select all that apply):

- ☐ Onsite storm drain inlets
- ☐ Interior floor drains and elevator shaft sump pumps
- ☐ Interior parking garages
- ☐ Need for future indoor & structural pest control
- ☐ Landscape/outdoor pesticide use
- ☐ Pools, spas, ponds, decorative fountains, and other water features
- ☐ Food service
- ☐ Refuse areas
- ☐ Industrial processes
- ☐ Outdoor storage of equipment or materials
- ☐ Vehicle and equipment cleaning
- ☐ Vehicle/equipment repair and maintenance
- ☐ Fuel dispensing areas
- ☐ Loading docks
- ☐ Fire sprinkler test water
- ☐ Miscellaneous drain or wash water
- ☐ Plazas, sidewalks, and parking lots

Description/Additional Information:

Project Name:

Form I-3B Page 7 of 11
Identification and Narrative of Receiving Water
Narrative describing flow path from discharge location(s), through urban storm conveyance system, to receiving creeks, rivers, and lagoons and ultimate discharge location to Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable)
Provide a summary of all beneficial uses of receiving waters downstream of the project discharge locations
Identify all ASBS (areas of special biological significance) receiving waters downstream of the project discharge locations
Provide distance from project outfall location to impaired or sensitive receiving waters
Summarize information regarding the proximity of the permanent, post-construction storm water BMPs to the City's Multi-Habitat Planning Area and environmentally sensitive lands

Project Name:

Form I-3B Page 8 of 11			
Identification of Receiving Water Pollutants of Concern			
List any 303(d) impaired water bodies within the path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable), identify the pollutant(s)/stressors(s) causing impairment, and identify any TMDLs and/or Highest Priority Pollutants from the WQIP for the impaired water bodies:			
303(d) Impaired Water Body (Refer to Appendix K)	Pollutant(s)/Stressor(s) (Refer to Appendix K)	TMDLs/WQIP Highest Priority Pollutant (Refer to Table 1-4 in Chapter 1)	
Identification of Project Site Pollutants*			
<p>*Identification of project site pollutants is only required if flow-thru treatment BMPs are implemented onsite in lieu of retention or biofiltration BMPs (note the project must also participate in an alternative compliance program unless prior lawful approval to meet earlier PDP requirements is demonstrated)</p> <p>Identify pollutants anticipated from the project site based on all proposed use(s) of the site (see Appendix B.6):</p>			
Pollutant	Not Applicable to the Project Site	Anticipated from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment			
Nutrients			
Heavy Metals			
Organic Compounds			
Trash & Debris			
Oxygen Demanding Substances			
Oil & Grease			
Bacteria & Viruses			
Pesticides			

Project Name:

Form I-3B Page 9 of 11	
Hydromodification Management Requirements	
Do hydromodification management requirements apply (see Section 1.6)?	
<input type="checkbox"/>	Yes, hydromodification management flow control structural BMPs required.
<input type="checkbox"/>	No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
<input type="checkbox"/>	No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
<input type="checkbox"/>	No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA for the watershed in which the project resides.
Description / Additional Information (to be provided if a 'No' answer has been selected above):	
Note: If “No” answer has been selected the SWQMP must include an exhibit that shows the storm water conveyance system from the project site to an exempt water body. The exhibit should include details about the conveyance system and the outfall to the exempt water body.	
Critical Coarse Sediment Yield Areas*	
*This Section only required if hydromodification management requirements apply	
Based on Section 6.2 and Appendix H does CCSYA exist on the project footprint or in the upstream area draining through the project footprint?	
<input type="checkbox"/>	Yes
<input type="checkbox"/>	No
Discussion / Additional Information:	

Project Name:

Form I-3B Page 10 of 11
Flow Control for Post-Project Runoff* *This Section only required if hydromodification management requirements apply
List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP Exhibit and a receiving channel identification name or number correlating to the project's HMP Exhibit.
Has a geomorphic assessment been performed for the receiving channel(s)? <input type="checkbox"/> No, the low flow threshold is $0.1Q_2$ (default low flow threshold) <input type="checkbox"/> Yes, the result is the low flow threshold is $0.1Q_2$ <input type="checkbox"/> Yes, the result is the low flow threshold is $0.3Q_2$ <input type="checkbox"/> Yes, the result is the low flow threshold is $0.5Q_2$ If a geomorphic assessment has been performed, provide title, date, and preparer:
Discussion / Additional Information: (optional)

Project Name:

Form I-3B Page 11 of 11
Other Site Requirements and Constraints
<p>When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements.</p>
Optional Additional Information or Continuation of Previous Sections As Needed
<p>This space provided for additional information or continuation of information from previous sections as needed.</p>

Project Name:

Source Control BMP Checklist for PDPs		Form I-4B	
Source Control BMPs			
All development projects must implement source control BMPs where applicable and feasible. See Chapter 4 and Appendix E of the BMP Design Manual (Part 1 of the Storm Water Standards) for information to implement source control BMPs shown in this checklist.			
Answer each category below pursuant to the following.			
<ul style="list-style-type: none"> • "Yes" means the project will implement the source control BMP as described in Chapter 4 and/or Appendix E of the BMP Design Manual. Discussion / justification is not required. • "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. • "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification may be provided. 			
Source Control Requirement		Applied?	
4.2.1 Prevention of Illicit Discharges into the MS4	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.2.1 not implemented:			
4.2.2 Storm Drain Stenciling or Signage	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.2.2 not implemented:			
4.2.3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.2.3 not implemented:			
4.2.4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.2.4 not implemented:			
4.2.5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.2.5 not implemented:			

Project Name:

Form I-4B Page 2 of 2			
Source Control Requirement	Applied?		
4.2.6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)			
On-site storm drain inlets	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Interior floor drains and elevator shaft sump pumps	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Interior parking garages	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Need for future indoor & structural pest control	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Landscape/Outdoor Pesticide Use	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Pools, spas, ponds, decorative fountains, and other water features	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Food service	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Refuse areas	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Industrial processes	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Outdoor storage of equipment or materials	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Vehicle/Equipment Repair and Maintenance	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Fuel Dispensing Areas	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Loading Docks	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Fire Sprinkler Test Water	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Miscellaneous Drain or Wash Water	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Plazas, sidewalks, and parking lots	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
SC-6A: Large Trash Generating Facilities	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
SC-6B: Animal Facilities	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
SC-6C: Plant Nurseries and Garden Centers	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
SC-6D: Automotive Facilities	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.2.6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for <u>all</u> "No" answers shown above.			

Project Name:

Site Design BMP Checklist for PDPs		Form I-5B	
Site Design BMPs			
<p>All development projects must implement site design BMPs where applicable and feasible. See Chapter 4 and Appendix E of the BMP Design Manual (Part 1 of Storm Water Standards) for information to implement site design BMPs shown in this checklist.</p> <p>Answer each category below pursuant to the following.</p> <ul style="list-style-type: none"> • "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the BMP Design Manual. Discussion / justification is not required. • "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. • "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project site has no existing natural areas to conserve). Discussion / justification may be provided. <p>A site map with implemented site design BMPs must be included at the end of this checklist.</p>			
Site Design Requirement		Applied?	
4.3.1 Maintain Natural Drainage Pathways and Hydrologic Features		<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Discussion / justification if 4.3.1 not implemented:			
1-1 Are existing natural drainage pathways and hydrologic features mapped on the site map?		<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
1-2 Are trees implemented? If yes, are they shown on the site map?		<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
1-3 Implemented trees meet the design criteria in 4.3.1 Fact Sheet (e.g. soil volume, maximum credit, etc.)?		<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
1-4 Is tree credit volume calculated using Appendix B.2.2.1 and SD-1 Fact Sheet in Appendix E?		<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
4.3.2 Have natural areas, soils and vegetation been conserved?		<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Discussion / justification if 4.3.2 not implemented:			

Project Name:

Form I-5B Page 2 of 4			
Site Design Requirement	Applied?		
4.3.3 Minimize Impervious Area	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.3 not implemented:			
4.3.4 Minimize Soil Compaction	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.4 not implemented:			
4.3.5 Impervious Area Dispersion	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.5 not implemented:			
5-1 Is the pervious area receiving runoff from impervious area identified on the site map?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
5-2 Does the pervious area satisfy the design criteria in 4.3.5 Fact Sheet in Appendix E (e.g. maximum slope, minimum length, etc.)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
5-3 Is impervious area dispersion credit volume calculated using Appendix B.2.1.1 and 4.3.5 Fact Sheet in Appendix E?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A

Project Name:

Form I-5B Page 3 of 4			
Site Design Requirement	Applied?		
4.3.6 Runoff Collection	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.6 not implemented:			
6a-1 Are green roofs implemented in accordance with design criteria in 4.3.6A Fact Sheet? If yes, are they shown on the site map?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
6a-2 Is the green roof credit volume calculated using Appendix B.2.1.2 and 4.3.6A Fact Sheet in Appendix E?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
6b-1 Are permeable pavements implemented in accordance with design criteria in 4.3.6B Fact Sheet? If yes, are they shown on the site map?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
6b-2 Is the permeable pavement credit volume calculated using Appendix B.2.1.3 and 4.3.6B Fact Sheet in Appendix	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
4.3.7 Landscaping with Native or Drought Tolerant Species	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.7 not implemented:			
4.3.8 Harvest and Use Precipitation	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.8 not implemented:			
8-1 Are rain barrels implemented in accordance with design criteria in 4.3.8 Fact Sheet? If yes, are they shown on the site map?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
8-2 Is the rain barrel credit volume calculated using Appendix B.2.2.2 and 4.3.8 Fact Sheet in Appendix E?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A

Project Name:

Form I-5B Page 4 of 4
Insert Site Map with all site design BMPs identified:
<div></div>



Project Name:

Summary of PDP Structural BMPs	Form I-6
PDP Structural BMPs	
<p>All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the BMP Design Manual, Part 1 of Storm Water Standards). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the BMP Design Manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s).</p> <p>PDP structural BMPs must be verified by the City at the completion of construction. This includes requiring the project owner or project owner's representative to certify construction of the structural BMPs (complete Form DS-563). PDP structural BMPs must be maintained into perpetuity (see Chapter 7 of the BMP Design Manual).</p> <p>Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).</p> <p>Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the BMP Design Manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate.</p> <p>(Continue on page 2 as necessary.)</p>	

Project Name:

Form I-6 Page 2 of

(Continued from page 1)

Project Name:

Form I-6 Page of (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No.	
Construction Plan Sheet No.	
Type of Structural BMP: <input type="checkbox"/> Retention by harvest and use (e.g. HU-1, cistern) <input type="checkbox"/> Retention by infiltration basin (INF-1) <input type="checkbox"/> Retention by bioretention (INF-2) <input type="checkbox"/> Retention by permeable pavement (INF-3) <input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1) <input type="checkbox"/> Biofiltration (BF-1) <input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) <input type="checkbox"/> Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) <input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) <input type="checkbox"/> Detention pond or vault for hydromodification management <input type="checkbox"/> Other (describe in discussion section below)	
Purpose: <input type="checkbox"/> Pollutant control only <input type="checkbox"/> Hydromodification control only <input type="checkbox"/> Combined pollutant control and hydromodification control <input type="checkbox"/> Pre-treatment/forebay for another structural BMP <input type="checkbox"/> Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	
Who will be the final owner of this BMP?	
Who will maintain this BMP into perpetuity?	
What is the funding mechanism for maintenance?	

Project Name:

Form I-6 Page of (Copy as many as needed)
Structural BMP ID No.
Construction Plan Sheet No.
Discussion (as needed; must include worksheets showing BMP sizing calculations in the SWQMPs):

Project Name:

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Project Name:

Attachment 1

Backup For PDP Pollutant Control BMPs

This is the cover sheet for Attachment 1.

Project Name:

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Project Name:

Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 1a	DMA Exhibit (Required) See DMA Exhibit Checklist.	<input checked="" type="checkbox"/> Included
Attachment 1b	Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)* *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	<input type="checkbox"/> Included on DMA Exhibit in Attachment 1a <input type="checkbox"/> Included as Attachment 1b, separate from DMA Exhibit
Attachment 1c	Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs) Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7.	<input type="checkbox"/> Included <input type="checkbox"/> Not included because the entire project will use infiltration BMPs
Attachment 1d	Infiltration Feasibility Information. Contents of Attachment 1d depend on the infiltration condition: <ul style="list-style-type: none"> • No Infiltration Condition: <ul style="list-style-type: none"> ○ Infiltration Feasibility Condition Letter (<i>Note: must be stamped and signed by licensed geotechnical engineer</i>) ○ Form I-8A (optional) ○ Form I-8B (optional) • Partial Infiltration Condition: <ul style="list-style-type: none"> ○ Infiltration Feasibility Condition Letter (<i>Note: must be stamped and signed by licensed geotechnical engineer</i>) ○ Form I-8A ○ Form I-8B • Full Infiltration Condition: <ul style="list-style-type: none"> ○ Form I-8A ○ Form I-8B ○ Worksheet C.4-3 ○ Form I-9 Refer to Appendices C and D of the BMP Design Manual for guidance.	<input type="checkbox"/> Included <input type="checkbox"/> Not included because the entire project will use harvest and use BMPs
Attachment 1e	Pollutant Control BMP Design Worksheets / Calculations (Required) Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines and site design credit calculations	<input type="checkbox"/> Included

Project Name:

Use this checklist to ensure the required information has been included on the DMA Exhibit:

The DMA Exhibit must identify:

- ☐ Underlying hydrologic soil group
- ☐ Approximate depth to groundwater
- ☐ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- ☐ Critical coarse sediment yield areas to be protected
- ☐ Existing topography and impervious areas
- ☐ Existing and proposed site drainage network and connections to drainage offsite
- ☐ Proposed grading
- ☐ Proposed impervious features
- ☐ Proposed design features and surface treatments used to minimize imperviousness
- ☐ Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)
- ☐ Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Form I-3B)
- ☐ Structural BMPs (identify location, type of BMP, size/detail, and include cross-section)

DRAINAGE AREA DMA BREAKDOWN			
DRAINAGE AREA SURFACE	SYMBOL	SOIL TYPE	DRAINAGE AREA 'A'
BUILDING ROOFTOP		TYPE D	3,945 SQ FT
PARKING/DRIVE AISLE IMPERVIOUS AREA		TYPE D	14,750 SQ FT
HARDSCAPING/SIDEWALK		TYPE D	1,525 SQ FT
EXIST. IMPERVIOUS AREA		TYPE D	2,340 SQ FT
LANDSCAPING AREA		TYPE D	8,448 SQ FT
			TOTAL LOT AREA = 31,008 SQ FT

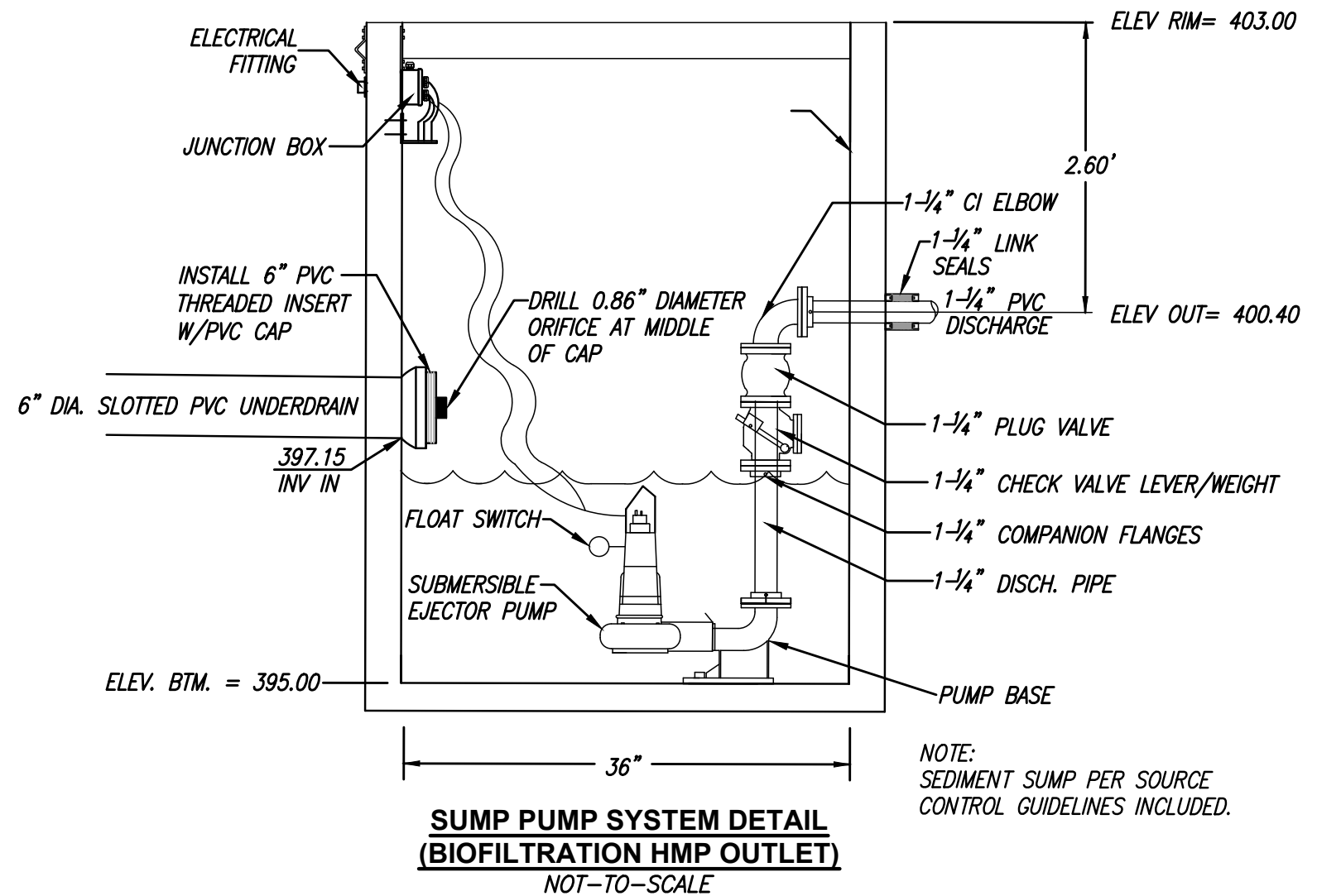
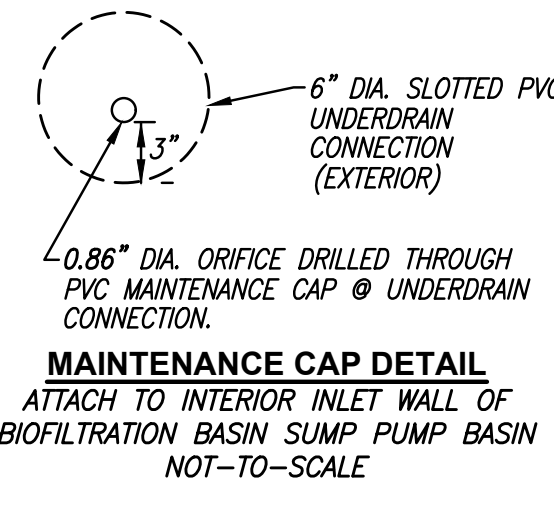
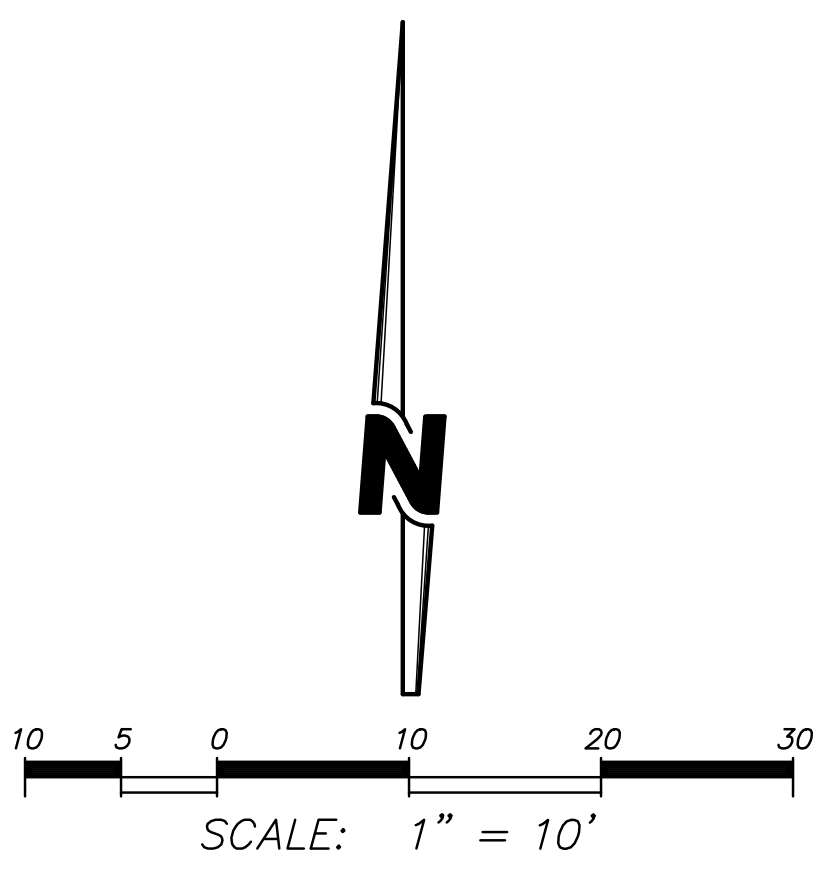
LEGEND:

EXISTING CONTOURS

EXISTING DIRECTION OF DRAINAGE

DRAINAGE AREA

"A" DRAINAGE MANAGEMENT AREA DESIGNATION



POST DEVELOPMENT PLAN FOR:
6270 MIRAMAR ROAD

DRAINAGE AREA "A"
0.71 ACRES
31,008 SQUARE FEET

TC FLOW PATH
L=265'

PARCEL A

PROPOSED BUILDING

POC
Q100 = 2.4 cfs
V100 = 5.3 ft/s

BIOFILTRATION BASIN MEDIA

AMENDED SOIL LAYER
COMPOSITION AND TEXTURE:
65% SAND, 20% SANDY LOAM, & 15% COMPOST (FROM VEGETATION-BASED FEEDSTOCK). ANIMAL WASTES OR BY-PRODUCTS SHOULD NOT BE APPLIED.
AMENDED SOIL LAYER DEPTH 18"

PERMEABILITY:
5 IN/HR INFILTRATION RATE FOR THE FLOW-BASED SUSMP METHOD
(1-6IN/HR FOR ALTERNATIVE DESIGNS, AS APPROVED BY LOCAL JURISDICTION).

