


# **APPENDIX K**

## *Storm Water Quality Management Plan*



(Application No. GPA13-00003)

CITY OF OCEANSIDE ENGINEERING DIVISION	
<b>PRIORITY DEVELOPMENT PROJECT STORM WATER QUALITY MANAGEMENT PLAN FOR NORTH RIVER FARMS</b>	
ENGINEER OF WORK	
Raymond L. Martin, RCE # 48670	2/26/2018 Date

**PREPARED FOR:**

**Integral Communities  
2235 Encinitas Blvd, Suite 216,  
Encinitas, CA 92024  
(858) 349-6654**

**PREPARED BY:**

**Hunsaker & Associates – San Diego, Inc.  
9707 Waples Street  
San Diego CA 92121  
(858)558-4500  
WO: 2543-0016**



**Quick Reference Guide**

Item	Project Information
Project Name	North River Farms
Application Number(s)	
Project Address	North River Road and Wilshire Road
Total Parcel Area	176.6 Acres
Project Description	<ul style="list-style-type: none"> <li>• The existing site is 176.64 acres of agricultural land.</li> <li>• The proposed development will consist of roads, residential structures, and parks.</li> </ul>
Proposed Disturbed Area	159 acres
Created or Replaced Impervious	79.8 acres
Project Hydrologic Unit Watershed	<input type="checkbox"/> Santa Maria <input checked="" type="checkbox"/> San Luis Rey <input type="checkbox"/> Carlsbad
Required to implement HMP	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No



## Table of Contents

<b>CERTIFICATION PAGE</b> .....	<b>Section 1</b>
<b>SUBMITTAL RECORD</b> .....	<b>Section 2</b>
<b>PROJECT VICINITY MAP</b> .....	<b>Section 3</b>
<b>FORM I-1: APPLICABILITY OF PERMANENT STORM Water BMP REQUIREMENTS</b> .....	<b>Section 4</b>
<b>FORM I-2: PROJECT TYPE DETERMINATION CHECKLIST</b> .....	<b>Section 5</b>
<b>FORM I-3B: SITE INFORMATION CHECKLIST</b> .....	<b>Section 6</b>
<b>FORM I-4: SOURCE CONTROL BMP CHECKLIST</b> .....	<b>Section 7</b>
<b>FORM I-5: SITE DESIGN BMP CHECKLIST</b> .....	<b>Section 8</b>
<b>FORM I-6: SUMMARY OF PDP STRUCTURAL BMPS</b> .....	<b>Section 9</b>
<b>BMP CONSTRUCTION SELF CERTIFICATION FORM</b> .....	<b>Section 10</b>
<b>ATTACHMENT 1: BACKUP FOR PDP POLLUTANT CONTROL BMPS</b> .....	<b>Section 11</b>
ATTACHMENT 1a: DMA Exhibit .....	Section 11
ATTACHMENT 1b: Tabular Summary of DMAs .....	Section 11
ATTACHMENT 1c: Design Capture Volume Worksheet .....	Section 11
ATTACHMENT 1d: FORM I-7: Harvest and Use Feasibility Screening Checklist.....	Section 11
ATTACHMENT 1e: FORM I-8: Categorization of Infiltration Feasibility Condition.....	Section 11
ATTACHMENT 1f: Pollutant Control BMP Design Worksheets/Calculations .....	Section 11
<b>ATTACHMENT 2: BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES</b> .....	<b>Section 12</b>
ATTACHMENT 2a: Hydromodification Management Exhibit .....	Section 12
ATTACHMENT 2b: Management of Critical Coarse Sediment Yield Areas.....	Section 12
ATTACHMENT 2c: Geomorphic Assessment of Receiving Channels.....	Section 12
ATTACHMENT 2d: Flow Control Facility Design and BMP Drawdown Calculations .....	Section 12
ATTACHMENT 2e: Vector Control Plan .....	Section 12
<b>ATTACHMENT 3: STRUCTURAL BMP MAINTENANCE INFORMATION</b> .....	<b>Section 13</b>
ATTACHMENT 3a: Structural BMP Maintenance Thresholds and Actions.....	Section 13
ATTACHMENT 3b: Management of Critical Coarse Sediment Yield Areas.....	Section 13
<b>ATTACHMENT 4: STORM WATER BMP PLAN SHEETS</b> .....	<b>Section 14</b>
<b>ATTACHMENT 5: DRAINAGE REPORT</b> .....	<b>Section 15</b>
<b>ATTACHMENT 6: GEOTECHNICAL AND GROUNDWATER INVESTIGATION REPORT</b> .....	<b>Section 16</b>
<b>ATTACHMENT 7: STORM WATER QUALITY ASSESSMENT FORM</b> .....	<b>Section 17</b>
<b>ADDITIONAL SUPPORTING DOCUMENTATION</b> .....	<b>Section 18</b>