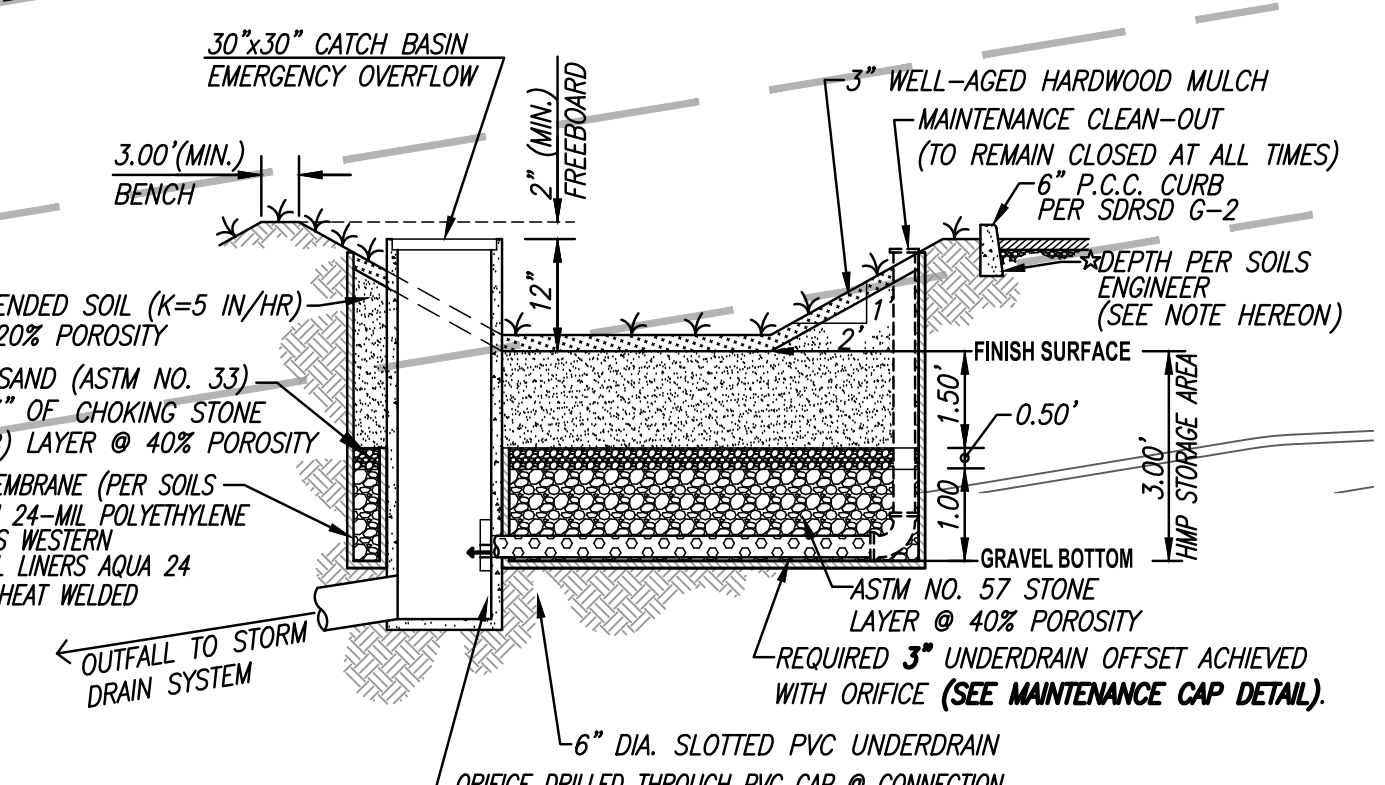
CHEMICAL COMPOSITION: TOTAL PHOSPHORUS < 15 PARTS PER MILLION (PPM);
PH 6-8; CATION EXCHANGE CAPACITY > 5 MILLIEQUIVALENTS PER 100 GRAMS (MEQ/100 G) OF SOIL; ORGANIC MATTER CONTENT < 5 PERCENT BY WEIGHT.

DRAINAGE LAYER
SEPARATE SOIL MEDIA FROM UNDERDRAIN LAYER WITH 3 INCH OF WASHED SAND, FOLLOWED BY 3 INCHES OF CHOKING STONE (ASTM NO. 8) OVER A 1.00-FOOT ENVELOPE OF ASTM NO. 57 STONE. TOTAL COMBINED DRAINAGE LAYER 18".

SURFACE VEGETATION
AS SPECIFIED BY THE LANDSCAPE ARCHITECT PLANS.

NOTE:
SOIL MIX WILL BE TESTED IN FIELD TO MEET REQUIRED INFILTRATION RATE.

BIOFILTRATION BASIN SECTION
TYPICAL BASIN SECTION & OUTLET CONNECTION
NOT-TO-SCALE



PLANS PREPARED BY:
SPEAR & ASSOCIATES, INC.
CIVIL ENGINEERING & LAND SURVEYING
475 PRODUCTION STREET, SAN MARCOS, CA 92078
PHONE (760) 736-2040 FAX (760) 736-4866
WWW.SPEARINC.NET

Project Name:

Tabular Summary of DMAs							Worksheet B-1		
DMA Unique Identifier	Area (acres)	Impervious Area (acres)	% Imp	HSG	Area Weighted Runoff Coefficient	DCV (cubic feet)	Treated By (BMP ID)	Pollutant Control Type	Drains to (POC ID)
Summary of DMA Information (Must match project description and SWQMP Narrative)									
No. of DMAs	Total DMA Area (acres)	Total Impervious Area (acres)	% Imp		Area Weighted Runoff Coefficient	Total DCV (cubic feet)	Total Area Treated (acres)		No. of POCs

Where: DMA = Drainage Management Area; Imp = Imperviousness; HSG = Hydrologic Soil Group; DCV= Design Capture Volume; BMP = Best Management Practice; POC = Point of Compliance; ID = identifier; No. = Number



Harvest and Use Feasibility Checklist		Worksheet B.3-1 : Form I-7
<p>1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season?</p> <p><input type="checkbox"/> Toilet and urinal flushing</p> <p><input type="checkbox"/> Landscape irrigation</p> <p><input type="checkbox"/> Other: _____</p>		
<p>2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2.</p> <p>[Provide a summary of calculations here]</p>		
<p>3. Calculate the DCV using worksheet B-2.1.</p> <p>DCV = _____ (cubic feet)</p> <p>[Provide a summary of calculations here]</p>		
<p>3a. Is the 36-hour demand greater than or equal to the DCV?</p> <p>Yes / No ⇒</p> <p>↓</p>	<p>3b. Is the 36-hour demand greater than 0.25DCV but less than the full DCV?</p> <p><input type="checkbox"/> Yes / No ⇒</p> <p>↓</p>	<p>3c. Is the 36-hour demand less than 0.25DCV?</p> <p>Yes</p> <p>↓</p>
<p>Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria.</p>	<p>Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours.</p>	<p>Harvest and use is considered to be infeasible.</p>
<p>Is harvest and use feasible based on further evaluation?</p> <p>Yes, refer to Appendix E to select and size harvest and use BMPs.</p> <p>No, select alternate BMPs.</p>		

Form I-8 Page 2 of 4			
Criteria	Screening Question	Yes	No
3	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
<p>Provide basis:</p> <p>Groundwater depth is estimated between 10' to 20' and should not be affected.</p> <p>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.</p>			
4	Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
<p>Provide basis:</p> <p>infiltration should not cause water balance issues such as seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface water</p> <p>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.</p>			
Part 1 Result *	<p>If all answers to rows 1 - 4 are “Yes” a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration</p> <p>If any answer from row 1-4 is “No”, infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a “full infiltration” design. Proceed to Part 2</p>		No full Infiltration

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

Form I-8 Page 3 of 4

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X
<p>Provide basis: The soil is type D with a low infiltration rate</p> <p>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.</p>			
6	Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
<p>Provide basis:</p> <p>There would be potential structural damage to the adjacent public street.</p> <p>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.</p>			

Form I-8 Page 4 of 4			
Criteria	Screening Question	Yes	No
7	Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: Groundwater depth is estimated between 10' to 20' and should not be affected. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
8	Can infiltration be allowed without violating downstream water rights? The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: No downstream water rights violations are anticipated. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
Part 2 Result*	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration . If any answer from row 5-8 is no, then infiltration of any volume is considered to be infeasible within the drainage area. The feasibility screening category is No Infiltration .		No Partial Infiltration

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

Factor of Safety and Design Infiltration Rate Worksheet				Form I-9	
Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) $p = w \times v$
A	Suitability Assessment	Soil assessment methods	0.25		
		Predominant soil texture	0.25		
		Site soil variability	0.25		
		Depth to groundwater / impervious layer	0.25		
		Suitability Assessment Safety Factor, $S_A = \sum p$			
B	Design	Level of pretreatment/ expected sediment loads	0.5		
		Redundancy/resiliency	0.25		
		Compaction during construction	0.25		
		Design Safety Factor, $S_B = \sum p$			
Combined Safety Factor, $S_{total} = S_A \times S_B$				2.0	
Observed Infiltration Rate, inch/hr, $K_{observed}$ (corrected for test-specific bias)				0.02	
Design Infiltration Rate, in/hr, $K_{design} = K_{observed} / S_{total}$				0.0	
Supporting Data					
Briefly describe infiltration test and provide reference to test forms:					


Runoff Factors


DMA A	s.f.	(A) acres	(C) Runoff	C x A
Exist Imperv to remain	2340	0.054	0.9	0.05
Roof	3945	0.091	0.9	0.08
Pvmt	14750	0.339	0.9	0.30
Hardscape	1525	0.035	0.9	0.03
Landscape	8448	0.194	0.1	0.02
total	31008	0.712		0.44
			Composite C	0.61


Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods
Worksheet B.2-1 DCV

DMA A

Design Capture Volume		Worksheet B.2-1		
1	85 th percentile 24-hr storm depth from Figure B.1-1	d=	0.52	inches
2	Area tributary to BMP (s)	A=	0.71	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.61	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = $(3630 \times C \times d \times A) - \text{TCV} - \text{RCV}$	DCV=	820	cubic-feet

		Project Name Superstar Car Wash
		BMP ID A
Sizing Method for Pollutant Removal Criteria		Worksheet B.5-1
1	Area draining to the BMP	31008 sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.61
3	85 th percentile 24-hour rainfall depth	0.52 inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	820 cu. ft.
BMP Parameters		
5	Surface ponding [6 inch minimum, 12 inch maximum]	12 inches
6	Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations	24 inches
7	Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area	12 inches
8	Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area	3 inches
9	Freely drained pore storage of the media	0.2 in/in
10	Porosity of aggregate storage	0.4 in/in
11	Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.)	1.2 in/hr.
Baseline Calculations		
12	Allowable routing time for sizing	6 hours
13	Depth filtered during storm [Line 11 x Line 12]	7.2 inches
14	Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)]	22.8 inches
15	Total Depth Treated [Line 13 + Line 14]	30 inches
Option 1 – Biofilter 1.5 times the DCV		
16	Required biofiltered volume [1.5 x Line 4]	1229 cu. ft.
17	Required Footprint [Line 16/ Line 15] x 12	492 sq. ft.
Option 2 - Store 0.75 of remaining DCV in pores and ponding		
18	Required Storage (surface + pores) Volume [0.75 x Line 4]	615 cu. ft.
19	Required Footprint [Line 18/ Line 14] x 12	324 sq. ft.
Footprint of the BMP		
20	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4)	0.03
21	Minimum BMP Footprint [Line 1 x Line 2 x Line 20]	567 sq. ft.
22	Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21)	567 sq. ft.
23	Provided BMP Footprint	1480 sq. ft.
24	Is Line 23 ≥ Line 22?	Yes, Performance Standard is Met

		Project Name	Superstar Car Wash	
		BMP ID	A	
Sizing Method for Volume Retention Criteria			Worksheet B.5-2	
1	Area draining to the BMP		31008	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)		0.61	
3	85 th percentile 24-hour rainfall depth		0.52	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]		820	cu. ft.
Volume Retention Requirement				
5	Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or enter 0.05		0.1	in/hr.
6	Factor of safety		2	
7	Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6]		0.05	in/hr.
8	Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 +6.62) When Line 7 ≤ 0.01 in/hr. = 3.5%		15.0	%
9	Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023		0.106	
10	Target volume retention [Line 9 x Line 4]		87	cu. ft.

		Project Name Superstar Car Wash				
		BMP ID A				
Volume Retention for No Infiltration Condition				Worksheet B.5-6		
1	Area draining to the biofiltration BMP				31008	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)				0.61	
3	Effective impervious area draining to the BMP [Line 1 x Line 2]				18915	sq. ft.
4	Required area for Evapotranspiration [Line 3 x 0.03]				567	sq. ft.
5	Biofiltration BMP Footprint				1480	sq. ft.
Landscape Area (must be identified on DS-3247)						
	Identification	1	2	3	4	5
6	Landscape area that meet the requirements in SD-B and SD-F Fact Sheet (sq. ft.)					
7	Impervious area draining to the landscape area (sq. ft.)					
8	Impervious to Pervious Area ratio [Line 7/Line 6]	0.00	0.00	0.00	0.00	0.00
9	Effective Credit Area If (Line 8 > 1.5, Line 6, Line 7/1.5)	0	0	0	0	0
10	Sum of Landscape area [sum of Line 9 Id's 1 to 5]	0				sq. ft.
11	Provided footprint for evapotranspiration [Line 5 + Line 10]	1480				sq. ft.
Volume Retention Performance Standard						
12	Is Line 11 ≥ Line 4?	Volume Retention Performance Standard is Met				
13	Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4]	2.61				
14	Target Volume Retention [Line 10 from Worksheet B.5.2]	87				cu. ft.
15	Volume retention required from other site design BMPs [(1-Line 13) x Line 14]	-139.8805816				cu. ft.
Site Design BMP						
	Identification	Site Design Type			Credit	
16	1					cu. ft.
	2					cu. ft.
	3					cu. ft.
	4					cu. ft.
	5					cu. ft.
	Sum of volume retention benefits from other site design BMPs (e.g. trees; rain barrels etc.). [sum of Line 16 Credits for Id's 1 to 5] Provide documentation of how the site design credit is calculated in the PDP SWQMP.				0	cu. ft.
17	Is Line 16 ≥ Line 15?	Volume Retention Performance Standard is Met				

Project Name:

Attachment 2

Backup for PDP Hydromodification Control Measures

This is the cover sheet for Attachment 2.

☐ Mark this box if this attachment is empty because the project is exempt from PDP hydromodification management requirements.

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Project Name:

Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 2a	Hydromodification Management Exhibit (Required)	<input type="checkbox"/> Included See Hydromodification Management Exhibit Checklist.
Attachment 2b	<p>Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional)</p> <p>See Section 6.2 of the BMP Design Manual.</p>	<input type="checkbox"/> Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map (Required) Optional analyses for Critical Coarse Sediment Yield Area Determination <input type="checkbox"/> 6.2.1 Verification of Geomorphic Landscape Units Onsite <input type="checkbox"/> 6.2.2 Downstream Systems Sensitivity to Coarse Sediment <input type="checkbox"/> 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
Attachment 2c	<p>Geomorphic Assessment of Receiving Channels (Optional)</p> <p>See Section 6.3.4 of the BMP Design Manual.</p>	<input type="checkbox"/> Not Performed <input type="checkbox"/> Included <input type="checkbox"/> Submitted as separate stand-alone document
Attachment 2d	<p>Flow Control Facility Design and Structural BMP Drawdown Calculations (Required)</p> <p>Overflow Design Summary for each structural BMP</p> <p>See Chapter 6 and Appendix G of the BMP Design Manual</p>	<input type="checkbox"/> Included <input type="checkbox"/> Submitted as separate stand-alone document

Project Name:

Use this checklist to ensure the required information has been included on the Hydromodification Management Exhibit:

The Hydromodification Management Exhibit must identify:

- ☐ Underlying hydrologic soil group
- ☐ Approximate depth to groundwater
- ☐ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- ☐ Critical coarse sediment yield areas to be protected OR provide a separate map showing that the project site is outside of any critical coarse sediment yield areas
- ☐ Existing topography
- ☐ Existing and proposed site drainage network and connections to drainage offsite
- ☐ Proposed grading
- ☐ Proposed impervious features
- ☐ Proposed design features and surface treatments used to minimize imperviousness
- ☐ Point(s) of Compliance (POC) for Hydromodification Management
Existing and proposed drainage boundary and drainage area to each POC (when necessary, create separate exhibits for pre-development and post-project conditions)
- ☐ Structural BMPs for hydromodification management (identify location, type of BMP, and size/detail).

DRAINAGE AREA DMA BREAKDOWN			
DRAINAGE AREA SURFACE	SYMBOL	SOIL TYPE	DRAINAGE AREA 'A'
BUILDING ROOFTOP		TYPE D	3,945 SQ FT
PARKING/DRIVE AISLE IMPERVIOUS AREA		TYPE D	14,750 SQ FT
HARDSCAPING/SIDEWALK		TYPE D	1,525 SQ FT
EXIST. IMPERVIOUS AREA		TYPE D	2,340 SQ FT
LANDSCAPING AREA		TYPE D	8,448 SQ FT
			TOTAL LOT AREA = 31,008 SQ FT

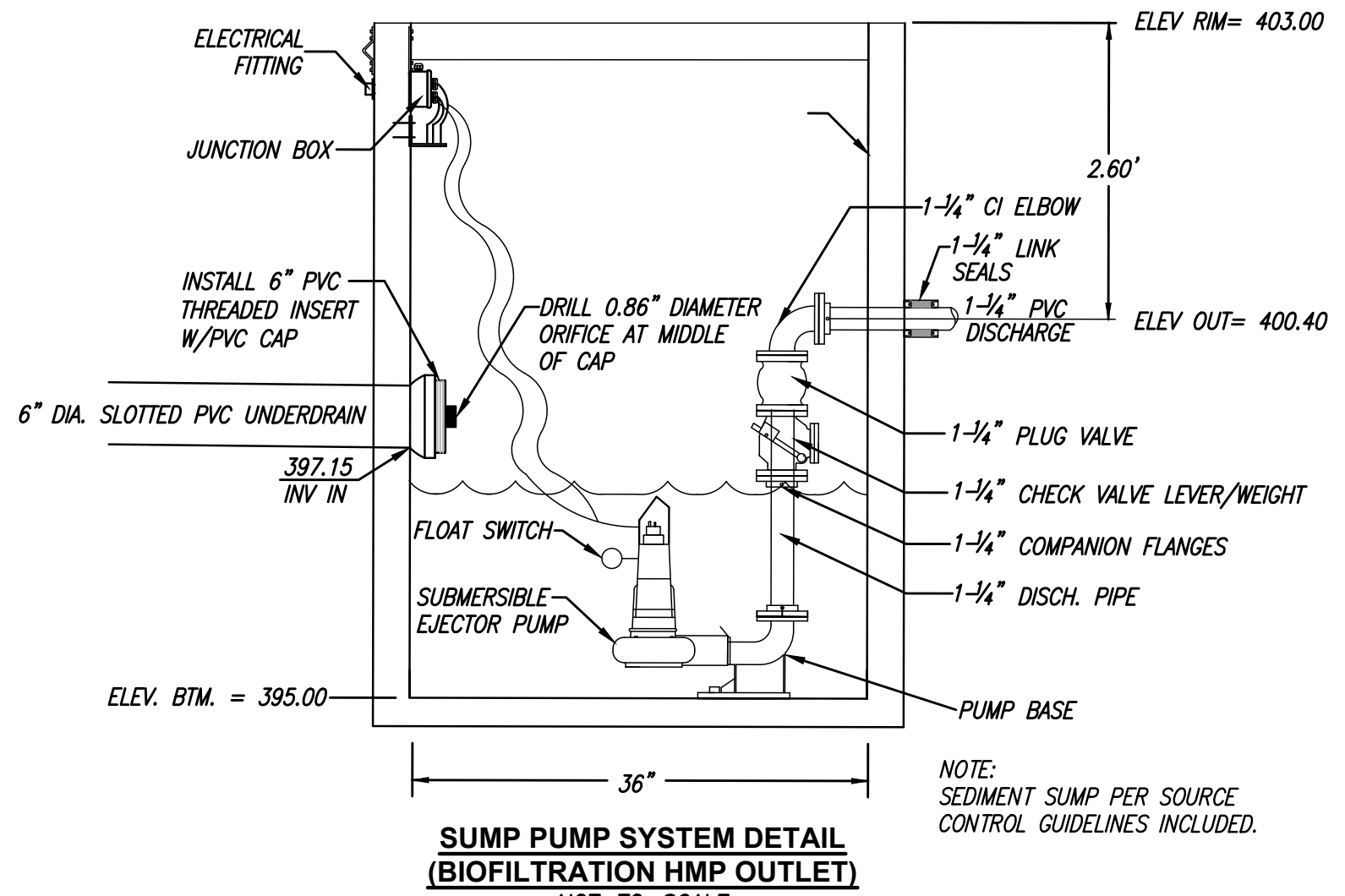
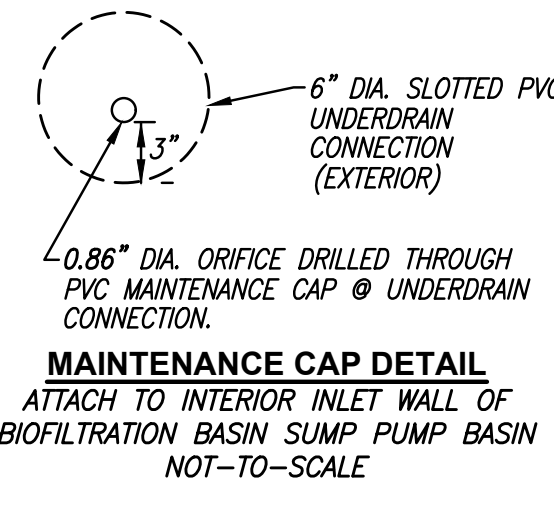
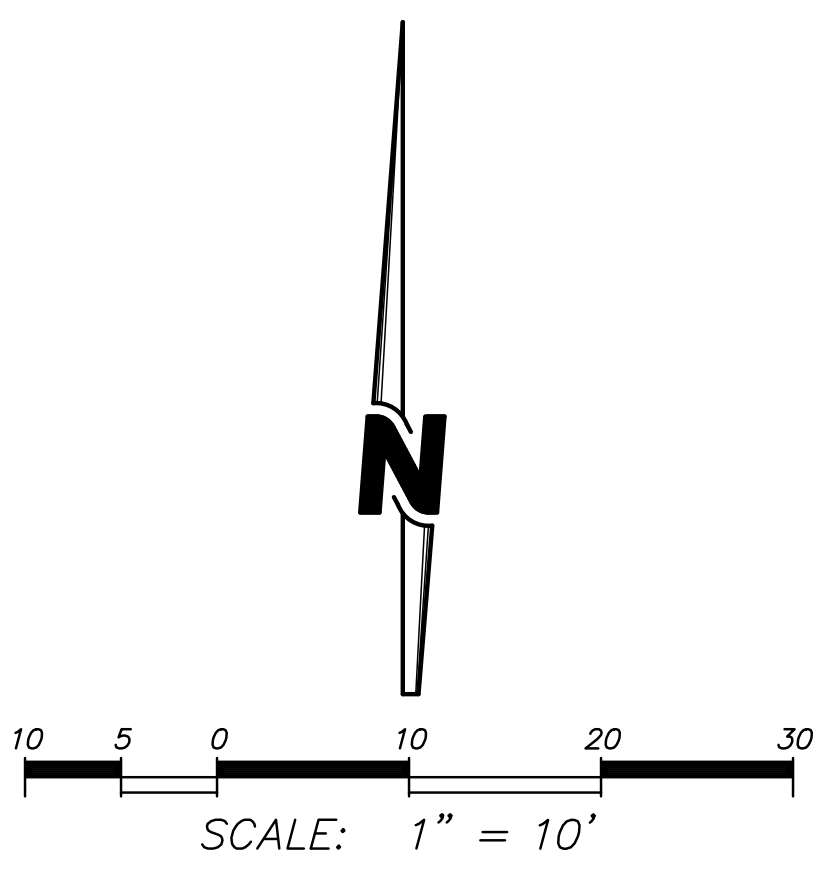
LEGEND:

EXISTING CONTOURS

EXISTING DIRECTION OF DRAINAGE

DRAINAGE AREA

"A" DRAINAGE MANAGEMENT AREA DESIGNATION



POST DEVELOPMENT PLAN FOR:
6270 MIRAMAR ROAD

DRAINAGE AREA "A"
0.71 ACRES
31,008 SQUARE FEET

TC FLOW PATH
L=265'

PARCEL A

PROPOSED BUILDING

POC
Q100 = 2.4 cfs
V100 = 5.3 ft/s

BIOFILTRATION BASIN MEDIA

AMENDED SOIL LAYER
COMPOSITION AND TEXTURE:
65% SAND, 20% SANDY LOAM, & 15% COMPOST (FROM VEGETATION-BASED FEEDSTOCK). ANIMAL WASTES OR BY-PRODUCTS SHOULD NOT BE APPLIED.
AMENDED SOIL LAYER DEPTH 18"

PERMEABILITY:
5 IN/HR INFILTRATION RATE FOR THE FLOW-BASED SUSMP METHOD
(1-6IN/HR FOR ALTERNATIVE DESIGNS, AS APPROVED BY LOCAL JURISDICTION).