**CERTIFICATION PAGE**

**Project Name:** North River Farms  
**Permit Application Number:**

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 City of Oceanside BMP Design Manual, which is based on the requirements of San Diego Regional Water Quality Control Board Order No. R9-2013-0001 (MS4 Permit).

I have read and understand that the City has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the BMP Design Manual. I certify that this 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 SWQMP by City staff 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.

As Engineer of Work, I agree to indemnify, defend, and hold harmless the City of Oceanside, its officers, agents, and employees from any and all liability, claims, damages, or injuries to any person or property which might arise from the negligent acts, errors, or omissions of the Engineer of Work, my employees, agents or consultants.

\_\_\_\_\_  
Engineer of Work's Signature

Raymond L. Martin

Print Name

Hunsaker & Associates - San Diego, Inc.

Company

2/23/2018

Date



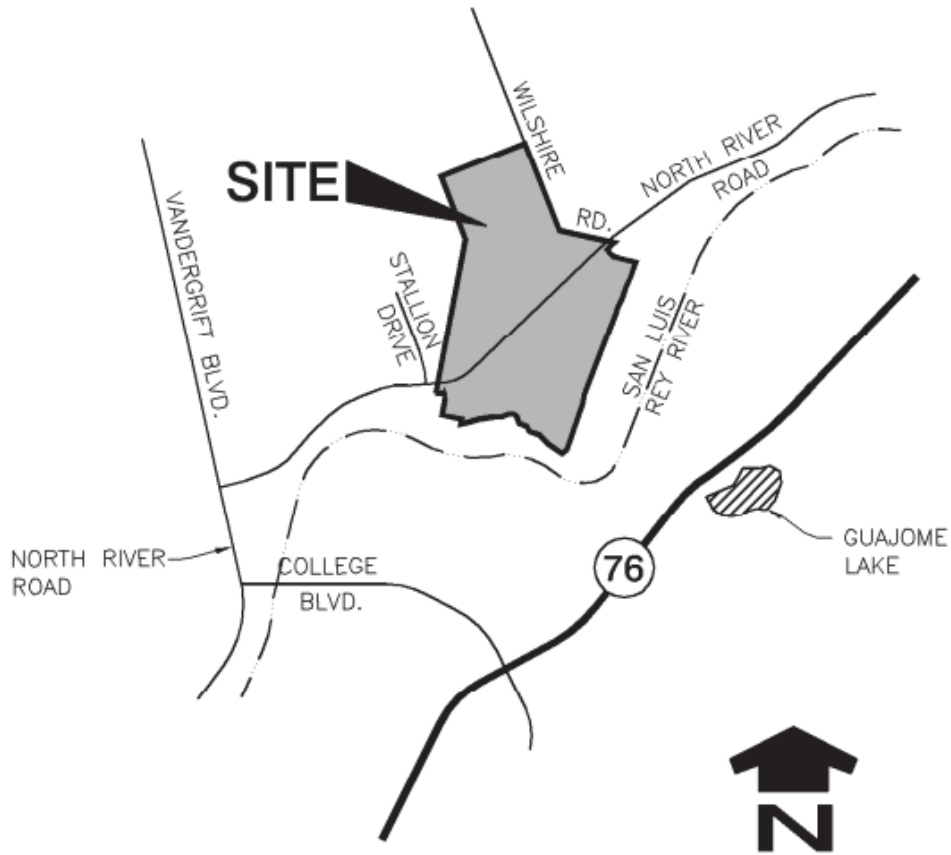
## SUBMITTAL RECORD

Use this Table to keep a record of submittals of this SWQMP. Each time the 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 behind this page.

Submittal Number	Date	Project Status	Changes
1	2/26/2018	<input checked="" type="checkbox"/> Preliminary Design/ Planning/ CEQA <input type="checkbox"/> Final Design	Initial Submittal
2		<input type="checkbox"/> Preliminary Design/ Planning/ CEQA <input type="checkbox"/> Final Design	
3		<input type="checkbox"/> Preliminary Design/ Planning/ CEQA <input type="checkbox"/> Final Design	
4		<input type="checkbox"/> Preliminary Design/ Planning/ CEQA <input type="checkbox"/> Final Design	



**Project Vicinity Map**



***VICINITY MAP***

NOT TO SCALE



<b>Applicability of Permanent, Post-Construction Storm Water BMP Requirements</b> (Storm Water Intake Form for all Development Permit Applications)		Form I-1
<b>Project Identification</b>		
Project Name: North River Farms		
Permit Application Number: TBD		Date: 2/23/2018
<b>Determination of Requirements</b>		
<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
<b>Step 1:</b> Is the project a "development project"? See Section 1.3 of the manual for guidance.	<input checked="" 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):		
<b>Step 2:</b> Is the project a Standard Project, PDP, or exception to PDP definitions? To answer this item, see Section 1.4 of the manual <i>in its entirety</i> for guidance, AND complete Form I-2, Project Type Determination.	<input type="checkbox"/> Standard Project	Stop. Standard Project requirements apply, including Standard Project SWQMP.
	<input checked="" type="checkbox"/> PDP	PDP requirements apply, including PDP SWQMP. Go to Step 3.
	<input type="checkbox"/> Exception to PDP definitions	Stop. Standard Project requirements apply. Provide discussion and list any additional requirements below. Prepare Standard Project SWQMP.
Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:		



Step	Answer	Progression
<b>Step 3.</b> Is the project subject to earlier PDP requirements due to a prior lawful approval? See Section 1.10 of the manual for guidance.	<input type="checkbox"/> Yes	Consult the [City Engineer] to determine requirements. Provide discussion and identify requirements below. Go to Step 4.
	<input checked="" type="checkbox"/> No	BMP Design Manual PDP requirements apply. Go to Step 4.
Discussion / justification of prior lawful approval, and identify requirements ( <i>not required if prior lawful approval does not apply</i> ):		
<b>Step 4.</b> Do hydromodification control requirements apply? See Section 1.6 of the manual 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 checked="" 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:  Project discharges directly to the San Luis Rey River, an exempt watercourse		
<b>Step 5.</b> Does protection of critical coarse sediment yield areas apply? See Section 6.2 of the manual for guidance.	<input type="checkbox"/> Yes	Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2). Stop.
	<input checked="" 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:  CCSYA management does not apply since HMP not required		