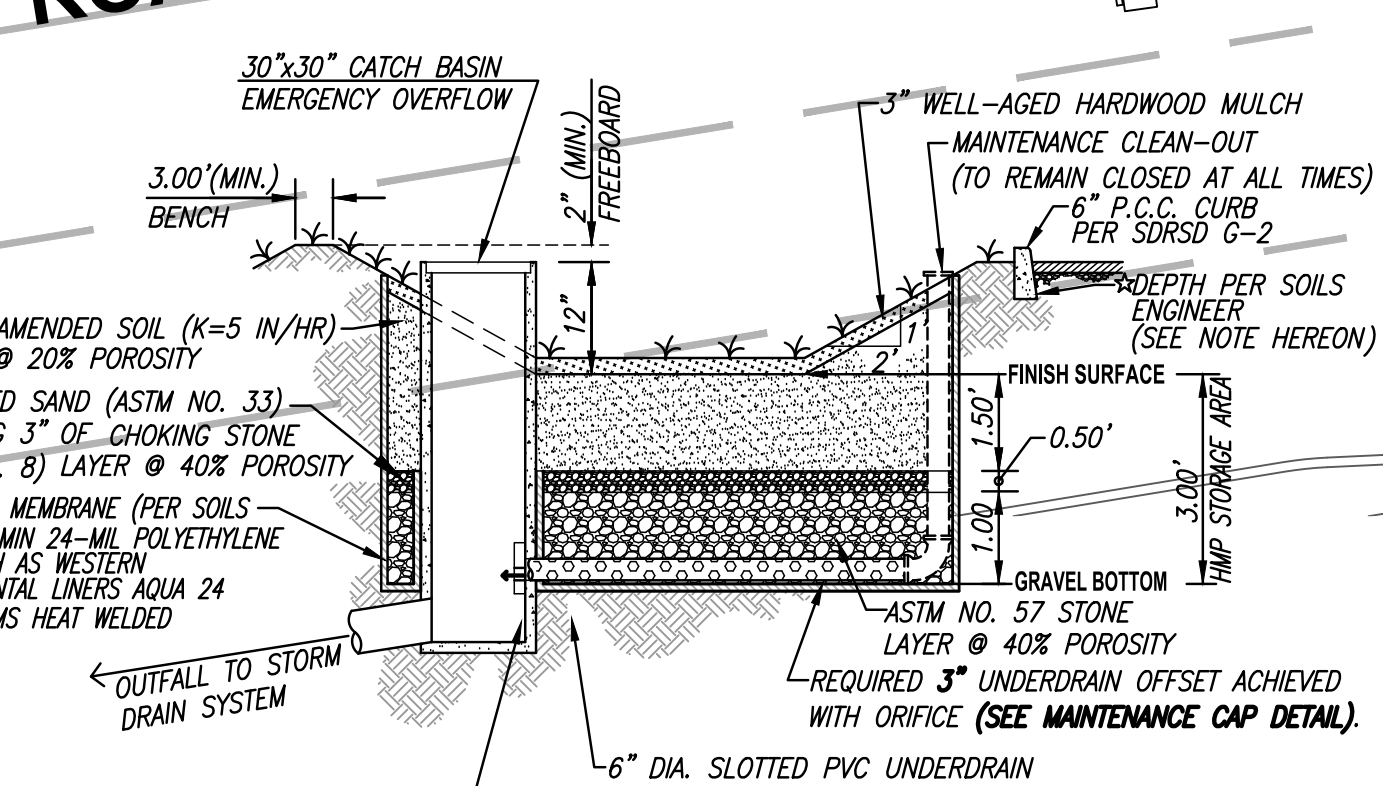
CHEMICAL COMPOSITION: TOTAL PHOSPHORUS < 15 PARTS PER MILLION (PPM);
PH 6-8; CATION EXCHANGE CAPACITY > 5 MILLIEQUIVALENTS PER 100 GRAMS (MEQ/100 G) OF SOIL; ORGANIC MATTER CONTENT < 5 PERCENT BY WEIGHT.

DRAINAGE LAYER
SEPARATE SOIL MEDIA FROM UNDERDRAIN LAYER WITH 3 INCH OF WASHED SAND, FOLLOWED BY 3 INCHES OF CHOKING STONE (ASTM NO. 8) OVER A 1.00-FOOT ENVELOPE OF ASTM NO. 57 STONE. TOTAL COMBINED DRAINAGE LAYER 18".

SURFACE VEGETATION
AS SPECIFIED BY THE LANDSCAPE ARCHITECT PLANS.

NOTE:
SOIL MIX WILL BE TESTED IN FIELD TO MEET REQUIRED INFILTRATION RATE.

BIOFILTRATION BASIN SECTION
TYPICAL BASIN SECTION & OUTLET CONNECTION
NOT-TO-SCALE



PLANS PREPARED BY:
SPEAR & ASSOCIATES, INC.
CIVIL ENGINEERING & LAND SURVEYING
475 PRODUCTION STREET, SAN MARCOS, CA 92078
PHONE (760) 736-2040 FAX (760) 736-4866
WWW.SPEARINC.NET





6270 Miramar Rd

Miramar Rd

Site

Nearest CCSYA

BMP Sizing Spreadsheet V3.0

Project Name:	Superstar Car Wash
Project Applicant:	Reza Amirrezvani
Jurisdiction:	City of San Diego
Parcel (APN):	343-252-34
Hydrologic Unit:	Penasquitos
Rain Gauge:	Oceanside
Total Project Area (sf):	31,008
Channel Susceptibility:	High

BMP Sizing Spreadsheet V3.0			
Project Name:	Superstar Car Wash	Hydrologic Unit:	Penasquitos
Project Applicant:	Reza Amirrezvani	Rain Gauge:	Oceanside
Jurisdiction:	City of San Diego	Total Project Area:	31,008
Parcel (APN):	343-252-34	Low Flow Threshold:	0.1Q2
BMP Name:	A	BMP Type:	Biofiltration
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.025

Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1) ¹	Surface Area	Surface Area (SF)
A	2,340	D	Flat	Mixed	0.9	0.07	147
A	3,945	D	Flat	Roofs	0.9	0.07	249
A	14,750	D	Flat	Mixed	0.9	0.07	929
A	1,525	D	Flat	Concrete	0.9	0.07	96
A	8,448	D	Flat	Landscape	0.1	0.07	59
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	31,008					Minimum BMP Size	1480

Proposed BMP Size* 1480

* Assumes standard configuration

Surface Ponding Depth	12.00	in
Bioretention Soil Media Depth	18.00	in
Filter Coarse	6.00	in
Gravel Storage Layer Depth	12	in
Underdrain Offset	3.0	in

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manual,

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.

Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, April 2018. For questions or concerns please contact the jurisdiction in which your project is located.

Project Name:

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Project Name:

Attachment 3 Structural BMP Maintenance Information

This is the cover sheet for Attachment 3.

OPERATION & MAINTENANCE (O&M) PLAN

Project Name:

Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 3	Maintenance Agreement (Form DS-3247) (when applicable)	<input type="checkbox"/> Included <input type="checkbox"/> Not applicable

Project Name:

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Project Name:

Use this checklist to ensure the required information has been included in the Structural BMP Maintenance Information Attachment:

Attachment 3: For private entity operation and maintenance, Attachment 3 must include a Storm Water Management and Discharge Control Maintenance Agreement (Form DS-3247). The following information must be included in the exhibits attached to the maintenance agreement:

- ☐ Vicinity map
- ☐ Site design BMPs for which DCV reduction is claimed for meeting the pollutant control obligations.
- ☐ BMP and HMP location and dimensions
- ☐ BMP and HMP specifications/cross section/model
- ☐ Maintenance recommendations and frequency
- ☐ LID features such as (permeable paver and LS location, dim, SF).

OPERATION & MAINTENANCE (O&M) PLAN

1. Contents

1. PROJECT DESCRIPTION.....	1
2. OPERATION & MAINTENANCE (O&M) PLAN	1
3. Operation & Maintenance of BMP'S	1
A. Training	2
B. Landscaping	2
C. Irrigation System	5
D. Roof Drains	5
E. Trash Storage Areas	5
F. Storm Water Conveyance System Stenciling and Signing	6
G. Structural BMP: Biofiltration	7
H. Outlet Structures	8
I. Vector Control Owner Responsibilities	8

ATTACHMENTS

A1. Inspection & Maintenance Schedule

B1. Cost Estimate

C1. BMP Training Log

D1. Inspection & Maintenance Log

1. PROJECT DESCRIPTION

The project will re-develop the site with a car wash facility, parking lot and landscaping. The runoff will be directed to a biofiltration basin for treatment.

2. OPERATION & MAINTENANCE (O&M) PLAN

This document has been prepared in compliance with the San Diego Regional Water Quality Control Board requirements and in accordance with requirements set by the City. A Storm Water Quality Management Plan (SWQMP) has been prepared for the project. It identifies the specific Best Management Practices (BMPs) required for the project. Refer to this project's SWQMP for additional information on BMPs. Proper maintenance of the project BMP's is required for their intended and effective function. This O&M Plan provides operation and maintenance procedures for the BMPs designated in the SWQMP. It includes procedures to be followed for inspection and maintenance of the BMPs, instructions for documenting the work performed, record keeping, and outlining the requirement and procedures for training of personnel involved in the process.

3. Operation & Maintenance of BMP'S

It shall be the responsibility of the "Owner or Designated Responsible Party" to maintain and to train all employees for the maintenance and operation of all BMPs, to achieve the maximum pollutant reduction they are designed for, as addressed in the approved Project's SWQMP. The following schedule of O&M's must be followed to satisfy the Conditions of Concern and the Pollutants of Concern as addressed in the approved Project's SWQMP. This schedule shall include periodic inspections of all Source Control and Treatment Control BMP's. All maintenance records for training, inspection and maintenance shall be retained and provided to the city upon request.

The owner may also be required to provide to the City, as part of the maintenance and operation agreement an executed access easement that shall be binding on the land throughout the life of the project.

Responsible Party for O&M and For Training

Reza Amirrezvani
14425 W. McDowell Road, Ste F-108, Goodyear, Az 85395
602-421-6717
r.amirrezvani@superstarcaswash.com

The Designated Responsible Party will be responsible for ensuring that individuals involved in O&M activities, including but not limited to contractors and new owners, will be trained according to the training program herein. Additionally, upon any future sale of the property, the Owner will be responsible for ensuring that the new Designated Responsible Party is familiar with the contents of the plan and the requirements for the routine inspection, routine and non-routine maintenance and

record keeping tasks as described herein. All parties involved in the O&M activities will be required to read this plan.

A. Training

Personnel training is an important component of the implementation of this O&M Plan. The employee training program may consist of a meeting with any new owners, Designated Responsible Party or contractor/employees involved in the O&M activities to review the contents of this plan and to physically tour the facility to observe the BMPs and describe O&M requirements for each BMP. The Designated Responsible Party will implement the training program. All new contractors involved in landscape and/or facility maintenance at the site shall receive training within 30-days of hire and shall receive updated annual training. Maintenance contractor shall verify staff training annually.

The Designated Responsible Party shall be responsible for documenting all training activities and for maintaining records related to training. Forms for documentation of training are included in Attachment C1 of this plan. Training records must be shall be retained and provided to the city upon request.

B. Landscaping

Operational and maintenance needs include:

- Vegetation management to maintain adequate drainage and to limit habitat for mosquitoes, rodents and other disease-carrying vectors.
- Parking lot sweeping.
- Animal and vector control (any method to limit or eradicate the mammals, birds, insects or other arthropods which transmit disease pathogens).
- Periodic sediment removal to optimize performance.
- Trash, debris, grass trimmings, tree pruning, and leaf collection and removal to prevent obstruction of landscape areas so as not to prohibit their use as a BMP.
- Monitoring irrigation equipment.
- Removal of standing water, which may contribute to the development of aquatic plant communities or mosquito breeding areas.
- Preventive maintenance on sampling, flow measurement, and associated BMP equipment and structures.
- Erosion and structural maintenance to prevent the loss of soil and maintain the performance of all landscaping.

Inspection Frequency

The facility will be inspected and inspection visits will be completely documented:

- Once a month at a minimum.
- After every large storm (after every storm monitored or these storms with more than 0.50 inch of precipitation.)
- On a weekly basis during extended periods of wet weather.

Inspect for proper irrigation and fertilizer use, and ensure that all landscaped areas have minimum of 80% coverage.

Visual Inspection as part of landscape maintenance

- Inspect before and after the rainy season (Rainy season (Oct. 1 to April 30)).

Aesthetic Maintenance

The following activities will be included in the aesthetic maintenance program:

Grass Trimming: Trimming of grass will be done on all landscaped areas, around fences, at the inlet and outlet structures, and sampling structures.

Weed Control. Weeds will be removed through mechanical means. Herbicide shall not be used because these chemicals will impact the water quality monitoring.

Functional Maintenance

Functional maintenance has two components:

- Preventive maintenance
- Corrective maintenance

Preventive Maintenance

Preventive maintenance activities to be instituted for landscaped areas are:

- Grass Mowing: Vegetation seed, mix within the landscaped areas, are to be designed to be kept short to maintain adequate drainage and to limit the development of faunal habitats.
- Prohibitive dumping placards.
- Trash and Debris: During each inspection and maintenance visit to the site, debris and trash removal will be conducted to reduce the potential for inlet and outlet structures and other components from becoming clogged and inoperable during storm events.
- Sediment Removal: Sediment accumulation, as part of the operation and maintenance program at of landscaped areas, will be monitored once a month during the dry season, after every large storm (0.50 inch), and monthly during the wet season. Specifically, if sediment reaches a level at or near plant height, or could interfere with flow or operation, the sediment will be removed. If accumulation of debris or sediment is determined to be the cause of decline in design performance, prompt action (i.e., within ten working days) will be taken to restore the landscaped areas to design performance standards. Actions will include using additional fill and vegetation and/or removing accumulated sediment to correct channeling or ponding. Characterization and Appropriate disposal of sediment will comply with applicable local, county, state, or federal requirements. The landscaped areas will be re-graded, if the flow gradient has changed, and then replanted with sod.
- Removal of Standing Water: Standing water must be removed if it contributes to the development of aquatic plant communities or mosquito breeding areas.
- Fertilization and Irrigation: The vegetation seed mix is to been designed so that fertilization and irrigation is to be kept at a minimum.

- **Elimination of Mosquito Breeding Habitats.** The most effective mosquito control program is one that eliminates potential breeding habitats. All mosquitoes require a water source to lay their eggs, which in the hottest part of summer can hatch into larvae within a week.

Corrective Maintenance

Corrective maintenance is required on an emergency or non-routine basis to correct problems and to restore the intended operation and safe function of all landscaped areas.

Corrective maintenance activities include:

Removal of Debris and Sediment: Sediment, debris, and trash, which impede the hydraulic functioning of landscaping and prevent vegetative growth, will be removed and properly disposed. Temporary arrangements will be made for handling the sediments until a permanent arrangement is made. Vegetation will be re-established after sediment removal.

Structural Repairs: Once deemed necessary, repairs to structural components of landscaping will be done within 10 working days. Qualified individuals (i.e., the designers or contractors) will conduct repairs where structural damage has occurred.

Embankment and Slope Repairs: Once deemed necessary, damage to the embankments and slopes of landscaped areas will be repaired as soon as possible, and within 10 working days maximum.

Erosion Repair: Where a reseeding program has been ineffective, or where other factors have created erosive conditions (i.e., pedestrian traffic, concentrated flow, etc.), corrective steps will be taken to prevent loss of soil and any subsequent danger to the performance and use of landscaped areas as BMPs. There are a number of corrective actions that can be taken.

These include erosion control blankets, riprap, sodding, or reduced flow through the area. Designers or contractors will be consulted to address erosion problems if the solution is not evident.

Elimination of Animal Burrows

Animal burrows will be filled and steps taken to remove the animals if burrowing problems continue to occur (filling and compacting). If the problem persists, vector control specialists will be consulted regarding removal steps. This consulting is necessary as the threat of rabies in some areas may necessitate the animals being destroyed rather than relocated. If the BMP performance is affected, abatement will begin. Otherwise, abatement will be performed annually in September.

General Facility Maintenance: In addition to the above elements of corrective maintenance, general corrective maintenance will address the overall facility and its associated components. If corrective maintenance is being done to one component, other components will be inspected to see if maintenance is needed.

Maintenance Frequency

The Inspection & Maintenance Schedule included in enclosed Attachment A1 for all BMPs lists the schedule of maintenance activities to be implemented.

Debris and Sediment Disposal

Waste generated onsite is ultimately the responsibility of the Owner. Disposal of sediments, debris, and trash will comply with applicable local, county, state, and federal waste control programs.

Hazardous Waste

Suspected hazardous wastes will be analyzed to determine disposal options. Hazardous wastes generated onsite will be handled and disposed of according to applicable local, state, and federal regulations. A solid or liquid waste is considered a hazardous waste if it exceeds the criteria listed in the CCR, Title 22, Article 11.

C. Irrigation System

Inspection Frequency and Procedure

The Irrigation system shall be checked each week as a minimum. The following items shall be checked to insure that they are functioning properly:

- Shut-off devices
- Pressure drop sensors
- Moisture sensors
- All piping and sprinkler heads to insure there are no leaks and that proper water spread is maintained.
- All flow reducers.
- Check for overspray/runoff

D. Roof Drains

All roof drains shall be inspected Prior to August 31 of each year to ensure that they are clean and free from trash and in good repair. They shall be flushed and any leaks or damages piping shall be either replaced or repaired. Where roof drains flow onto grass areas splash structures and or rock rip-rap shall be maintained so the flow from the roof drains do not cause erosion or damage to the grass area. During the rain season roof drains shall be inspected weekly and after each rain storm to insure that there is no trash and or silt build up that will restrict the run-off flow from the roof. All trash and/or silt build up shall be removed immediately.

- It is not permissible to directly connect roof drains into a drain system.
- Roof drain downspouts shall discharge runoff to a landscaped area, and to allow the runoff to flow through landscape, prior to entering a private yard drain system.

E. Trash Storage Areas

All trash storage areas shall be inspected daily to insure that they are clean from trash. Also the following shall be inspected annually before and after the rainy season (Oct. 1 to April 30).

- Pavement is in good repair.
- Drainage will not run-off onto adjacent areas.
- That they remain screened or walled to prevent off-site transport of trash.
- That all lids are closed and/or awnings are in good repair to minimize direct precipitation.

F. Storm Water Conveyance System Stenciling and Signing

- Signage/stenciling are to be inspected for legibility and visual obstruction and shall be repaired and cleared of any obstruction within 5 working day of inspection.
- Inspection Frequency: Semi-annually, and monthly during rainy season.

G. Structural BMP: Biofiltration

Vegetated Infiltration or Filtration BMP

Maintenance Indicators and Actions for Vegetated BMPs

Typical Maintenance Indicator(s) for Vegetated BMPs	Maintenance Actions
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials, without damage to the vegetation.
Poor vegetation establishment	Re-seed, re-plant, or re-establish vegetation per original plans.
Overgrown vegetation	Mow or trim as appropriate, but not less than the design height of the vegetation per original plans when applicable (e.g. a vegetated swale may require a minimum vegetation height).
Erosion due to concentrated irrigation flow	Repair/re-seed/re-plant eroded areas and adjust the irrigation system.
Erosion due to concentrated storm water runoff flow	Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, The City must be contacted prior to any additional repairs or reconstruction.
Standing water in vegetated swales	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, loosening or replacing top soil to allow for better infiltration, or minor re-grading for proper drainage. If the issue is not corrected by restoring the BMP to the original plan and grade, City staff must be contacted prior to any additional repairs or reconstruction.
Standing water in bioretention, biofiltration with partial retention, or biofiltration areas, or flow-through planter boxes for longer than 96 hours following a storm event*	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains (where applicable), or repairing/replacing clogged or compacted soils.
Obstructed inlet or outlet structure	Clear obstructions.
Damage to structural components such as weirs, inlet or outlet structures	Repair or replace as applicable.
*These BMPs typically include a surface ponding layer as part of their function which may take 96 hours to drain following a storm event.	

Inspection Frequency

The facility will be inspected and inspection visits will be completely documented:

- Once a month at a minimum.
- After every large storm (after every storm monitored or these storms with more than 0.50 inch of precipitation.)
- On a weekly basis during extended periods of wet weather.

Maintenance is needed if vegetation height is greater than 5” (height shall be kept between 2” and 5”); if there is standing water; if debris are present or if sedimentation is occurring at the vegetation height; ensure that all landscaped areas have minimum of 80% coverage and that no animal burrows are present.

Visual Inspection as part of landscape maintenance

- Inspect before and after the rainy season (Rainy season (Oct. 1 to April 30)).

H. Outlet Structures

All outlet structures shall be kept functional at all times. Routine inspection and corrective maintenance shall include removal of trash sediment and debris and repair of any structural damage or clogging of orifice outlets. The minimum maintenance frequency shall be Prior to August 31 each year, weekly during rainy season or within 24 hours prior to rain forecasts.

I. Vector Control Owner Responsibilities

VECTOR MANAGEMET CONTROL REQUIREMENTS

Any method to limit or eradicate the mammals, birds, insects or other arthropods which transmit disease pathogens. Management of mosquitoes and other vectors in stormwater management structures, such as Bioretention Facilities and Best Management Practices, is critical for protecting public health.

In order to implement vector controls including minimizing the risk for mosquito-borne disease transmission, It is the responsibility of the Owner to regularly maintain the outlet structures and monitor the site after every storm event to ensure that the system (comprising of above and below ground storage facilities) is dewatered in less than 72 hours. Otherwise the owner will be required to implement a vector control plan in accordance with the county’s Department of Public Health.

- Maintain all drainage inlets and outlets trash free; remove silt; make sure to clear any standing water after 72-hours of ponding.

Vector Control Resources:

1. F of San Diego vector educational brochures please reference the following website:
http://www.sdcounty.ca.gov/deh/pests/vector_disease.html
2. Please contact the County of San Diego vector control program with specific questions or concerns.

ATTACHMENT “A1”

INSPECTION & MAINTENANCE SCHEDULE

PREVENTATIVE MAINTENANCE AND ROUTINE INSPECTION					
TYPE BMP	Routine Action	Maintenance Indicator	Maintenance Frequency	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Landscaping & irrigation	Proper irrigation & Fertilizer.	Less than 80% coverage	Each year as needed and once during rainy season (Oct. 1 to April 30)	Re-plant. Repair Irrigation system within 5-days.	All slopes and landscaped areas are to have a minimum coverage of 80%
Trash storage areas	Trash free and removal of silt	Visual Inspection	Daily inspection	Remove trash and silt Daily.	All trash storage areas to be free from trash and silt at all times. Dry Clean, No Power Wash.
Roof drain	Trash free and removal of silt, sedimentation & Debris	Silt build up of more than 1" no trash	Each year routinely as needed.	Remove all trash and silt and repair any damage to roof drains,	All Roof to be free from trash and silt and in good repair
Bioretention – Biofiltration Facilities	Trash free and removal of silt. Clear Clogged outlets and Standing Water.	Silt build up of more than 2" no trash, Exposed soils, dead vegetation, ponded water, and excessive vegetation (see TC-30)	Monthly during rainy season, and after Storm Event	Remove trash and silt –repair and reseed exposed areas, maintain grass height so as not be shorter than 2" or higher than 5" remove all ponded water weekly inspections, (See TC-30)	All bio-filters to be free from trash and silt at all times, grass area to be free from exposed soil and maintained to proper height, removal of any ponding of water for more than 72 hours.
Storm Water Conveyance system Stenciling & Signing	Must be legible at all times and have a clear view.	Fading of paint or illegible letters or	Semi-annually each year & monthly during rainy season	Repaint stenciling and/or replace signs	Applies to all stenciling and signs
Outlet Structures	Must be kept functional at all times. Clear Clogged outlets and Standing Water.	Silt, debris, trash accumulation, Ponding Water	Weekly during rainy season or within 24 hours prior to rain forecasts.	Silt, debris, trash accumulation and repair any structural damage to the outlet structures.	All outlet structures shall be kept functional at all times.

ATTACHMENT “B1”

<u>Annual Estimate to Maintain all BMPs</u>	<u>Annual</u>	<u>10-Year</u>
<u>Landscaping & Biofiltration</u>		
Maintenance of landscaping and bio-filters is already included in the property management responsibilities. Additional cost:	\$400	\$4,000
<u>Irrigation System:</u>		
Inspection and maintenance of the irrigation system is already included in the property management responsibilities, Additional cost:	\$100	\$1,000
<u>Roof Drains:</u>		
Roof drain inspection and maintenance is already included in the property management responsibilities.		
<u>Training:</u>		
Once a year & training of new employees within their first week of employment.	\$100	\$1,000
<u>Stormdrain Signage</u> (As needed or every 2 years)	\$100	\$1,000
<u>Trash Storage Areas:</u>		
Inspection of trash storage area & maintenance to those areas is already included in the property management responsibilities. Additional cost:	\$50	\$500
<hr/>		
Total Estimated Annual Cost to Maintain BMPs	\$750	\$7,500

ATTACHMENT "C1"

[illegible]

ATTACHMENT "D1"

INSPECTION AND MAINTENANCE LOG				
BMP TYP & LOCATION	DATE M/D/Y	Name of Person Inspecting	Description of BMP Condition/ Description repair required if any	Date Repair made and Description repair made and by whom



RECORDING REQUESTED BY:
THE CITY OF SAN DIEGO AND
WHEN RECORDED MAIL TO:

(THIS SPACE IS FOR RECORDER'S USE ONLY)

STORM WATER MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT

APPROVAL NUMBER:

ASSESSORS PARCEL NUMBER:

PROJECT NUMBER:

This agreement is made by and between the City of San Diego, a municipal corporation [City] and _____,
the owner or duly authorized representative of the owner [Property Owner] of property located at

(PROPERTY ADDRESS)

and more particularly described as: _____

(LEGAL DESCRIPTION OF PROPERTY)

in the City of San Diego, County of San Diego, State of California.

Property Owner is required pursuant to the City of San Diego Municipal Code, Chapter 4, Article 3, Division 3, Chapter 14, Article 2, Division 2, and the Land Development Manual, Storm Water Standards to enter into a Storm Water Management and Discharge Control Maintenance Agreement [Maintenance Agreement] for the installation and maintenance of Permanent Storm Water Best Management Practices [Permanent Storm Water BMP's] prior to the issuance of construction permits. The Maintenance Agreement is intended to ensure the establishment and maintenance of Permanent Storm Water BMP's onsite, as described in the attached exhibit(s), the project's Storm Water Quality Management Plan [SWQMP] and Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s): _____.

Property Owner wishes to obtain a building or engineering permit according to the Grading and/or Improvement Plan Drawing No(s) or Building Plan Project No(s): _____.

Continued on Page 2

NOW, THEREFORE, the parties agree as follows:

1. Property Owner shall have prepared, or if qualified, shall prepare an Operation and Maintenance Procedure [OMP] for Permanent Storm Water BMP's, satisfactory to the City, according to the attached exhibit(s), consistent with the Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s): _____.
2. Property Owner shall install, maintain and repair or replace all Permanent Storm Water BMP's within their property, according to the OMP guidelines as described in the attached exhibit(s), the project's SWQMP and Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s) _____.
3. Property Owner shall maintain operation and maintenance records for at least five (5) years. These records shall be made available to the City for inspection upon request at any time.

This Maintenance Agreement shall commence upon execution of this document by all parties named hereon, and shall run with the land.

Executed by the City of San Diego and by Property Owner in San Diego, California.

See Attached Exhibit(s): _____

(Owner Signature)

(Print Name and Title)

(Company/Organization Name)

(Date)

THE CITY OF SAN DIEGO

APPROVED:

(City Control Engineer Signature)

(Print Name)

(Date)

NOTE: ALL SIGNATURES MUST INCLUDE NOTARY ACKNOWLEDGMENTS PER CIVIL CODE SEC. 1180 ET.SEQ.

Project Name:

Attachment 4

Copy of Plan Sheets Showing Permanent Storm Water BMPs

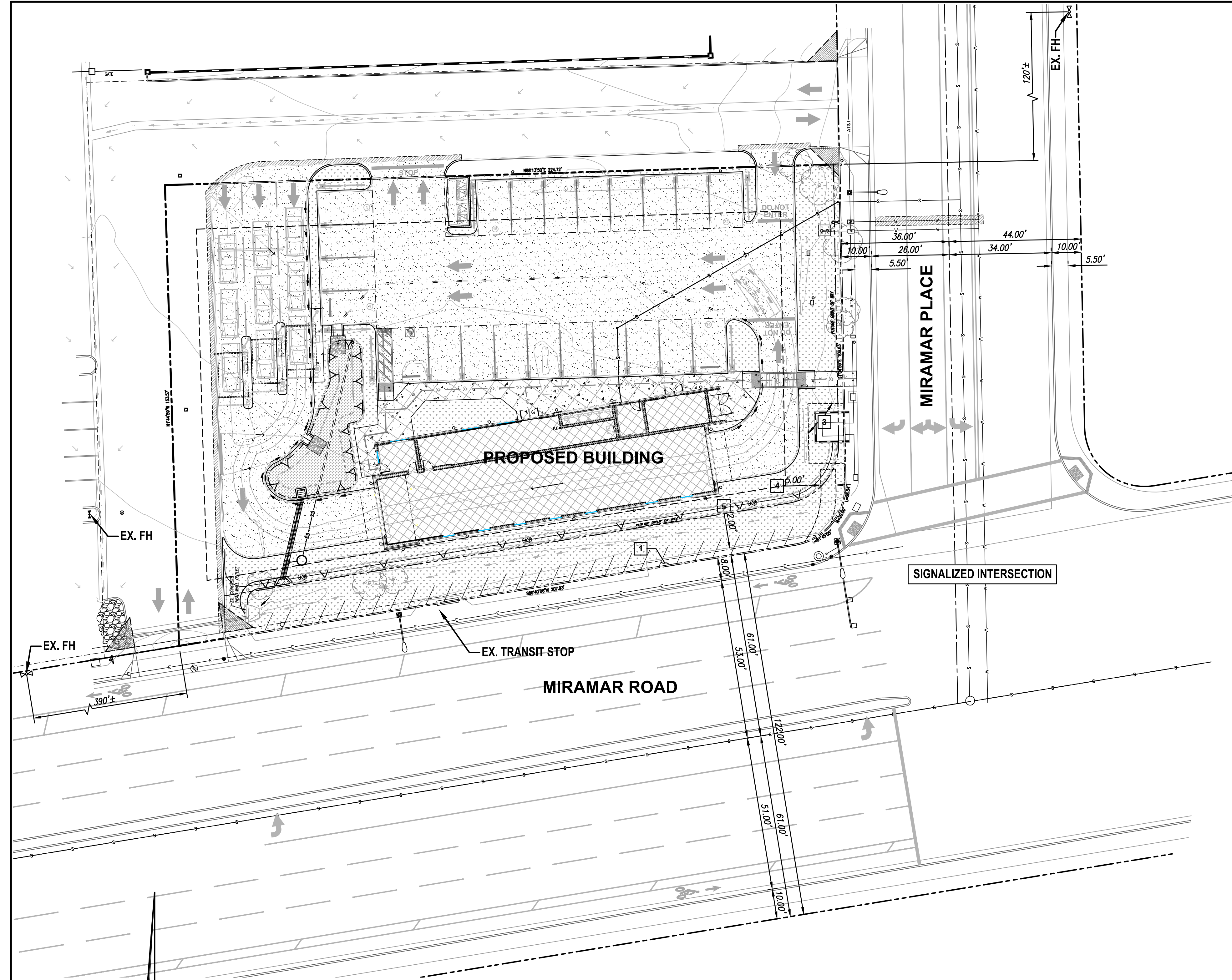
This is the cover sheet for Attachment 4.

Project Name:

Use this checklist to ensure the required information has been included on the plans:

The plans must identify:

- ☐ Structural BMP(s) with ID numbers matching Form I-6 Summary of PDP Structural BMPs
- ☐ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit
- ☐ Details and specifications for construction of structural BMP(s)
- ☐ Signage indicating the location and boundary of structural BMP(s) as required by the City Engineer
- ☐ How to access the structural BMP(s) to inspect and perform maintenance
- ☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☐ Recommended equipment to perform maintenance
- ☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management
- ☐ Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)
- ☐ All BMPs must be fully dimensioned on the plans
- ☐ When proprietary BMPs are used, site specific cross section with outflow, inflow and model number shall be provided. Broucher photocopies are not allowed.



EASEMENT NOTES:

- 1 THE OWNERSHIP OF SAID LAND DOES NOT INCLUDE RIGHTS OF ACCESS TO OR FROM THE STREET, HIGHWAY, OR FREEWAY ABUTTING SAID LAND, SUCH RIGHTS HAVING BEEN RELINQUISHED BY SAID MAP/PLAT.
AFFECTS: MIRAMAR ROAD, EXCEPT 48.00' OPENING. SAID LAND, HOWEVER, ABUTS ON A PUBLIC THOROUGHFARE, OTHER THAN THE ONE REFERRED TO ABOVE, OVER WHICH THE RIGHTS OF VEHICULAR ACCESS HAVE NOT BEEN RELINQUISHED.
- 2 (NOT SHOWN) MATTERS CONTAINED IN THAT CERTAIN DOCUMENT ENTITLED PLANNED INDUSTRIAL DEVELOPMENT PERMIT NO. 0612 RESOURCE PROTECTION ORDINANCE PERMIT, RECORDED DECEMBER 5, 1991 AS DOC. NO. 1991-0628356 OF OFFICIAL RECORDS. REFERENCE IS MADE TO SAID DOCUMENT FOR FULL PARTICULARS.
- 3 AN EASEMENT FOR PUBLIC UTILITIES, INGRESS, EGRESS AND RIGHTS INCIDENTAL THERETO IN FAVOR OF PACIFIC BELL TELEPHONE COMPANY RECORDED JULY 07, 2000 AS DOC NO. 2000-0358397 OF OFFICIAL RECORDS.
- 4 AN EASEMENT FOR PUBLIC UTILITIES, INGRESS, EGRESS AND RIGHTS INCIDENTAL THERETO IN FAVOR OF PACIFIC BELL TELEPHONE COMPANY RECORDED MARCH 6, 2001 AS DOC NO. 2001-0125925 OF OFFICIAL RECORDS.
- 5 A GENERAL UTILITY EASEMENT AND RIGHTS INCIDENTAL THERETO AS DELINEATED ON OR AS OFFERED FOR DEDICATION ON MAP NO. 15025.

PATH OF TRAVEL NOTE:

ALL BUILDING'S EXTERIOR DOORS SHALL HAVE A LEVEL LANDING (2.0% MAX. SLOPE) THAT EXTENDS 60" FROM THE DOOR OPENING AND 24" PASS THE STRIKE EDGE OF THE DOOR.

PATH OF TRAVEL SHALL NOT EXCEED 5.0% IN THE DIRECTION OF TRAVEL & SHALL NOT HAVE MORE THAN 2.0% CROSS SLOPE.

PATH OF TRAVEL DENOTED ON PLANS BY SYMBOL BELOW:

***GRADING QUANTITIES**

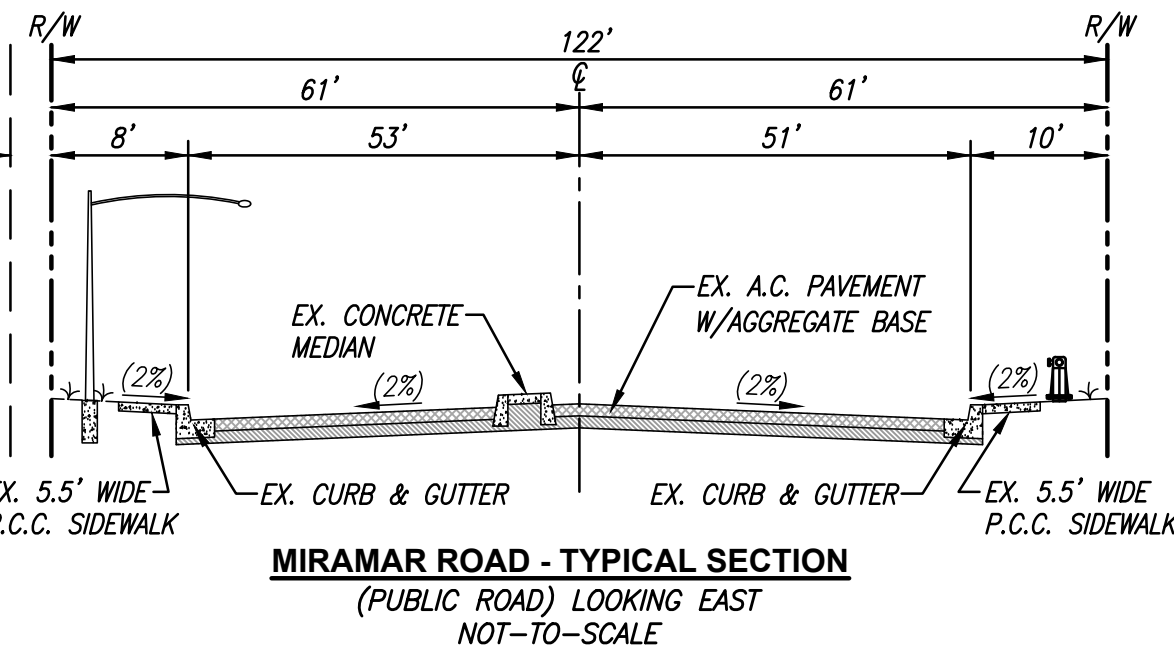
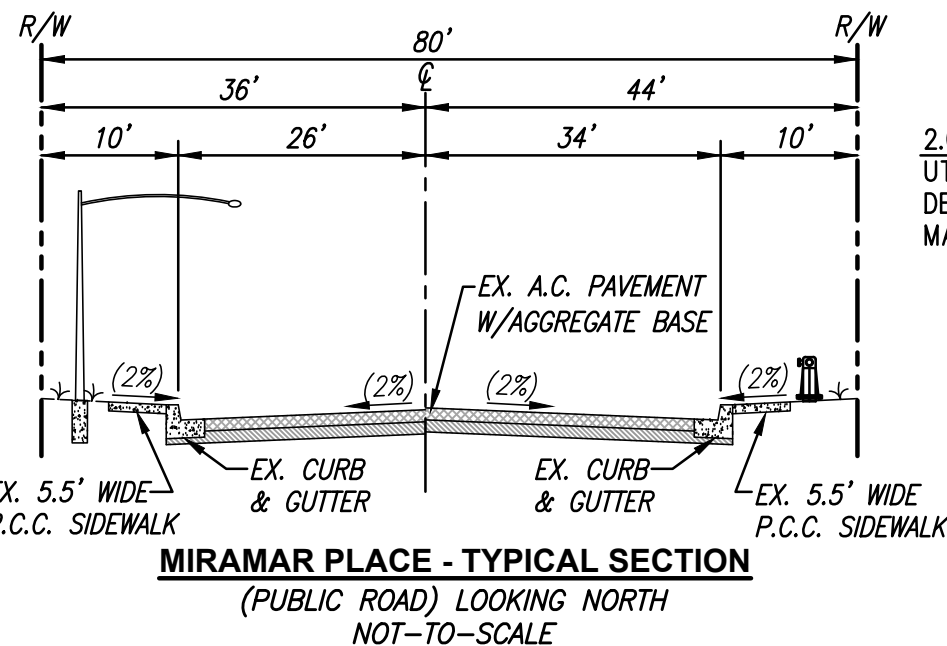
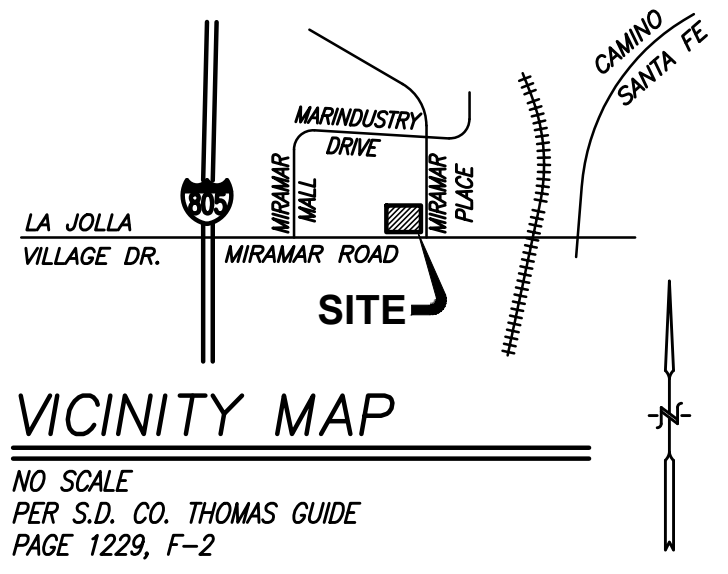
GRADED AREA	0.62 [ACRES]	MAX. CUT DEPTH	5.0 [FT]
CUT QUANTITIES	1,500 [CYD]	MAX CUT SLOPE RATIO	2:1 [MAX]
FILL QUANTITIES	1,500 [CYD]	MAX. FILL DEPTH	3.0 [FT]
EXPORT	0 [CYD]	MAX FILL SLOPE RATIO	2:1 [MAX]

THIS PROJECT PROPOSES TO EXPORT 0 CUBIC YARDS OF MATERIAL FROM THIS SITE. ALL EXPORT MATERIAL SHALL BE DISCHARGED TO A LEGAL DISPOSAL SITE. THE APPROVAL OF THIS PROJECT DOES NOT ALLOW PROCESSING AND SALE OF THE MATERIAL. ALL SUCH ACTIVITIES REQUIRE A SEPARATE CONDITIONAL USE PERMIT.