Project Type Determination Checklist		Form I-2	
<b>Project Information</b>			
Project Name: North River Farms			
Permit Application Number: TBD			
<b>Project Type Determination: Standard Project or PDP</b>			
The project is (select one): <input checked="" type="checkbox"/> New Development <input type="checkbox"/> Redevelopment			
The total proposed newly created or replaced impervious area is: 80 acres			
Is the project in any of the following categories, (a) through (f)?			
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	(a)	New development projects that create 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	(b)	Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	(c)	<p>New and redevelopment projects that create 5,000 square feet or more of impervious surface (collectively over the entire project site), and support one or more of the following uses:</p> <ul style="list-style-type: none"> <li>(i) Restaurants. This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption SIC code 5812).</li> <li>(ii) Hillside development projects. This category includes development on any natural slope that is twenty-five percent or greater.</li> <li>(iii) Parking lots. This category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce.</li> <li>(iv) Streets, roads, highways, freeways, and driveways. This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles.</li> </ul>



Form I-2 Page 2 of 2

Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	(d)	<p>New or redevelopment projects that create or replace 2,500 square feet or more of impervious surface (collectively over the entire project site), and discharging 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).</p> <p><u>Note: ESAs are areas that include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Board and SDRWQCB; State Water Quality Protected Areas; water bodies designated with the RARE beneficial use by the State Water Board and SDRWQCB; and any other equivalent environmentally sensitive areas which have been identified by the Copermitttees. See manual Section 1.4.2 for additional guidance.</u></p>
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	(e)	<p>New development projects that support one or more of the following uses:</p> <p>(i) Automotive repair shops. This category is defined as a facility that is categorized in any one of the following SIC codes: 5013, 5014, 5541, 7532-7534, or 7536-7539.</p> <p>(ii) Retail gasoline outlets. This category includes retail gasoline outlets that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic of 100 or more vehicles per day.</p>
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	(f)	<p>New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction.</p> <p><i>Note: See manual Section 1.4.2 for additional guidance.</i></p>
<p>Does the project meet the definition of one or more of the PDP categories (a) through (f) listed above?</p> <p><input type="checkbox"/> No – the project is not a PDP (Standard Project).</p> <p><input checked="" type="checkbox"/> Yes – the project is a PDP.</p>			
<p>The following is for redevelopment PDPs only:</p> <p>The area of existing (pre-project) impervious area at the project site is: _____ ft<sup>2</sup> (A)</p> <p>The total proposed newly created or replaced impervious area is: _____ ft<sup>2</sup> (B)</p> <p>Percent impervious surface created or replaced (A/B)*100: _____%</p> <p>The percent impervious surface created or replaced is (select one based on the above calculation):</p> <p><input type="checkbox"/> less than or equal to fifty percent (50%) – only new impervious areas are considered PDP</p> <p>OR</p> <p><input type="checkbox"/> greater than fifty percent (50%) – the entire project site is a PDP</p>			



Site Information Checklist For PDPs		Form I-3B (PDPs)
<b>Project Summary Information</b>		
Project Name	North River Farms	
Project Address	North River Road and Wilshire Road	
Assessor's Parcel Number(s)	157-100-83 & 84	
Permit Application Number		
Project Watershed (Hydrologic Unit)	Select One: <input type="checkbox"/> Santa Margarita 902 <input checked="" type="checkbox"/> San Luis Rey 903 <input type="checkbox"/> Carlsbad 904	
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	<u>176.6</u> Acres	
Area to be disturbed by the project (Project Area)	<u>159.3</u> Acres	
Project Proposed Impervious Area (subset of Project Area)	<u>78.8</u> Acres	
Project Proposed Pervious Area (subset of Project Area)	<u>80.5</u> Acres	
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.		

Hydrologic Unit	Hydrologic Area	Hydrologic Sub-Area
Santa Margarita 902.00	<input type="checkbox"/> Ysidora 902.10	<input type="checkbox"/> Lower Ysidora 902.11
San Luis Rey 903.00	<input checked="" type="checkbox"/> Lower San Luis 903.10	<input type="checkbox"/> Mission 903.11
		<input checked="" type="checkbox"/> Bonsall 903.12
Carlsbad 904.00	<input type="checkbox"/> Loma Alta 904.10	Not Applicable
	<input type="checkbox"/> Buena Vista Creek 904.20	<input type="checkbox"/> El Salto 904.21
		<input type="checkbox"/> Vista 904.22
<input type="checkbox"/> Agua Hedionda 4.30		<input type="checkbox"/> Los Monos 904.31