*THE QUANTITIES OF CUT AND FILL SHOWN HEREON WERE CALCULATED USING REASONABLE ENGINEERING METHODS. THE QUANTITIES ARE FOR USE IN CALCULATING THE FEES AND BONDS REQUIRED BY THE PUBLIC AGENCY; THEY ARE NOT TO BE USED FOR JOB BIDDING PURPOSES. ACTUAL QUANTITIES MAY VARY DUE TO FACTORS SUCH AS SHRINKAGE OR SWELL, RETAINING WALL BACKCUT REQUIREMENTS AND THE RECOMMENDATIONS OF THE SITE SOILS REPORT.

LEGEND OF SYMBOLS

- PROPERTY LINE
- STREET CENTERLINE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING SPOT ELEVATIONS
- PROPOSED SPOT ELEVATIONS
- DIRECTION OF DRAINAGE FLOW



BIOFILTRATION BASIN MEDIA

AMENDED SOIL LAYER
COMPOSITION AND TEXTURE:
65% SAND, 20% SANDY LOAM, & 15% COMPOST (FROM VEGETATION-BASED FEEDSTOCK). ANIMAL WASTES OR BY-PRODUCTS SHOULD NOT BE APPLIED.
AMENDED SOIL LAYER DEPTH 18"

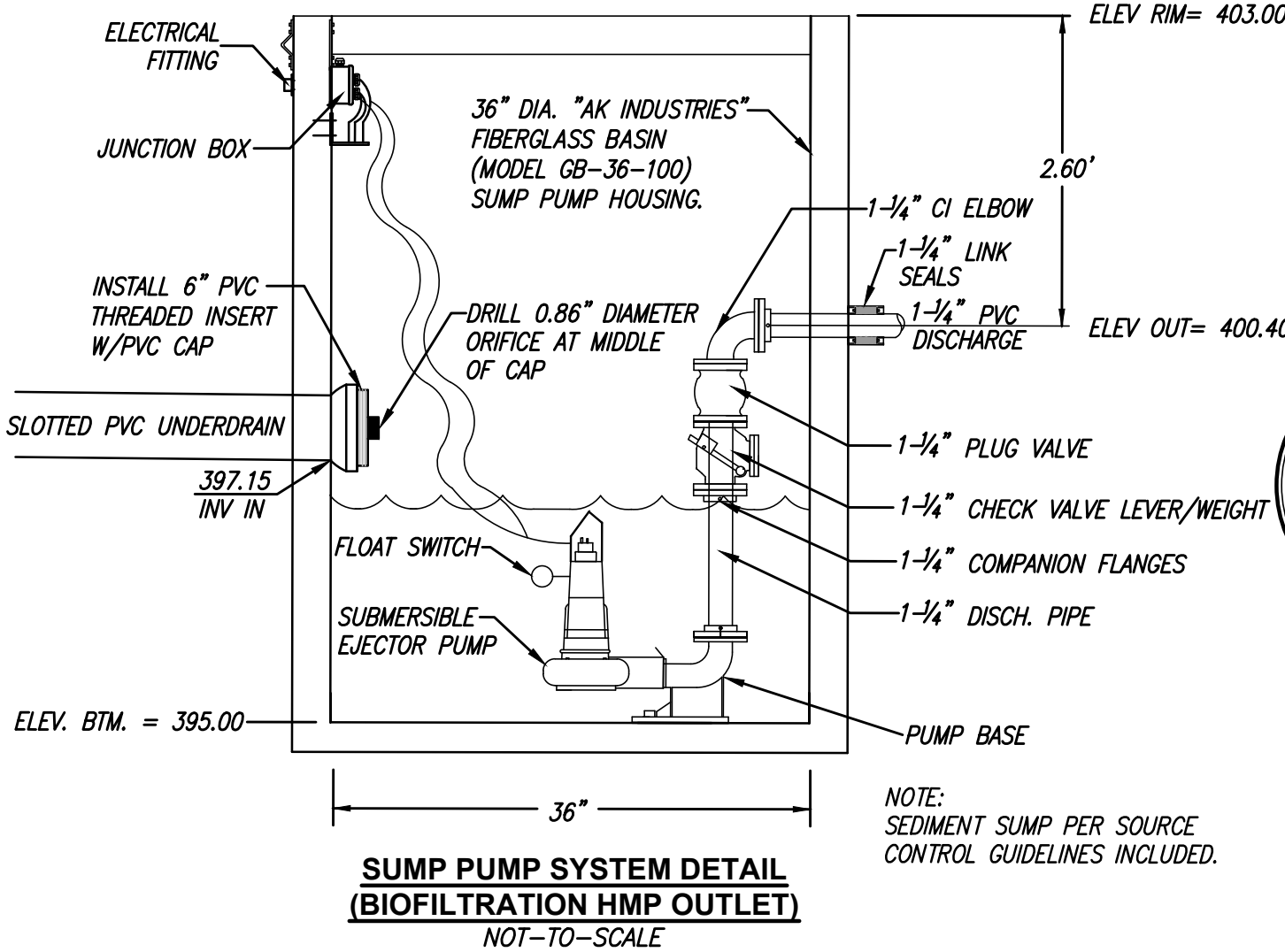
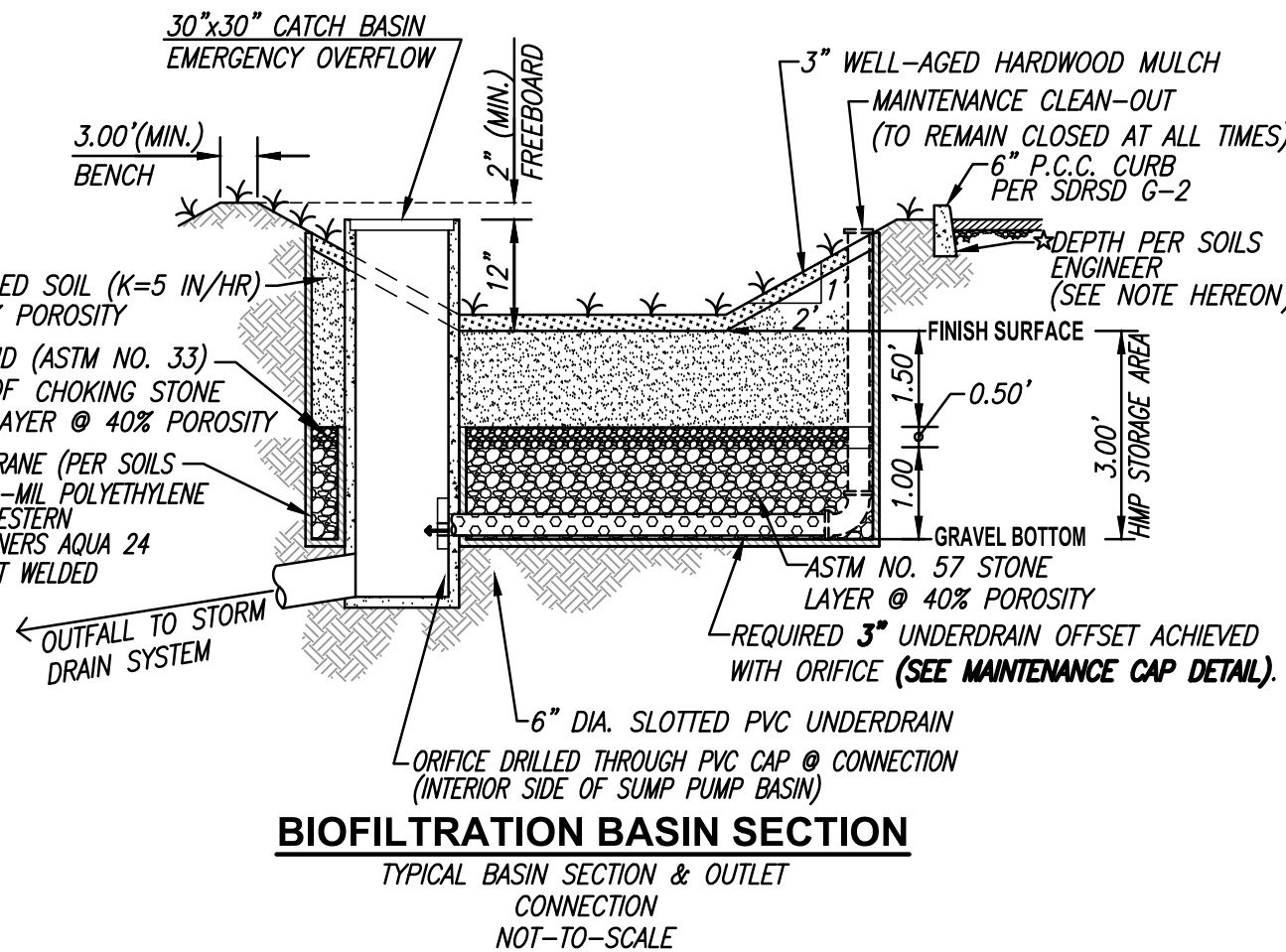
PERMEABILITY:
5 IN/HR INFILTRATION RATE FOR THE FLOW-BASED SUSMP METHOD
(1-6IN/HR FOR ALTERNATIVE DESIGNS, AS APPROVED BY LOCAL JURISDICTION).

CHEMICAL COMPOSITION: TOTAL PHOSPHORUS < 15 PARTS PER MILLION (PPM);
PH 6-8; CATION EXCHANGE CAPACITY > 5 MILLIEQUIVALENTS PER 100 GRAMS (MEQ/100 G) OF SOIL; ORGANIC MATTER CONTENT < 5 PERCENT BY WEIGHT.

DRAINAGE LAYER
SEPARATE SOIL MEDIA FROM UNDERDRAIN LAYER WITH 3 INCH OF WASHED SAND, FOLLOWED BY 3 INCHES OF CHOKING STONE (ASTM NO. 8) OVER A 1.00-FOOT ENVELOPE OF ASTM NO. 57 STONE. TOTAL COMBINED DRAINAGE LAYER 18".

SURFACE VEGETATION
AS SPECIFIED BY THE LANDSCAPE ARCHITECT PLANS.

NOTE:
SOIL MIX WILL BE TESTED IN FIELD TO MEET REQUIRED INFILTRATION RATE.



ASSESSOR'S PARCEL No.

343-252-34-00

STREET ADDRESS:

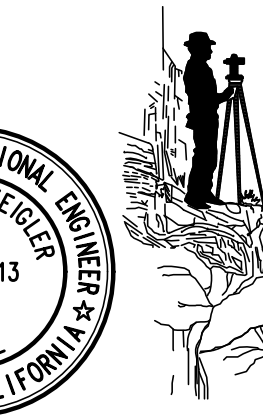
6270 MIRAMAR ROAD,
SAN DIEGO, CA 92121

LEGAL DESCRIPTION:

LOT 1 OF MIRAMAR SELF STORAGE, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 15025, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, JUNE 1, 2005.

ENGINEER OF WORK

PLANS PREPARED BY:
SPEAR & ASSOCIATES, INC.
CIVIL ENGINEERING & LAND SURVEYING
475 PRODUCTION STREET, SAN MARCOS, CA 92078
PHONE (760) 736-2040 FAX (760) 736-4866
WWW.SPEARINC.NET

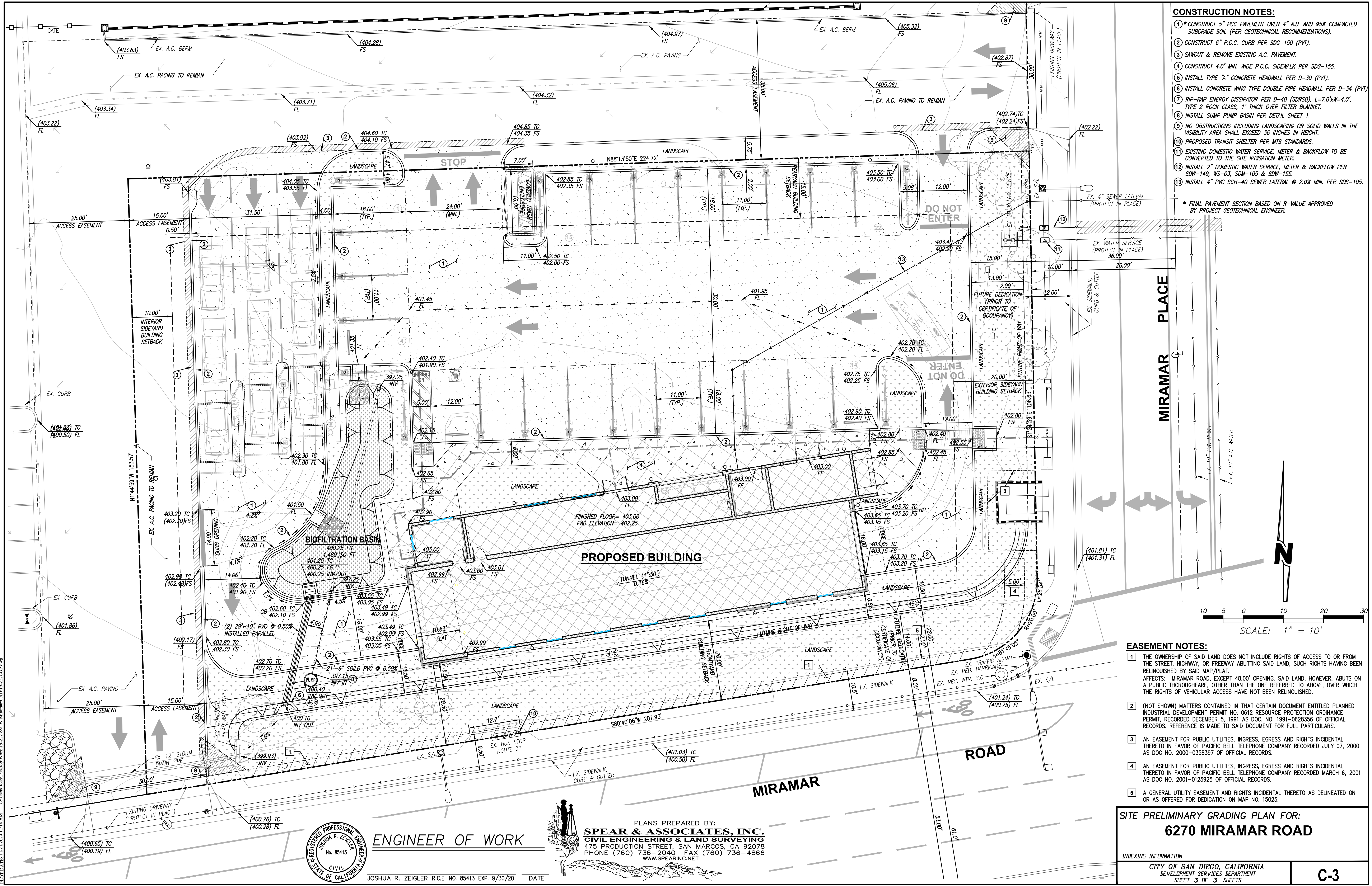


SITE PRELIMINARY GRADING PLAN FOR:
6270 MIRAMAR ROAD

INDEXING INFORMATION

CITY OF SAN DIEGO, CALIFORNIA
DEVELOPMENT SERVICES DEPARTMENT
SHEET 1 OF 3 SHEETS

C-1



- CONSTRUCTION NOTES:**
1. *CONSTRUCT 5" PCC PAVEMENT OVER 4" A.B. AND 95% COMPACTED SUBGRADE SOIL (PER GEOTECHNICAL RECOMMENDATIONS).
 2. CONSTRUCT 6" P.C.C. CURB PER SDG-150 (PVT).
 3. SAWCUT & REMOVE EXISTING A.C. PAVEMENT.
 4. CONSTRUCT 4.0' MIN. WIDE P.C.C. SIDEWALK PER SDG-155.
 5. INSTALL TYPE "A" CONCRETE HEADWALL PER D-30 (PVT).
 6. INSTALL CONCRETE WING TYPE DOUBLE PIPE HEADWALL PER D-34 (PVT).
 7. RIP-RAP ENERGY DISSIPATOR PER D-40 (SDRSD), L=7.0'xW=4.0', TYPE 2 ROCK CLASS, 1" THICK OVER FILTER BLANKET.
 8. INSTALL SUMP PUMP BASIN PER DETAIL SHEET 1.
 9. NO OBSTRUCTIONS INCLUDING LANDSCAPING OR SOLID WALLS IN THE VISIBILITY AREA SHALL EXCEED 36 INCHES IN HEIGHT.
 10. PROPOSED TRANSIT SHELTER PER MTS STANDARDS.
 11. EXISTING DOMESTIC WATER SERVICE, METER & BACKFLOW TO BE CONVERTED TO THE SITE IRRIGATION METER.
 12. INSTALL 2" DOMESTIC WATER SERVICE, METER & BACKFLOW PER SDW-149, WS-03, SDW-105 & SDW-155.
 13. INSTALL 4" PVC SCH-40 SEWER LATERAL @ 2.0% MIN. PER SDS-105.
- * FINAL PAVEMENT SECTION BASED ON R-VALUE APPROVED BY PROJECT GEOTECHNICAL ENGINEER.

- EASEMENT NOTES:**
1. THE OWNERSHIP OF SAID LAND DOES NOT INCLUDE RIGHTS OF ACCESS TO OR FROM THE STREET, HIGHWAY, OR FREEWAY ABUTTING SAID LAND, SUCH RIGHTS HAVING BEEN RELINQUISHED BY SAID MAP/PLAT.
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Project Name:

Attachment 5

Drainage Report

Attach project's drainage report. Refer to Drainage Design Manual to determine the reporting requirements.

HYDROLOGY & HYDRAULIC REPORT

DATED: 10/22/20

For

Superstar Car Wash

Prepared for:

Reza Amirrezvani

14425 W. McDowell Road, Ste F-108, Goodyear, Az 85395

Phone: 602-421-6717

r.amirrezvani@superstarcaswash.com

Project Location:

6270 Miramar Road, San Diego, CA 92121

APN 343-252-34

Prepared By:

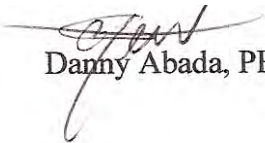
SPEAR & ASSOCIATES, INC.

CIVIL ENGINEERING AND LAND SURVEYING

457 Production Street

San Marcos, CA 92078

Phone: (760) 736-2040


Danny Abada, PE



DECLARATION OF RESPONSIBLE CHARGE

I, HEREBY DECLARE THAT I AM THE CIVIL ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THIS PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONAL CODE AND THAT THE DESIGN IS CONSISTENT WITH CURRENT DESIGN STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.



10/22/20

Danny Abada
REGISTERED CIVIL ENGINEER
Spear & Associates Inc.

DATE



TABLE OF CONTENTS

I. INTRODUCTION	1
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SUMMARY OF FLOW RATES	1
 <u>ATTACHMENTS</u>	
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B. HYDROLOGY	5
C. DRAINAGE AREA MAP	21

I. INTRODUCTION

This hydrology report was prepared for Superstar Car Wash located at 6270 Miramar Road, San Diego, CA 92121. The site encompasses approximately 0.71 acres.

The site is currently developed with a commercial building and parking lot. The project will re-develop the site with a car wash facility, parking lot and landscaping. The runoff will be directed to a biofiltration basin for treatment.

The existing topography slopes in a southerly direction with elevations ranging from approximately 405 to 400. The site drains south towards Miramar Road then continues west, then north to Miramar Mall, then northwest to Carrol Canyon Creek, Los Penasquitos Creek, Los Penasquitos Lagoon and The Pacific Ocean approximately 6.2 miles west.

The development will maintain existing drainage patterns; post development runoff will be directed to biofiltration/Detention basin for stormwater treatment. The outlet flows will be directed to the same drainage system as in pre-development.

We have used the County of San Diego Hydrology Manual to determine the run-off from the site for the 100yr, flow. Based on the soil hydrologic group map of the County Hydrology Manual, the project soil uniformly consists of type D across all sub areas. Peak flow rates were calculated using the rational method. Times of concentrations were calculated using the Manning's equation to obtain velocities using average overland flow rates.

The existing site's impervious area of 24,516 square feet will be reduced to 22,560 square feet. Water quality will be addressed with biofiltration basins to treat the projects anticipated and expected pollutants. Refer to the Storm Water Quality Management Plan for more detailed information.

II. DISCUSSION/CONCLUSION

Post development peak flows, flow volumes and velocities for the 100yr event will not exceed pre-development rates with reduced site imperviousness, the use of a detention basin, an efficient site design and maximizing onsite times of concentration. No increased negative impact to any adjacent properties is anticipated from this development.

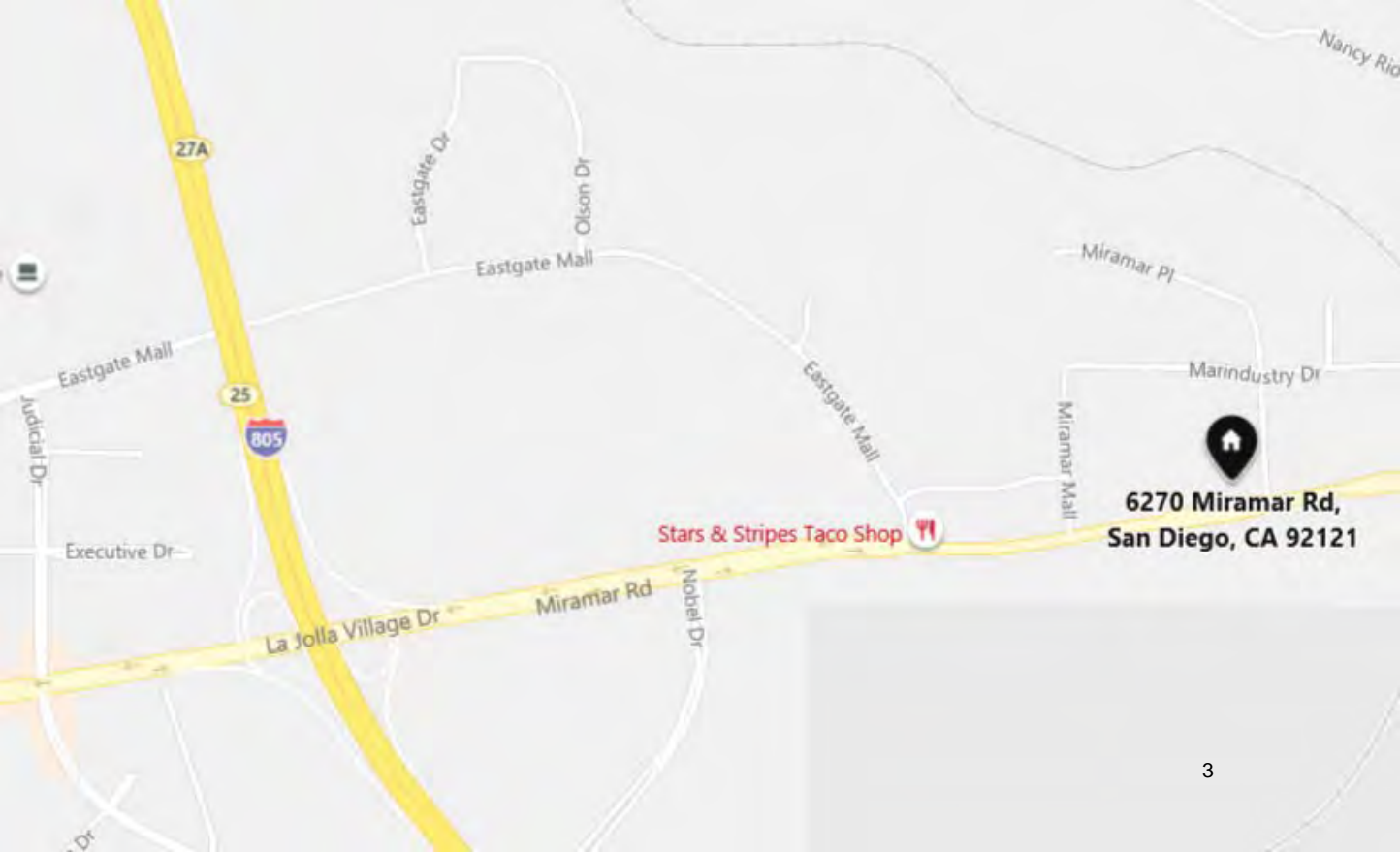
No increased peak runoff flow into the existing stormdrain system is anticipated as a result of this development.

The project will not conduct activities that would trigger a Clean Water Act Section 401 or 404 Certification.

Summary of flow rates

<i>Storm Event</i>	<i>100-yr cfs</i>
Pre-Development	2.9
Post-Development	2.4

ATTACHMENT A





6270 Miramar Rd.

amar Rd

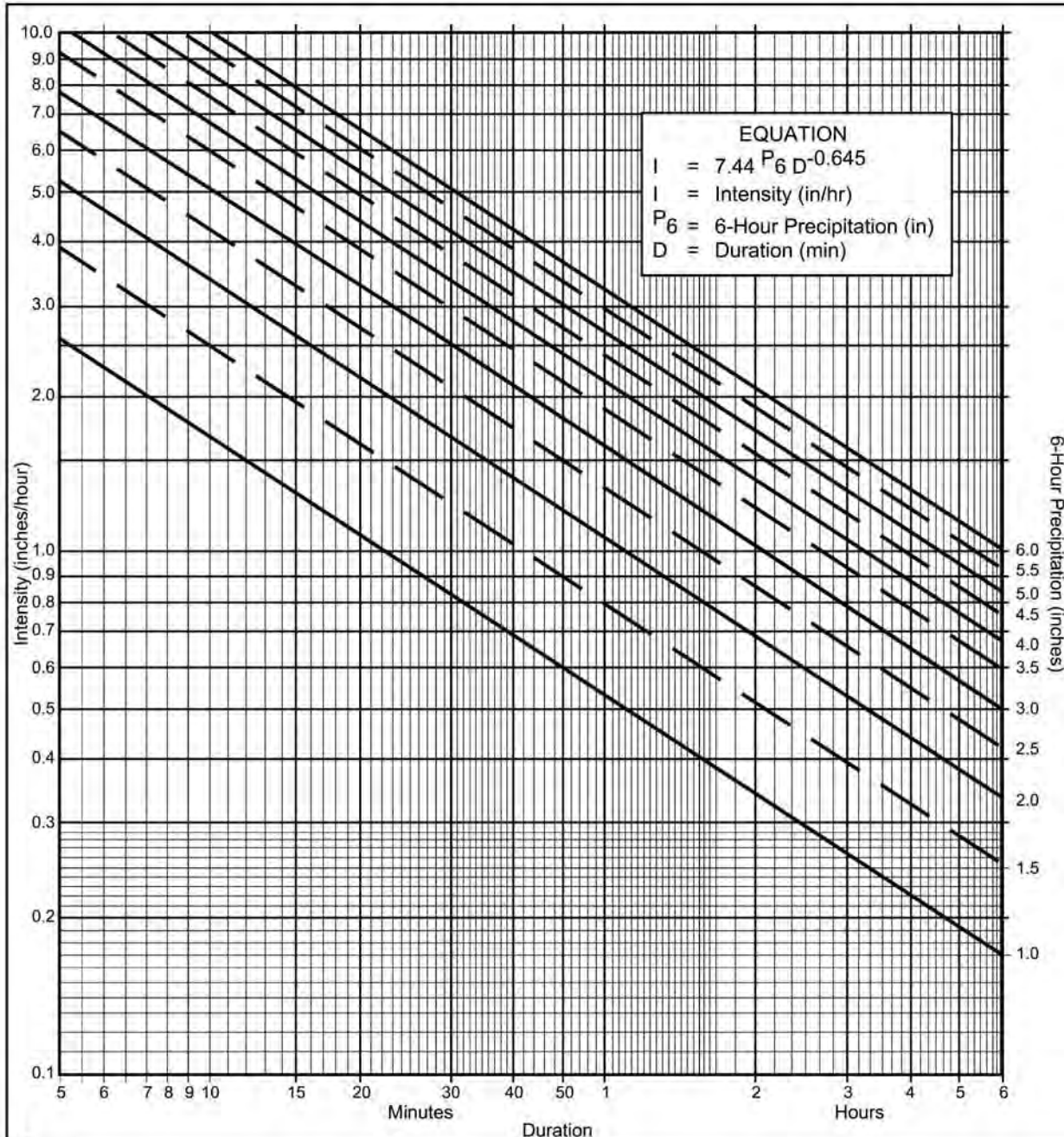
ATTACHMENT B

Post-Development**Rational Method, 100yr Event**

REACH	TC	C	A	CA	ΣCA	P_6	I	Q cfs
Site	7.8	0.75	0.71	0.53	0.53	2.32	4.59	2.4

Pre-Development

REACH	TC	C	A	CA	ΣCA	P_6	I	Q cfs
Site	6.4	0.78	0.71	0.55	0.55	2.32	5.21	2.9



Directions for Application:

- (1) From precipitation maps determine 6 hr and 24 hr amounts for the selected frequency. These maps are included in the County Hydrology Manual (10, 50, and 100 yr maps included in the Design and Procedure Manual).
- (2) Adjust 6 hr precipitation (if necessary) so that it is within the range of 45% to 65% of the 24 hr precipitation (not applicable to Desert).
- (3) Plot 6 hr precipitation on the right side of the chart.
- (4) Draw a line through the point parallel to the plotted lines.
- (5) This line is the intensity-duration curve for the location being analyzed.

Application Form:

- (a) Selected frequency 100 year
- (b) $P_6 = 2.32$ in., $P_{24} = 3.93$, $\frac{P_6}{P_{24}} = 59$ %⁽²⁾
- (c) Adjusted $P_6^{(2)} =$ _____ in.
- (d) $t_x =$ _____ min.
- (e) $I =$ _____ in./hr.

Note: This chart replaces the Intensity-Duration-Frequency curves used since 1965.

P6	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
Duration	I	I	I	I	I	I	I	I	I	I	I
5	2.63	3.95	5.27	6.59	7.90	9.22	10.54	11.86	13.17	14.49	15.81
7	2.12	3.18	4.24	5.30	6.36	7.42	8.48	9.54	10.60	11.66	12.72
10	1.68	2.53	3.37	4.21	5.05	5.90	6.74	7.58	8.42	9.27	10.11
15	1.30	1.95	2.59	3.24	3.89	4.54	5.19	5.84	6.49	7.13	7.78
20	1.08	1.62	2.15	2.69	3.23	3.77	4.31	4.85	5.39	5.93	6.46
25	0.93	1.40	1.87	2.33	2.80	3.27	3.73	4.20	4.67	5.13	5.60
30	0.83	1.24	1.66	2.07	2.49	2.90	3.32	3.73	4.15	4.56	4.98
40	0.69	1.03	1.38	1.72	2.07	2.41	2.76	3.10	3.45	3.79	4.13
50	0.60	0.90	1.19	1.49	1.79	2.09	2.39	2.69	2.98	3.28	3.58
60	0.53	0.80	1.06	1.33	1.59	1.86	2.12	2.39	2.65	2.92	3.18
90	0.41	0.61	0.82	1.02	1.23	1.43	1.63	1.84	2.04	2.25	2.45
120	0.34	0.51	0.68	0.85	1.02	1.19	1.36	1.53	1.70	1.87	2.04
150	0.29	0.44	0.59	0.73	0.88	1.03	1.18	1.32	1.47	1.62	1.76
180	0.26	0.39	0.52	0.65	0.78	0.91	1.04	1.18	1.31	1.44	1.57
240	0.22	0.33	0.43	0.54	0.65	0.76	0.87	0.98	1.08	1.19	1.30
300	0.19	0.28	0.38	0.47	0.56	0.66	0.75	0.85	0.94	1.03	1.13
360	0.17	0.25	0.33	0.42	0.50	0.58	0.67	0.75	0.84	0.92	1.00

Intensity-Duration Design Chart - Template

FIGURE

3-1



NOAA Atlas 14, Volume 6, Version 2
Location name: San Diego, California, USA*
Latitude: 32.8781°, Longitude: -117.1792°
Elevation: 406.24 ft**
* source: ESRI Maps
** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

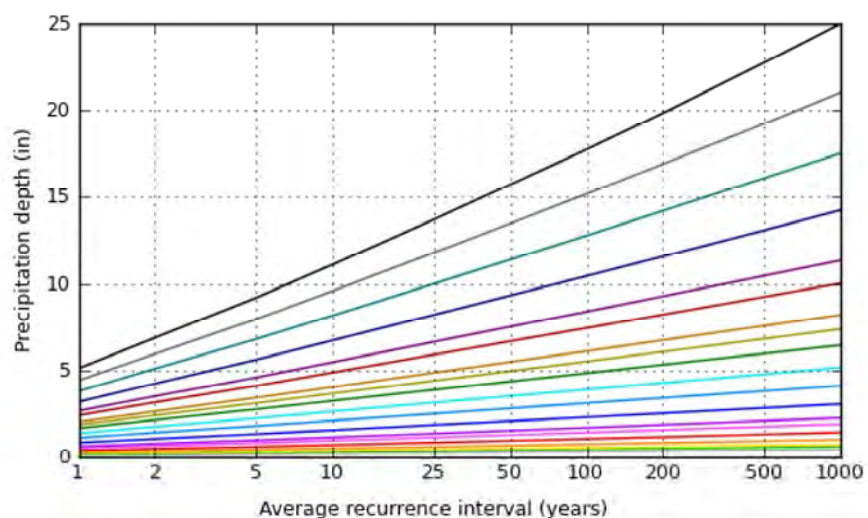
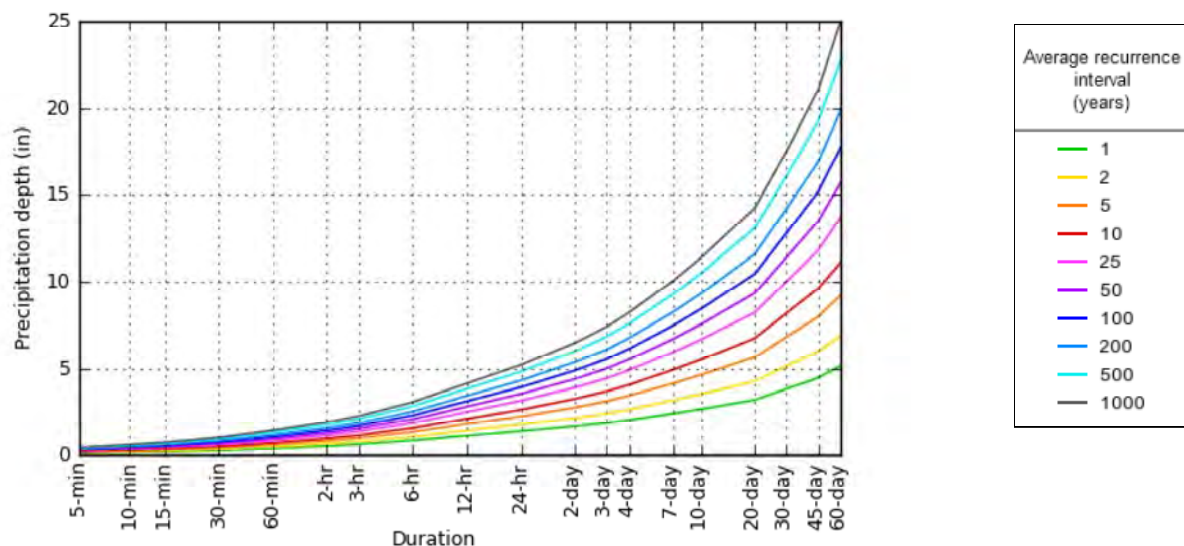
PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.110 (0.092-0.132)	0.139 (0.116-0.167)	0.176 (0.147-0.213)	0.207 (0.171-0.252)	0.248 (0.198-0.313)	0.279 (0.219-0.361)	0.311 (0.237-0.412)	0.344 (0.255-0.469)	0.388 (0.275-0.553)	0.422 (0.289-0.624)
10-min	0.158 (0.132-0.190)	0.199 (0.167-0.240)	0.253 (0.211-0.305)	0.296 (0.246-0.361)	0.355 (0.284-0.449)	0.400 (0.313-0.517)	0.446 (0.340-0.591)	0.493 (0.365-0.673)	0.556 (0.394-0.793)	0.605 (0.414-0.895)
15-min	0.191 (0.160-0.229)	0.241 (0.202-0.290)	0.306 (0.255-0.369)	0.358 (0.297-0.437)	0.430 (0.344-0.543)	0.484 (0.379-0.625)	0.540 (0.411-0.715)	0.596 (0.441-0.814)	0.673 (0.477-0.959)	0.732 (0.500-1.08)
30-min	0.263 (0.221-0.317)	0.332 (0.279-0.401)	0.422 (0.353-0.511)	0.495 (0.410-0.604)	0.594 (0.475-0.750)	0.669 (0.524-0.864)	0.746 (0.569-0.988)	0.824 (0.610-1.13)	0.930 (0.659-1.33)	1.01 (0.691-1.50)
60-min	0.373 (0.313-0.449)	0.471 (0.395-0.568)	0.598 (0.500-0.723)	0.702 (0.581-0.856)	0.841 (0.673-1.06)	0.948 (0.742-1.22)	1.06 (0.805-1.40)	1.17 (0.864-1.59)	1.32 (0.933-1.88)	1.43 (0.979-2.12)
2-hr	0.514 (0.431-0.619)	0.646 (0.542-0.779)	0.818 (0.683-0.989)	0.956 (0.792-1.17)	1.14 (0.913-1.44)	1.28 (1.00-1.66)	1.43 (1.09-1.89)	1.57 (1.16-2.14)	1.77 (1.25-2.52)	1.91 (1.31-2.83)
3-hr	0.617 (0.518-0.743)	0.776 (0.650-0.935)	0.980 (0.819-1.19)	1.15 (0.949-1.40)	1.37 (1.09-1.73)	1.53 (1.20-1.98)	1.70 (1.30-2.26)	1.87 (1.39-2.56)	2.10 (1.49-3.00)	2.28 (1.56-3.36)
6-hr	0.840 (0.704-1.01)	1.06 (0.886-1.27)	1.34 (1.12-1.62)	1.56 (1.30-1.91)	1.86 (1.49-2.35)	2.09 (1.63-2.70)	2.32 (1.77-3.07)	2.54 (1.88-3.47)	2.85 (2.02-4.06)	3.08 (2.10-4.55)
12-hr	1.12 (0.940-1.35)	1.42 (1.19-1.71)	1.81 (1.51-2.18)	2.11 (1.75-2.58)	2.52 (2.02-3.18)	2.83 (2.21-3.65)	3.13 (2.38-4.14)	3.43 (2.54-4.69)	3.84 (2.72-5.47)	4.14 (2.83-6.12)
24-hr	1.38 (1.21-1.60)	1.77 (1.55-2.05)	2.26 (1.98-2.63)	2.65 (2.30-3.11)	3.16 (2.67-3.82)	3.55 (2.93-4.37)	3.93 (3.17-4.95)	4.31 (3.40-5.58)	4.81 (3.65-6.48)	5.19 (3.81-7.22)
2-day	1.67 (1.47-1.94)	2.16 (1.89-2.51)	2.77 (2.43-3.23)	3.26 (2.84-3.83)	3.91 (3.30-4.73)	4.39 (3.63-5.42)	4.87 (3.94-6.15)	5.36 (4.22-6.94)	5.99 (4.54-8.07)	6.48 (4.75-9.00)
3-day	1.87 (1.64-2.17)	2.42 (2.13-2.81)	3.13 (2.74-3.64)	3.69 (3.21-4.33)	4.43 (3.74-5.36)	4.99 (4.13-6.16)	5.54 (4.48-6.99)	6.10 (4.81-7.90)	6.84 (5.18-9.20)	7.40 (5.43-10.3)
4-day	2.04 (1.80-2.37)	2.66 (2.33-3.09)	3.44 (3.02-4.01)	4.07 (3.54-4.77)	4.90 (4.13-5.93)	5.52 (4.56-6.81)	6.14 (4.96-7.74)	6.76 (5.33-8.75)	7.58 (5.75-10.2)	8.21 (6.03-11.4)
7-day	2.42 (2.13-2.81)	3.17 (2.79-3.69)	4.14 (3.63-4.82)	4.91 (4.27-5.76)	5.93 (5.00-7.18)	6.69 (5.54-8.26)	7.46 (6.03-9.41)	8.23 (6.48-10.7)	9.25 (7.01-12.4)	10.0 (7.36-13.9)
10-day	2.68 (2.35-3.11)	3.53 (3.10-4.10)	4.62 (4.05-5.39)	5.50 (4.78-6.45)	6.66 (5.61-8.06)	7.53 (6.23-9.29)	8.40 (6.79-10.6)	9.28 (7.31-12.0)	10.5 (7.92-14.1)	11.3 (8.32-15.8)
20-day	3.20 (2.81-3.72)	4.27 (3.75-4.96)	5.64 (4.94-6.57)	6.74 (5.86-7.91)	8.21 (6.92-9.94)	9.32 (7.71-11.5)	10.4 (8.44-13.2)	11.6 (9.11-15.0)	13.1 (9.91-17.6)	14.2 (10.4-19.8)
30-day	3.83 (3.37-4.45)	5.13 (4.51-5.96)	6.82 (5.97-7.94)	8.17 (7.11-9.59)	9.99 (8.43-12.1)	11.4 (9.41-14.0)	12.8 (10.3-16.1)	14.2 (11.2-18.4)	16.1 (12.2-21.6)	17.5 (12.9-24.3)
45-day	4.45 (3.91-5.16)	5.97 (5.24-6.94)	7.96 (6.98-9.28)	9.58 (8.33-11.2)	11.8 (9.93-14.2)	13.5 (11.1-16.6)	15.2 (12.3-19.1)	16.9 (13.3-21.9)	19.2 (14.6-25.9)	21.0 (15.4-29.2)
60-day	5.15 (4.52-5.97)	6.89 (6.05-8.01)	9.20 (8.06-10.7)	11.1 (9.64-13.0)	13.7 (11.5-16.6)	15.7 (13.0-19.4)	17.7 (14.3-22.4)	19.9 (15.6-25.7)	22.7 (17.2-30.6)	25.0 (18.3-34.7)
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.										

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PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 32.8781°, Longitude: -117.1792°



Maps & aerals

Small scale terrain



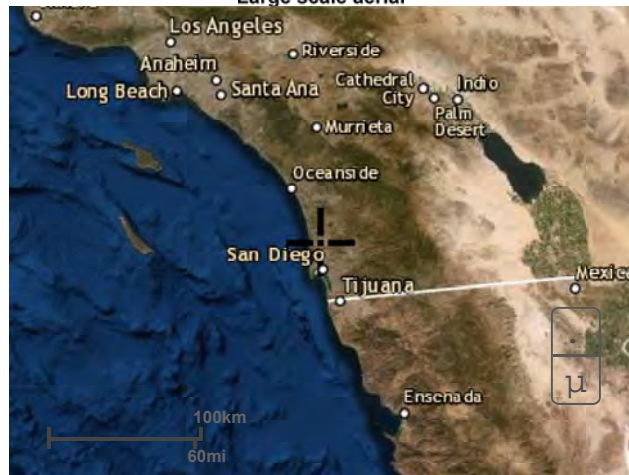
Large scale terrain



Large scale map



Large scale aerial



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1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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BMP Sizing Calculator

HYDRO UNIT NAME	PENASQUITOS
HYDRO AREA NAME	Miramar Reservoir
HYDRO SUBAREA NAME	SAME AS HANAME
HYDRO BASIN NUMBER	906.10
HYDRO SOIL GROUP	D
RAIN GAUGE BASIN	Oceanside Basin

[Zoom to](#)

**Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS**

Land Use		Runoff Coefficient "C"				
NRCS Elements	County Elements	% IMPER.	Soil Type			
			A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient, C_p , for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).