**Description of Existing Site Condition and Drainage Patterns**

Current Status of the Site (select all that apply):

- Existing development
- Previously graded but not built out
- Agricultural or other non-impervious use
- Vacant, undeveloped/natural

Description / Additional Information:

Existing Land Cover Includes (select all that apply):

- Vegetative Cover
- Non-Vegetated Pervious Areas
- Impervious Areas

Description / Additional Information:

Sparsely vegetated by weeds and annual grasses

Underlying Soil belongs to Hydrologic Soil Group (select all that apply):

- NRCS Type A
- NRCS Type B
- NRCS Type C
- NRCS Type D

Approximate Depth to Groundwater:

- Groundwater Depth < 5 feet
- 5 feet < Groundwater Depth < 10 feet
- 10 feet < Groundwater Depth < 20 feet
- Groundwater Depth > 20 feet



Description of Existing Site Topography and Drainage [How is storm water runoff conveyed from the site? At a minimum, this description should answer (1) whether existing drainage conveyance is natural or urban; (2) describe existing constructed storm water conveyance systems, if applicable; and (3) is runoff from offsite conveyed through the site? If so, describe]:

The existing drainage areas flow via overland sheet flow, largely in a south westerly direction. Onsite runoff reaches San Luis Rey River via overland land flow and there is also a channel conveying offsite flows through the site.



**Description of Proposed Site Development and Drainage Patterns**

Project Description / Proposed Land Use and/or Activities:

The proposed development will construct three mass graded pads for multi-family housing, in addition to access driveways, sidewalk, an internal storm drain system and infiltration basins and a flood attenuation basin. An assumption of 55% imperviousness is used to size bioretention facilities for the pads on the project site.

List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features):

Impervious features include residential structures, access roads, parking areas, sidewalks, driveways and walkways.

List/describe proposed pervious features of the project (e.g., landscape areas):

Pervious features include, landscaped areas, open space and biofiltration BMPs,

Does the project include grading and changes to site topography?

Yes

No

Description / Additional Information:

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

Yes

No

Description / Additional Information:



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



**Identification of Receiving Water Pollutants of Concern**

Describe path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable):

The existing drainage areas flow via overland sheet flow, largely in a south westerly direction. The northerly runoff reaches San Luis Rey River via overland land flow and there is also a channel conveying offsite flows through the site.

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)/stressor(s) causing impairment, and identify any TMDLs for the impaired water bodies:

303(d) Impaired Water Body	Pollutant(s)/Stressor(s)	TMDLs
Pacific Ocean Shoreline, San Luis Rey HU, at San Luis Rey River Mouth 90311000 ( 0.03 Miles)	Enterococcus Total Coliform	Requires Development
San Luis Rey River & Lower Stream (West of Interstate 15) 90311000 (19 Miles)	Chloride Enterococcus Fecal Coliform Phosphorus Total Dissolved Solids Total Nitrogen as N Toxicity	Requires Development



**Identification of Project Site Pollutants\***

**\*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)**

Identify pollutants expected from the project site based on all proposed use(s) of the site (see manual Appendix B.6):

<b>Pollutant</b>	<b>Not Applicable to the Project Site</b>	<b>Expected from the Project Site</b>	<b>Also a Receiving Water Pollutant of Concern</b>
Sediment			
Nutrients			
Heavy Metals			
Organic Compounds			
Trash & Debris			
Oxygen Demanding Substances			
Oil & Grease			
Bacteria & Viruses			
Pesticides			

**Note:** Indicator Bacteria shall be addressed as a Pollutant of Concern (POC) for projects located in the Lower San Luis Hydrologic Area and for projects that discharge to the Pacific Ocean Shoreline within the boundaries of the City of Oceanside.