DU/A = dwelling units per acre

NRCS = National Resources Conservation Service

Runoff Coefficient Adjustment

Post Development Area

Total Area 31008
Impervious: 22560 72.76%

$$C = 0.90 \times (\% \text{ Impervious}) + C_p \times (1 - \% \text{ Impervious})$$

$$\% \text{ impervious} = 72.76\%$$

$$C_p = 0.35 \quad (\text{Table 3.1, soil type D, 0\% impervious, County Hydrology Manual})$$

$$\mathbf{C = 0.75}$$

Pre Development Area

Total Area 31008
Impervious: 24516 79.06%

$$C = 0.90 \times (\% \text{ Impervious}) + C_p \times (1 - \% \text{ Impervious})$$

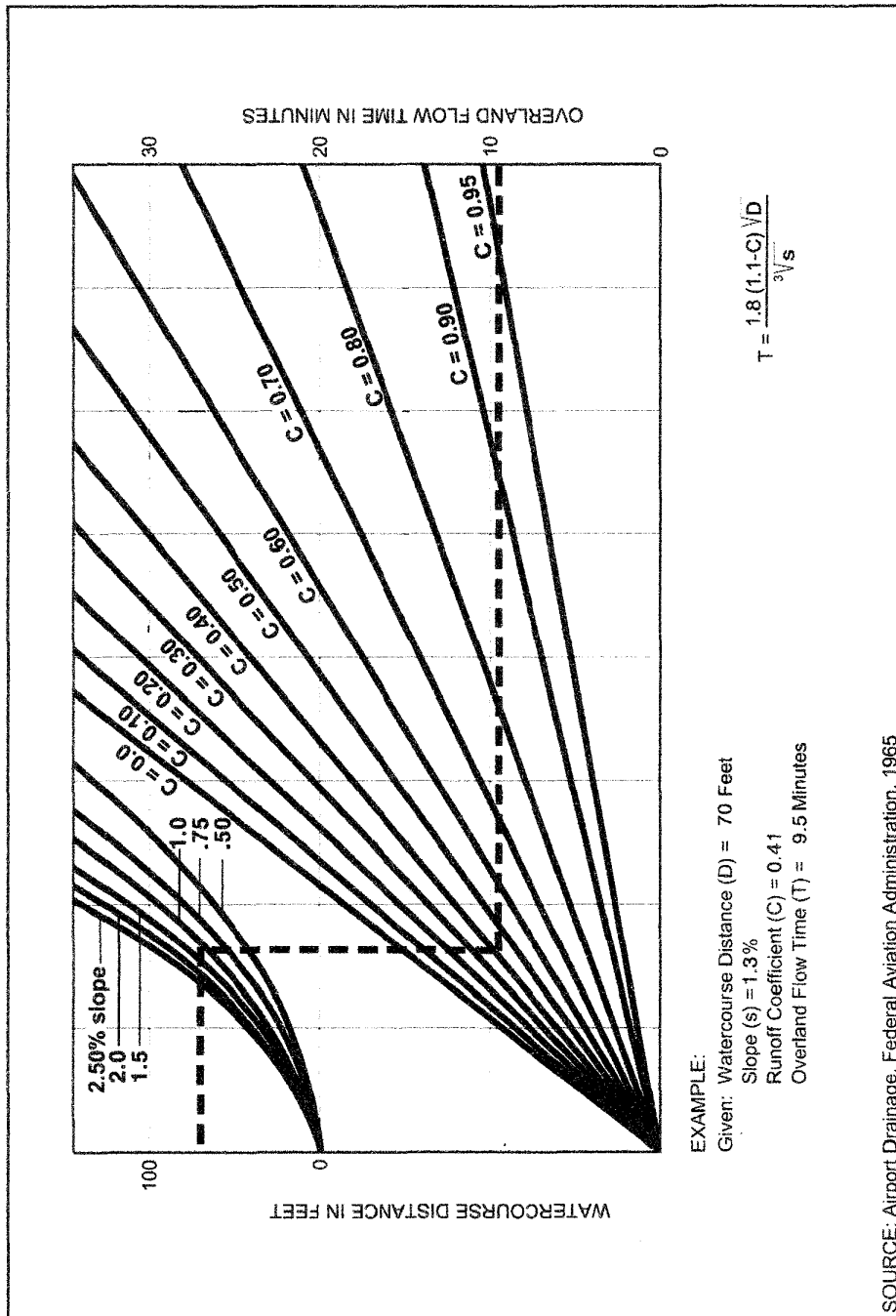
$$\% \text{ impervious} = 79.06\%$$

$$C_p = 0.35 \quad (\text{Table 3.1, soil type D, 0\% impervious, County Hydrology Manual})$$

$$\mathbf{C = 0.78}$$

Time of Concentration									
Location	Initial Average slope %	Initial L (ft)	Initial Travel Time T (min)	Add'l L (ft)	Average slope %	Notes	Average Q Mannings Eq. V (ft/s)	Additional TC (travel time) T (min)	Total TC T (min)
									(5 minutes min)
Pre Dev.									
Site	1.25	50	3.8	190	1.25		1.2	2.6	6.4
Post Dev.									
Site	1	50	4.5	215	0.6		1.1	3.3	7.8

	Pre-Dev		Post-Dev	
Initial Travel Time	Initial TC	Site	Initial TC	Site
(Figure 3-3)	C =	0.78	C =	0.75
T min= $\frac{1.8(1.1-C)D^{1/2}}{S^{1/3}}$	D ft =	50	D ft =	50
	S % =	1.25	S % =	1
	T =	3.78	T =	4.45



SOURCE: Airport Drainage, Federal Aviation Administration, 1965

FIGURE

3-3

Rational Formula - Overland Time of Flow Nomograph

Channel Report

Pre Dev TC Flow Path Velocity Average Q

Triangular

Side Slopes (z:1) = 100.00, 100.00
Total Depth (ft) = 0.12

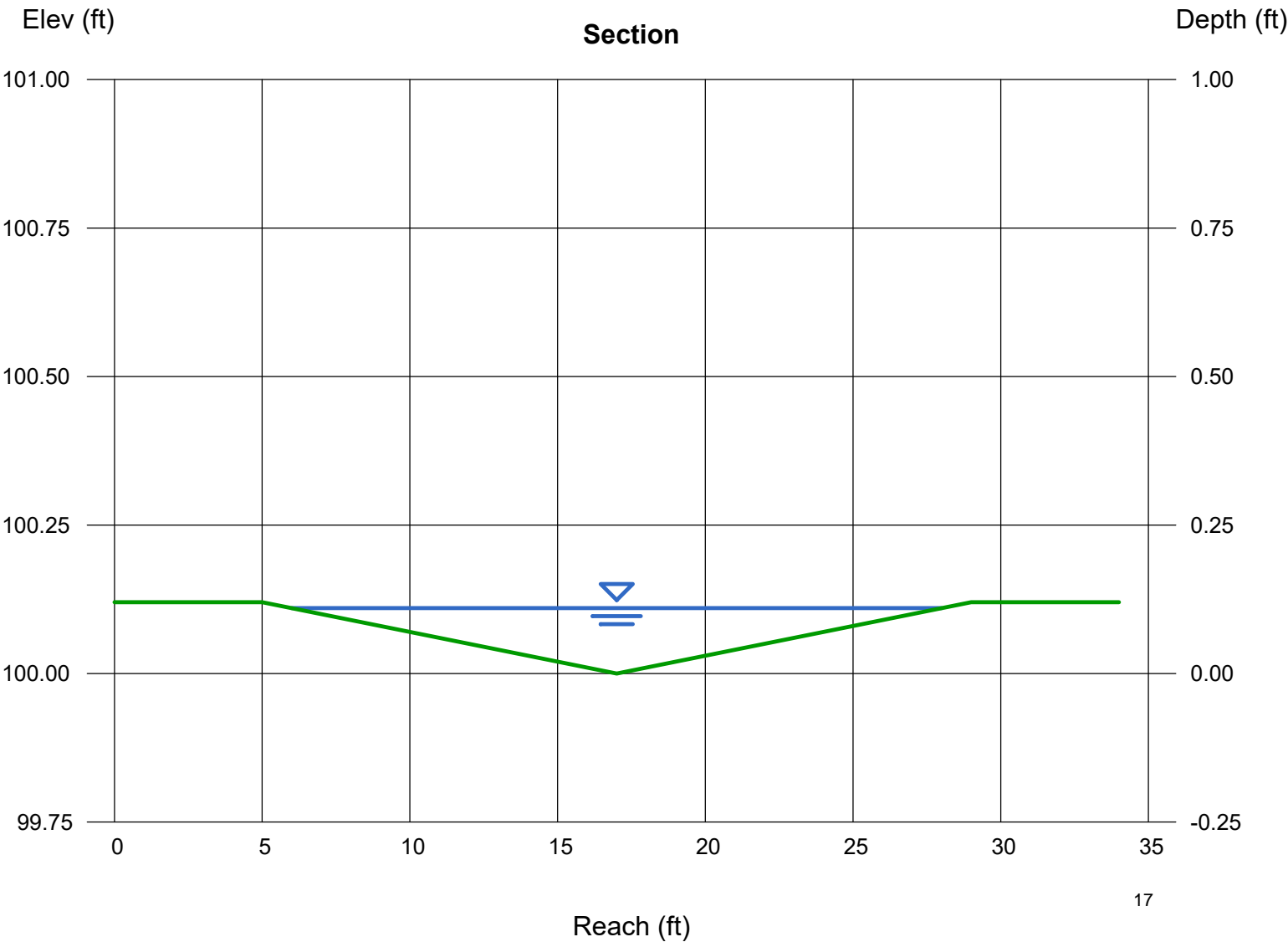
Invert Elev (ft) = 100.00
Slope (%) = 1.25
N-Value = 0.016

Calculations

Compute by: Known Q
Known Q (cfs) = 1.50

Highlighted

Depth (ft) = 0.11
Q (cfs) = 1.500
Area (sqft) = 1.21
Velocity (ft/s) = 1.24
Wetted Perim (ft) = 22.00
Crit Depth, Yc (ft) = 0.11
Top Width (ft) = 22.00
EGL (ft) = 0.13



Channel Report

Post Dev TC Flow Path Velocity Average Q

Gutter

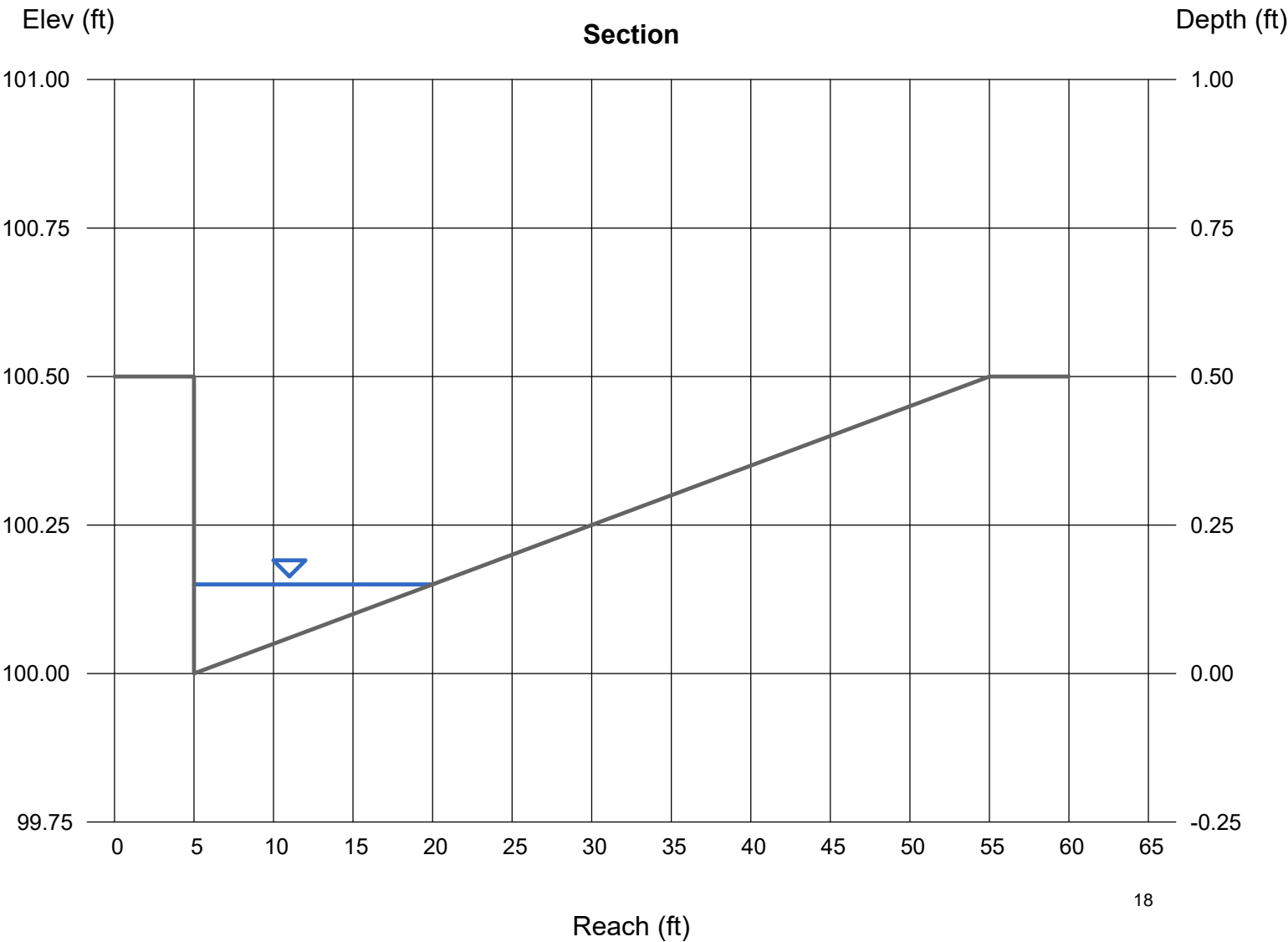
Cross Sl, Sx (ft/ft) = 0.01
Cross Sl, Sw (ft/ft) = 0.01
Gutter Width (ft) = 1.50
Invert Elev (ft) = 100.00
Slope (%) = 0.60
N-Value = 0.016

Calculations

Compute by: Known Q
Known Q (cfs) = 1.20

Highlighted

Depth (ft) = 0.15
Q (cfs) = 1.200
Area (sqft) = 1.13
Velocity (ft/s) = 1.07
Wetted Perim (ft) = 15.15
Crit Depth, Yc (ft) = 0.13
Spread Width (ft) = 15.00
EGL (ft) = 0.17



Channel Report

Pre Dev Q100 Outlet Flow

Circular

Diameter (ft) = 1.00

Invert Elev (ft) = 100.00

Slope (%) = 0.60

N-Value = 0.009

Calculations

Compute by: Known Q

Known Q (cfs) = 2.90

Highlighted

Depth (ft) = 0.64

Q (cfs) = 2.900

Area (sqft) = 0.53

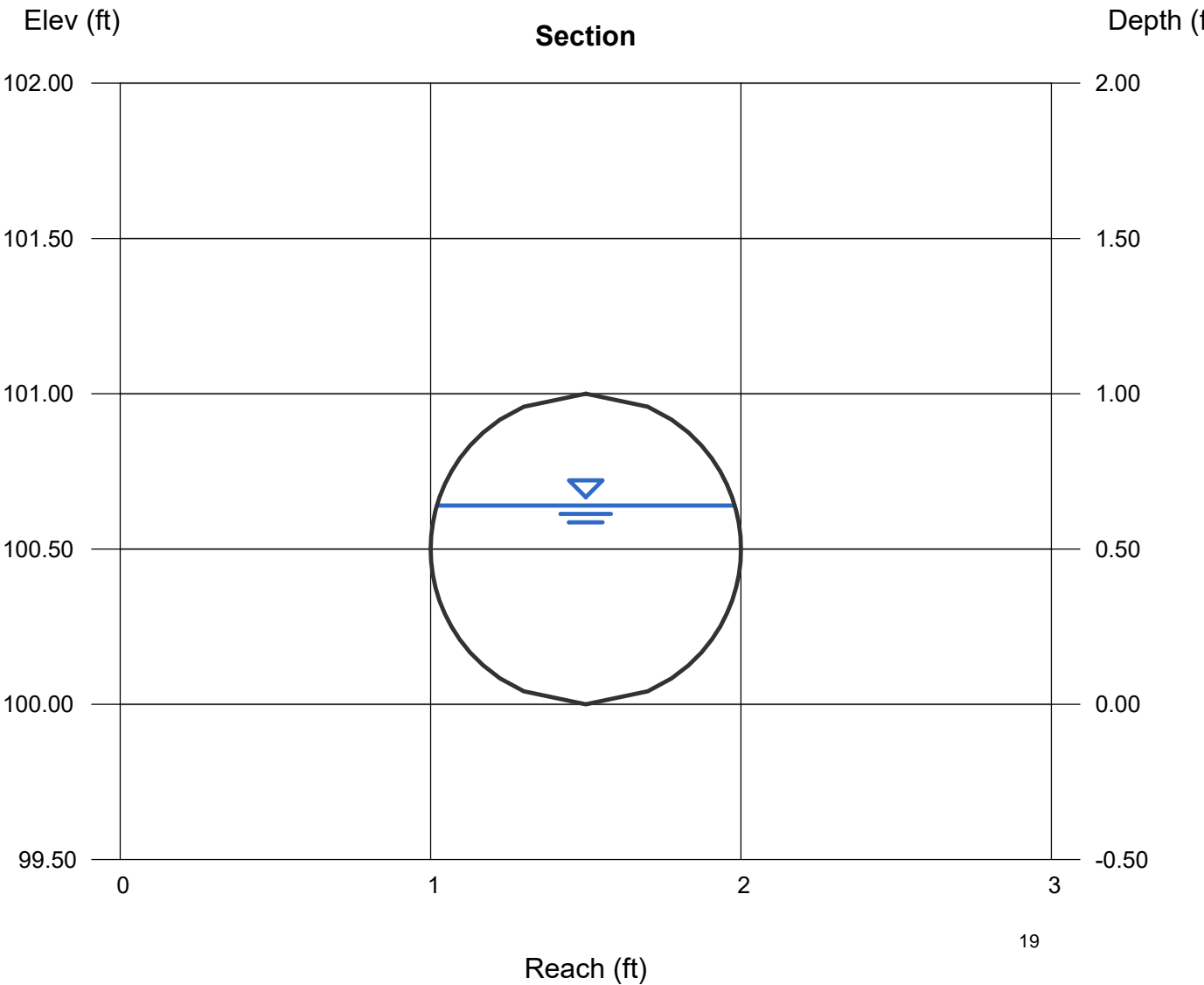
Velocity (ft/s) = 5.46

Wetted Perim (ft) = 1.85

Crit Depth, Yc (ft) = 0.73

Top Width (ft) = 0.96

EGL (ft) = 1.10



Channel Report

Q100 (2) 10in Pipes exiting the Biofiltration Basin. 1.2 cfs each (2.4 cfs total)

Circular

Diameter (ft) = 0.83

Invert Elev (ft) = 100.00

Slope (%) = 0.50

N-Value = 0.013

Calculations

Compute by: Known Q

Known Q (cfs) = 1.20

Highlighted

Depth (ft) = 0.56

Q (cfs) = 1.200

Area (sqft) = 0.39

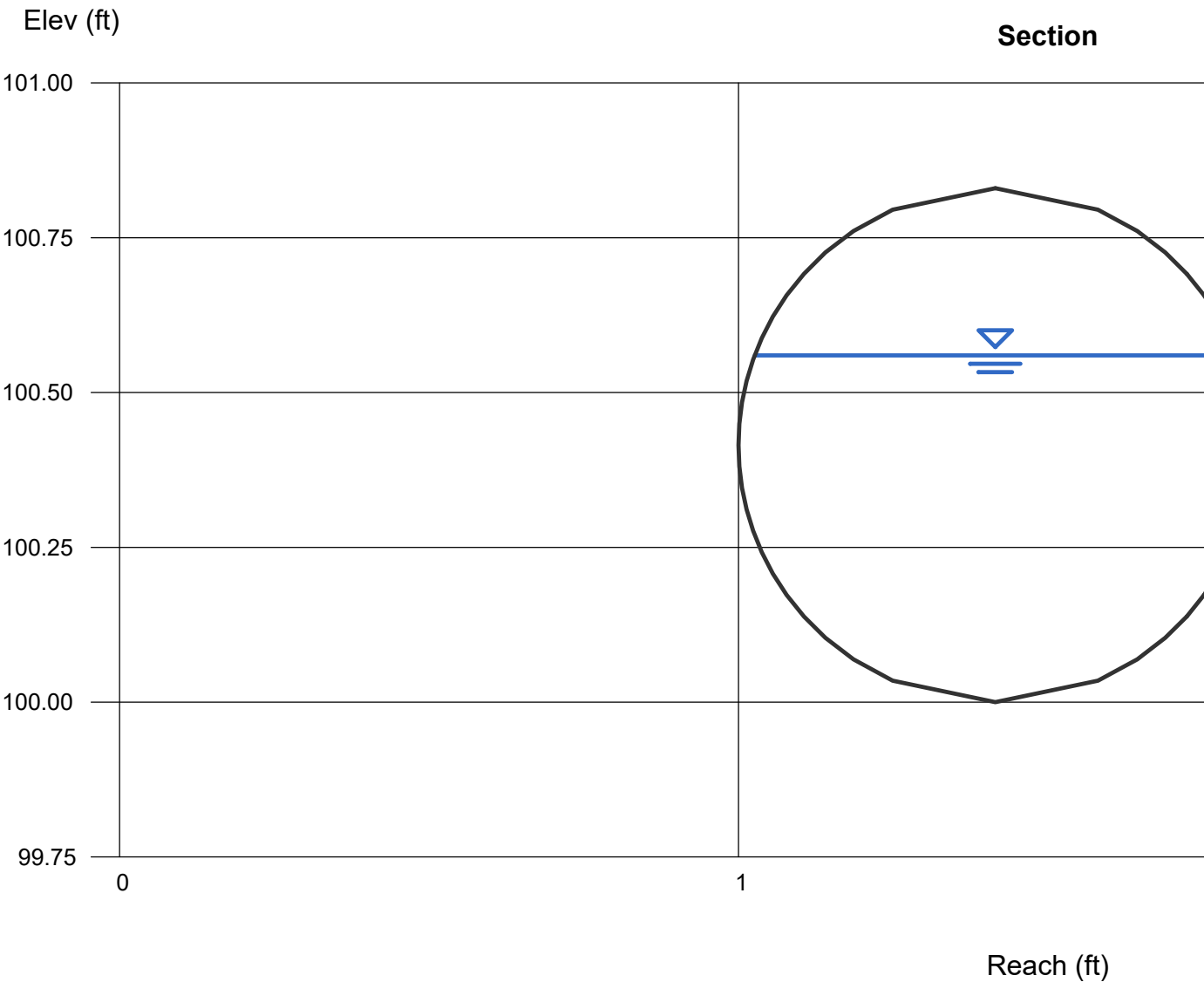
Velocity (ft/s) = 3.08

Wetted Perim (ft) = 1.60

Crit Depth, Yc (ft) = 0.49

Top Width (ft) = 0.78

EGL (ft) = 0.71



Channel Report

Post Dev Q100 Outlet Flow (exist 12in pipe)

Circular

Diameter (ft) = 1.00

Invert Elev (ft) = 100.00

Slope (%) = 0.60

N-Value = 0.009

Calculations

Compute by: Known Q

Known Q (cfs) = 2.40

Highlighted

Depth (ft) = 0.56

Q (cfs) = 2.400

Area (sqft) = 0.45

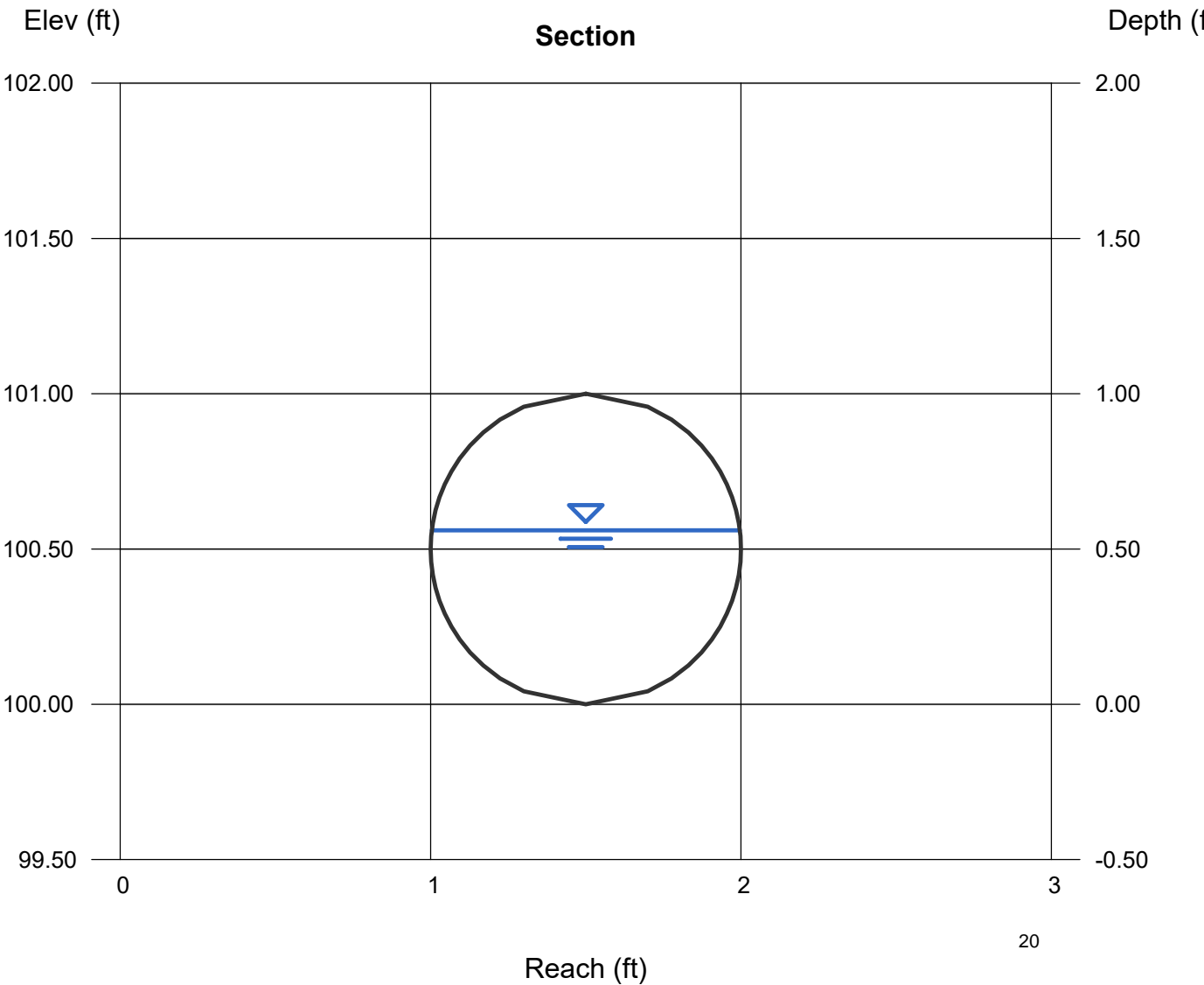
Velocity (ft/s) = 5.28

Wetted Perim (ft) = 1.69

Crit Depth, Yc (ft) = 0.67

Top Width (ft) = 0.99

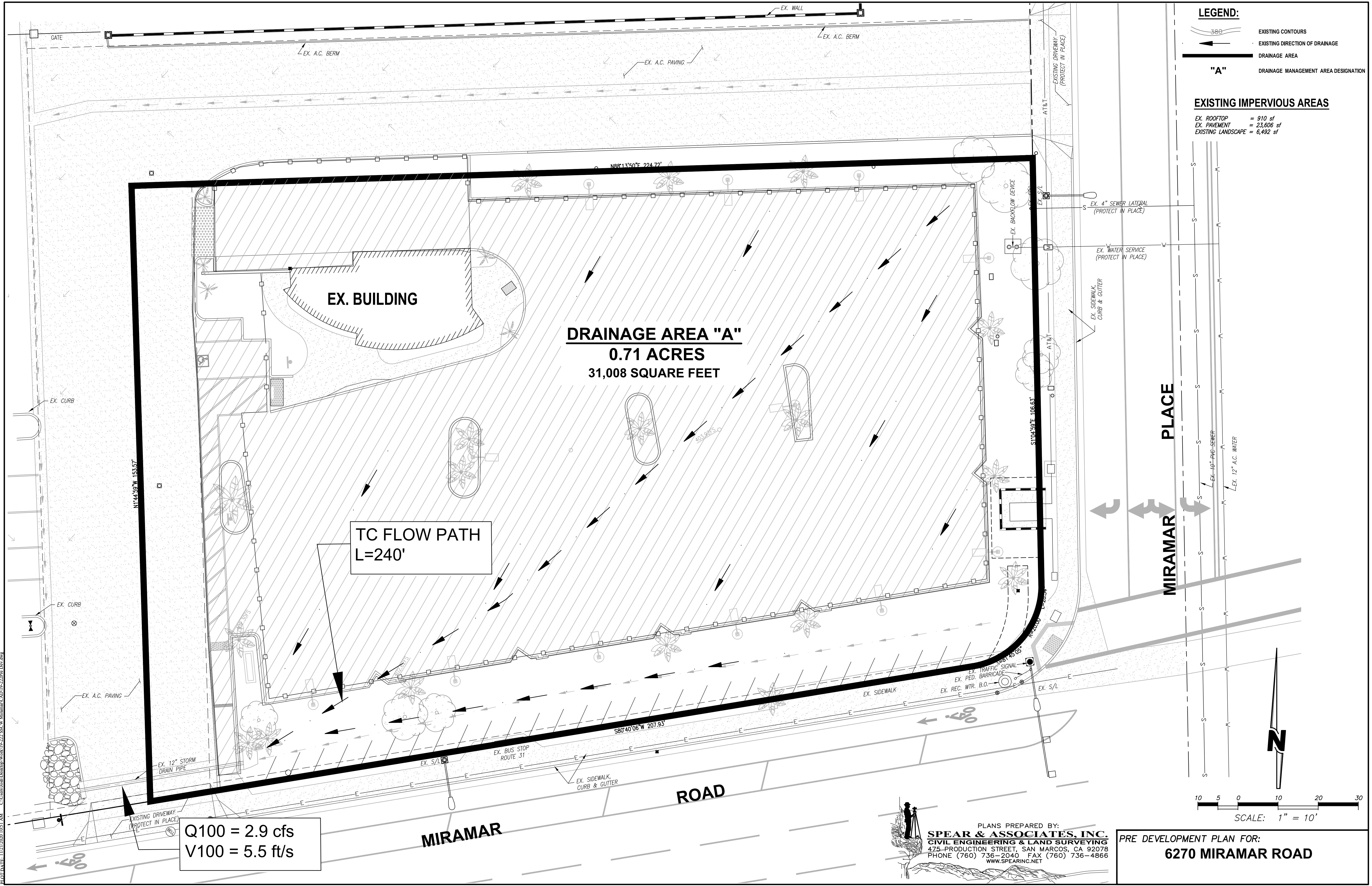
EGL (ft) = 0.99



ATTACHMENT C

Project Name:

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LEGEND:

- EXISTING CONTOURS
- EXISTING DIRECTION OF DRAINAGE
- DRAINAGE AREA
- "A" DRAINAGE MANAGEMENT AREA DESIGNATION

EXISTING IMPERVIOUS AREAS

EX. ROOFTOP	= 910 sf
EX. PAVEMENT	= 23,606 sf
EXISTING LANDSCAPE	= 6,492 sf

Q100 = 2.9 cfs
V100 = 5.5 ft/s

PLANS PREPARED BY:
SPEAR & ASSOCIATES, INC.
CIVIL ENGINEERING & LAND SURVEYING
475 PRODUCTION STREET, SAN MARCOS, CA 92078
PHONE (760) 736-2040 FAX (760) 736-4866
WWW.SPEARINC.NET

PRE DEVELOPMENT PLAN FOR:
6270 MIRAMAR ROAD

Scale bar: 10 5 0 10 20 30
SCALE: 1" = 10'

North arrow pointing towards the top right.

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DRAINAGE AREA DMA BREAKDOWN			
DRAINAGE AREA SURFACE	SYMBOL	SOIL TYPE	DRAINAGE AREA 'A'
BUILDING ROOFTOP		TYPE D	3,945 SQ FT
PARKING/DRIVE AISLE IMPERVIOUS AREA		TYPE D	14,750 SQ FT
HARDSCAPING/SIDEWALK		TYPE D	1,525 SQ FT
EXIST. IMPERVIOUS AREA		TYPE D	2,340 SQ FT
LANDSCAPING AREA		TYPE D	8,448 SQ FT
			TOTAL LOT AREA = 31,008 SQ FT

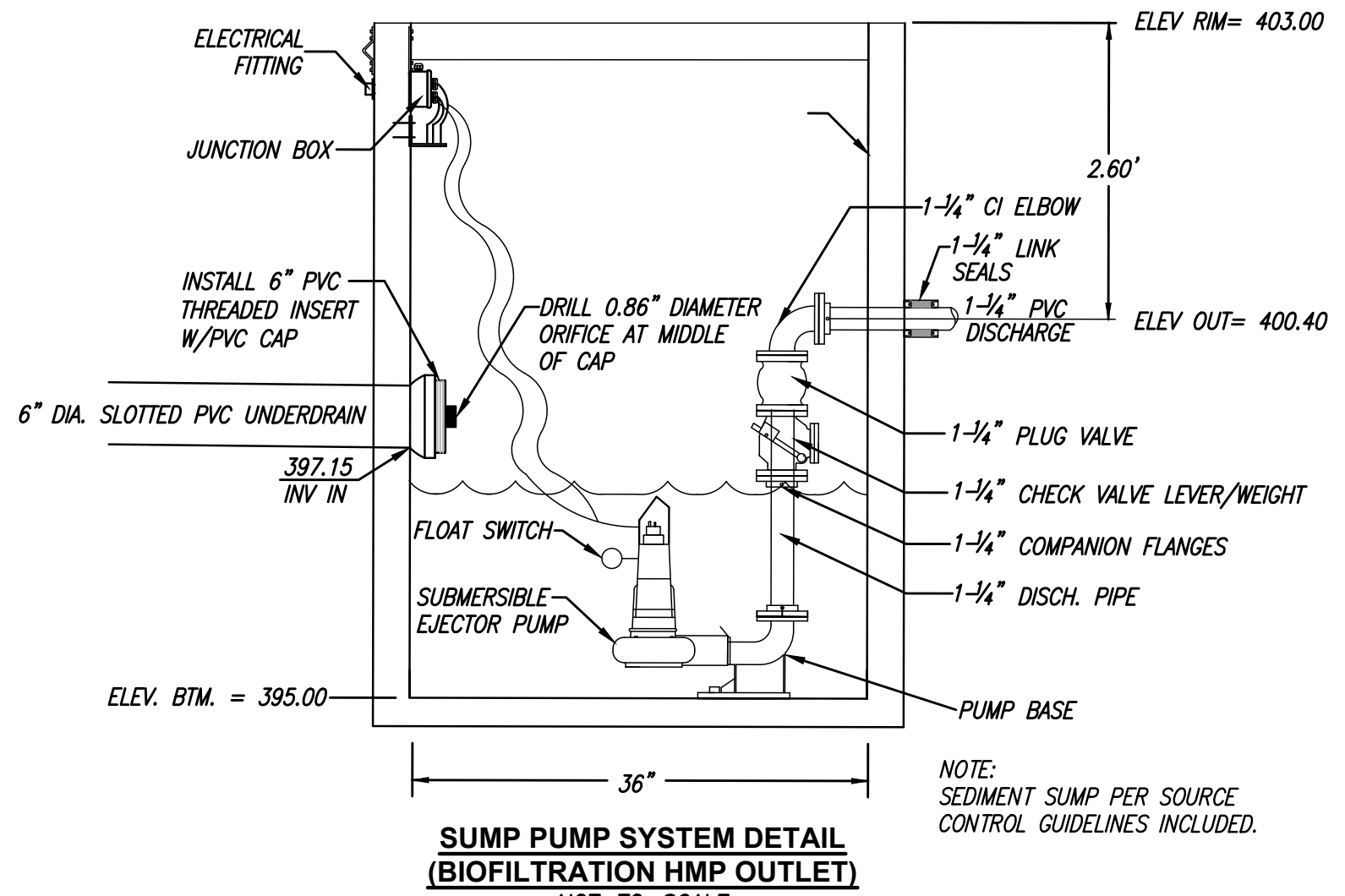
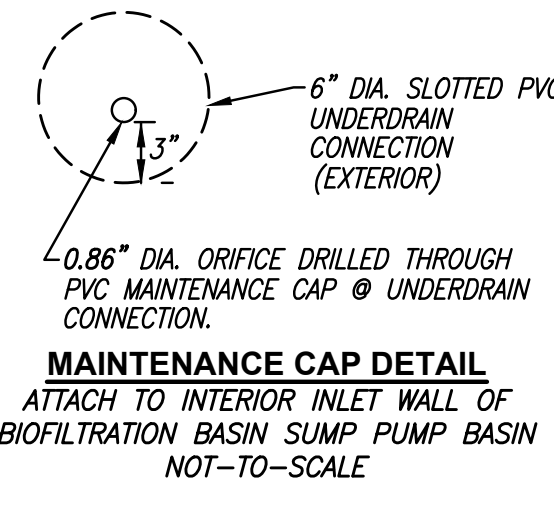
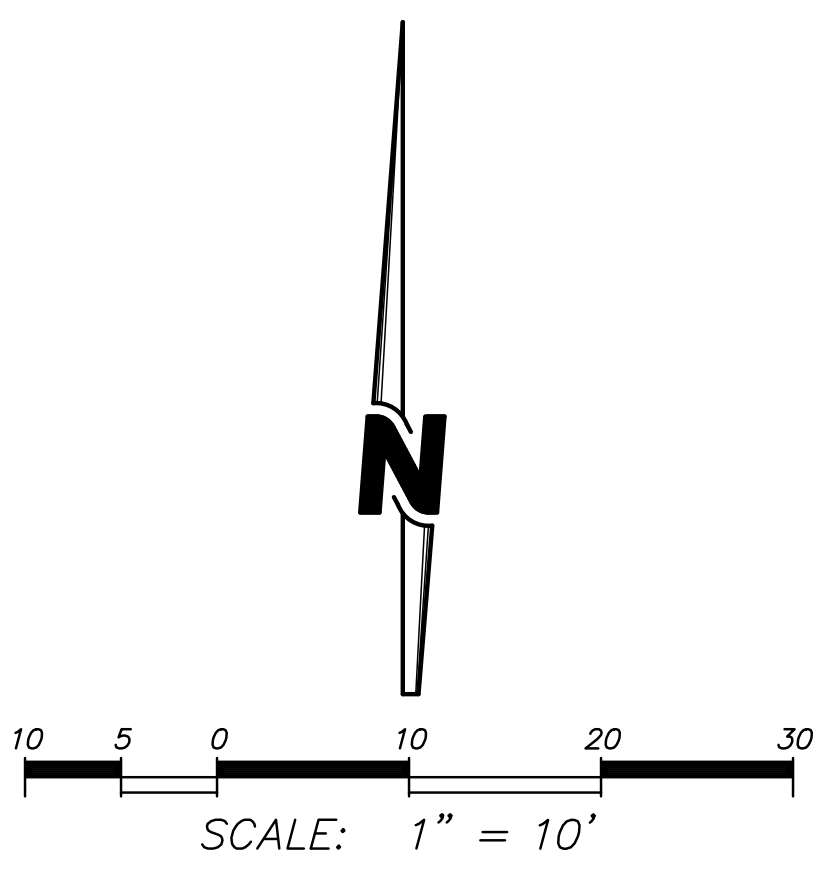
LEGEND:

EXISTING CONTOURS

EXISTING DIRECTION OF DRAINAGE

DRAINAGE AREA

"A" DRAINAGE MANAGEMENT AREA DESIGNATION



POST DEVELOPMENT PLAN FOR:
6270 MIRAMAR ROAD

DRAINAGE AREA "A"
0.71 ACRES
31,008 SQUARE FEET

TC FLOW PATH
L=265'

PARCEL A

PROPOSED BUILDING

POC
Q100 = 2.4 cfs
V100 = 5.3 ft/s

BIOFILTRATION BASIN MEDIA

AMENDED SOIL LAYER
COMPOSITION AND TEXTURE:
65% SAND, 20% SANDY LOAM, & 15% COMPOST (FROM VEGETATION-BASED FEEDSTOCK). ANIMAL WASTES OR BY-PRODUCTS SHOULD NOT BE APPLIED.
AMENDED SOIL LAYER DEPTH 18"

PERMEABILITY:
5 IN/HR INFILTRATION RATE FOR THE FLOW-BASED SUSMP METHOD
(1-6IN/HR FOR ALTERNATIVE DESIGNS, AS APPROVED BY LOCAL JURISDICTION).

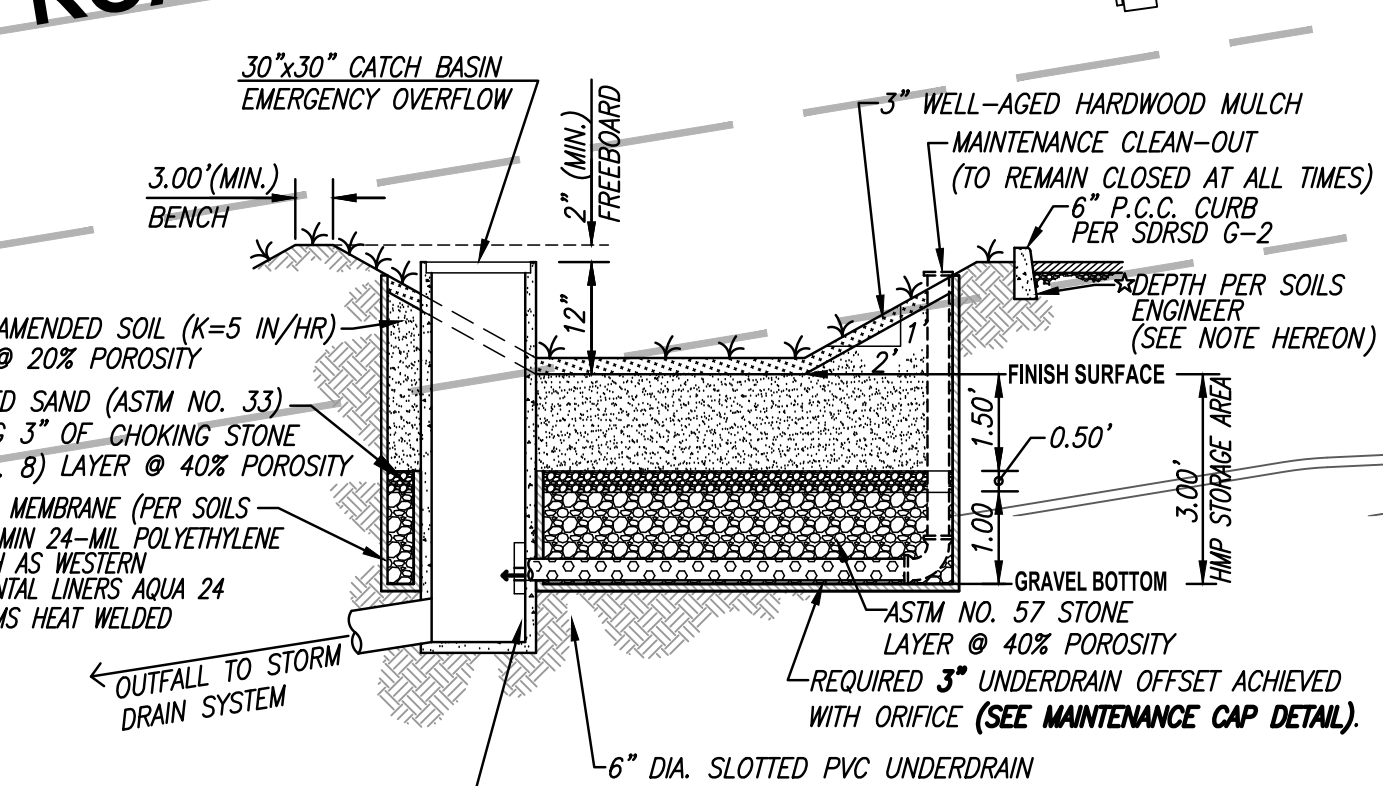
CHEMICAL COMPOSITION: TOTAL PHOSPHORUS < 15 PARTS PER MILLION (PPM);
PH 6-8; CATION EXCHANGE CAPACITY > 5 MILLIEQUIVALENTS PER 100 GRAMS (MEQ/100 G) OF SOIL; ORGANIC MATTER CONTENT < 5 PERCENT BY WEIGHT.

DRAINAGE LAYER
SEPARATE SOIL MEDIA FROM UNDERDRAIN LAYER WITH 3 INCH OF WASHED SAND, FOLLOWED BY 3 INCHES OF CHOKING STONE (ASTM NO. 8) OVER A 1.00-FOOT ENVELOPE OF ASTM NO. 57 STONE. TOTAL COMBINED DRAINAGE LAYER 18".

SURFACE VEGETATION
AS SPECIFIED BY THE LANDSCAPE ARCHITECT PLANS.

NOTE:
SOIL MIX WILL BE TESTED IN FIELD TO MEET REQUIRED INFILTRATION RATE.

BIOFILTRATION BASIN SECTION
TYPICAL BASIN SECTION & OUTLET CONNECTION
NOT-TO-SCALE



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Project Name:

Attachment 6

Geotechnical and Groundwater Investigation Report

Attach project's geotechnical and groundwater investigation report. Refer to Appendix C.4 to determine the reporting requirements.

Project Name:

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