**Note:** Nutrients shall be addressed as a Pollutant of Concern (POC) for projects located in the Loma Alta Hydrologic Area.



**Hydromodification Management Requirements**

Do hydromodification management requirements apply (see Section 1.6 of the manual)?

- Yes, hydromodification management flow control structural BMPs required.
- 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.
- 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.
- 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):

The project will discharge directly to San Luis Rey River which is identified as an exempt

**Critical Coarse Sediment Yield Areas\***

**\*This Section only required if hydromodification management requirements apply**

Based on the maps provided within the WMAA, do potential critical coarse sediment yield areas exist within the project drainage boundaries?

- Yes
- No, no critical coarse sediment yield areas to be protected based on WMAA maps

If yes, have any of the optional analyses presented in Section 6.2 of the manual been performed?

- 6.2.1 Verification of GLUs Onsite
- 6.2.2 Downstream Systems Sensitivity to Coarse Sediment
- 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
- No optional analyses performed, the project will avoid critical coarse sediment yield areas identified based on WMAA maps

If optional analyses were performed, what is the final result?

- No critical coarse sediment yield areas to be protected based on verification of GLUs onsite.
- Critical coarse sediment yield areas exist but additional analysis has determined that protection is not required. Documentation attached in Attachment 8 of the SWQMP.
- Critical coarse sediment yield areas exist and require protection. The project will implement management measures described in Sections 6.2.4 and 6.2.5 as applicable, and the areas are identified on the SWQMP Exhibit.

Discussion / Additional Information:



**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.

N/A

Has a geomorphic assessment been performed for the receiving channel(s)?

- No, the low flow threshold is 0.1Q2 (default low flow threshold)
- Yes, the result is the low flow threshold is 0.1Q2
- Yes, the result is the low flow threshold is 0.3Q2
- Yes, the result is the low flow threshold is 0.5Q2

If a geomorphic assessment has been performed, provide title, date, and preparer:

Discussion / Additional Information: (optional)



**Other Site Requirements and Constraints**

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.

**Optional Additional Information or Continuation of Previous Sections As Needed**

This space provided for additional information or continuation of information from previous sections as needed.



Source Control BMP Checklist for All Development Projects (Standard Projects and PDPs)		Form I-4	
<b>Project Identification</b>			
Project Name North River Farms			
Permit Application Number : TBD			
<b>Source Control BMPs</b>			
All development projects must implement source control BMPs SC-1 through SC-6 where applicable and feasible. See Chapter 4 and Appendix E of the manual 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"> <li>• "Yes" means the project will implement the source control BMP as described in Chapter 4 and/or Appendix E of the manual. Discussion / justification is not required.</li> <li>• "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.</li> <li>• "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.</li> </ul>			
Source Control Requirement		Implemented?	
<b>SC-1</b> Prevention of Illicit Discharges into the MS4		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Discussion / justification if SC-1 not implemented:			
<b>SC-2</b> Storm Drain Stenciling or Signage		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Discussion / justification if SC-2 not implemented:			
<b>SC-3</b> Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal		<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Discussion / justification if SC-3 not implemented:			



Source Control Requirement	Implemented?		
<b>SC-4</b> Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Discussion / justification if SC-4 not implemented:			
<b>SC-5</b> Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SC-5 not implemented:			



SC-6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)	Implemented?		
	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Onsite storm drain inlets	<input checked="" 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 checked="" type="checkbox"/> N/A
Interior parking garages	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Need for future indoor & structural pest control	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Landscape/outdoor pesticide use	<input checked="" 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 checked="" type="checkbox"/> N/A
Food service	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Refuse area	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Industrial processes	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Outdoor storage of equipment or materials	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Vehicle and equipment cleaning	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Vehicle/equipment repair and maintenance	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Fuel dispensing areas	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Loading docks	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Fire sprinkler test water	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Miscellaneous drain or wash water	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Plazas, sidewalks, and parking lots	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SC-6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for <u>all</u> "No" answers shown above.			



<b>Site Design BMP Checklist for All Development Projects (Standard Projects and PDPs)</b>		<b>Form I-5</b>	
<b>Project Identification</b>			
Project Name North River Farms			
Permit Application Number : TBD			
<b>Site Design BMPs</b>			
<p>All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the manual 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"> <li>• "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the manual. Discussion / justification is not required.</li> <li>• "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.</li> <li>• "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.</li> </ul>			
Site Design Requirement		Applied?	
<b>SD-1</b> Maintain Natural Drainage Pathways and Hydrologic Features		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Discussion / justification if SD-1 not implemented:			
<b>SD-2</b> Conserve Natural Areas, Soils, and Vegetation		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Discussion / justification if SD-2 not implemented:			
<b>SD-3</b> Minimize Impervious Area		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Discussion / justification if SD-3 not implemented:			
<b>SD-4</b> Minimize Soil Compaction		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Discussion / justification if SD-4 not implemented:			



Site Design Requirement	Applied?		
<b>SD-5</b> Impervious Area Dispersion	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SD-5 not implemented:			
<b>SD-6</b> Runoff Collection	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Discussion / justification if SD-6 not implemented: Biofiltration basins adequately retain and treat 1.5 DCV			
<b>SD-7</b> Landscaping with Native or Drought Tolerant Species	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SD-7 not implemented:			
<b>SD-8</b> Harvesting and Using Precipitation	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Discussion / justification if SD-8 not implemented: Harvest and use not feasible for toilet and urinal flushing since multi-family complex is proposed. Also not feasible for irrigation. See Form I-7.			



Summary of PDP Structural BMPs	Form I-6 (PDPs)
<b>Project Identification</b>	
Project Name : North River Farms	
Permit Application Number : TBD	
<b>PDP Structural BMPs</b>	
<p>All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the manual). 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 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 local jurisdiction at the completion of construction. This may include requiring the project owner or project owner's representative to certify construction of the structural BMPs (see Section 1.12 of the manual). PDP structural BMPs must be maintained into perpetuity, and the local jurisdiction must confirm the maintenance (see Section 7 of the 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>The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan was done based on City of Escondido Storm Water Design Manual meet the requirements of the San Diego Regional Water Quality Control Board Order R9-2013- 0001. Two bioretention basins and biofiltration swales were designed to meet the Water Quality Treatment requirements. Requirements. The existing soils is classified as Hydrologic soil group A &amp; D so full infiltration was not considered effective. The basins were designed to capture 1.5 times the 85th percentile design capture volume (DCV). The calculations are included in Attachment 1.</p>	



**Structural BMP Summary Information**

**(Copy this page as needed to provide information for each individual proposed structural BMP)**

Structural BMP ID No. BASIN 1	
Construction Plan Sheet No. TBD in Final Engineering	
Type of structural BMP: <input type="checkbox"/> Retention by harvest and use (HU-1) <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 checked="" 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 checked="" 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 forms if required by the [City Engineer] (See Section 1.12 of the manual)	Third party inspector TBD
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	HOA dues



**Structural BMP Summary Information**

**(Copy this page as needed to provide information for each individual proposed structural BMP)**

Structural BMP ID No. BASIN 2

Construction Plan Sheet No. TBD in Final Engineering

Type of structural BMP:

- Retention by harvest and use (HU-1)
- Retention by infiltration basin (INF-1)
- Retention by bioretention (INF-2)
- Retention by permeable pavement (INF-3)
- Partial retention by biofiltration with partial retention (PR-1)
- Biofiltration (BF-1)
- Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- 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)
- Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- Detention pond or vault for hydromodification management
- Other (describe in discussion section below) – Green Streets

Purpose:

- Pollutant control only
- Hydromodification control only
- Combined pollutant control and hydromodification control
- Pre-treatment/forebay for another structural BMP
- 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 forms if required by the [City Engineer] (See Section 1.12 of the manual)

Third party inspector TBD

Who will be the final owner of this BMP?

HOA

Who will maintain this BMP into perpetuity?

HOA

What is the funding mechanism for maintenance?

HOA dues



**Structural BMP Summary Information**

**(Copy this page as needed to provide information for each individual proposed structural BMP)**

Structural BMP ID No. BASIN 3A & 3B

Construction Plan Sheet No. TBD in Final Engineering

Type of structural BMP:

- Retention by harvest and use (HU-1)
- Retention by infiltration basin (INF-1)
- Retention by bioretention (INF-2)
- Retention by permeable pavement (INF-3)
- Partial retention by biofiltration with partial retention (PR-1)
- Biofiltration (BF-1)
- Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- 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)
- Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- Detention pond or vault for hydromodification management
- Other (describe in discussion section below) – Green Streets

Purpose:

- Pollutant control only
- Hydromodification control only
- Combined pollutant control and hydromodification control
- Pre-treatment/forebay for another structural BMP
- 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 forms if required by the [City Engineer] (See Section 1.12 of the manual)

Third party inspector TBD

Who will be the final owner of this BMP?

HOA

Who will maintain this BMP into perpetuity?

HOA

What is the funding mechanism for maintenance?

HOA dues



**Structural BMP Summary Information**

**(Copy this page as needed to provide information for each individual proposed structural BMP)**

Discussion (as needed):

Engineer of work does not provide inspection service, third party inspector will be provided by the project owner

Integral Communities





City of Oceanside  
 300 N Coast Highway  
 Oceanside, CA 92054

**Permanent BMP  
 Construction**  
 Self-Certification Form

February 2016

Date Prepared: 2/26/18	Project No.: TBD
Project Applicant: Integral Communities	Phone: (858) 349-6654
Project Address: North River Road and Wilshire Road	
Project Engineer: Raymond L. Martin	Phone: (858)558-4500

The purpose of this form is to verify that the site improvements for the project, identified above, have been constructed in conformance with the approved Storm Water Quality Management Plan (SWQMP) documents and drawings.

This form must be completed by the engineer and installing contractor and submitted prior to final inspection of the construction permit. Completion and submittal of this form is required for all new development and redevelopment projects in order to comply with the City's Storm Water ordinances and NDPES Permit Order No. R9-2013-0001. Final inspection for occupancy and/or release of grading or public improvement bonds may be delayed if this form is not submitted and approved by the City of Oceanside.

**ENGINEER'S CERTIFICATION:**

As the professional in responsible charge for the design of the above project, I certify that I have observed all constructed Low Impact Development (LID) site design, source control and treatment control BMP's required per the approved SWQMP and Construction Permit No. TBD; and that said BMP's appear to be constructed in compliance with the approved plans and all applicable specifications, permits, ordinances and Order No. R9-2013-0001 of the San Diego Regional Water Quality Control Board.

I understand that this BMP certification statement does not constitute an operation and maintenance verification.

**Signature:** \_\_\_\_\_

**Date of Signature:** \_\_\_\_\_

**Printed Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Phone No.** \_\_\_\_\_



**CONTRACTOR'S CERTIFICATION:**

As the professional in responsible charge for construction of the above project, I certify that all constructed Low Impact Development (LID) site design, source control and treatment control BMP's required per the approved SWQMP and Construction Permit No. [Click here to enter text.](#); have been constructed in compliance with the approved plans and all applicable specifications, permits, and ordinances.

I understand that this BMP certification statement does not constitute an operation and maintenance verification.

**Signature:** \_\_\_\_\_

**Date of Signature:** \_\_\_\_\_

**Printed Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Phone No.** \_\_\_\_\_



**ATTACHMENT 1**  
**BACKUP FOR PDP POLLUTANT CONTROL BMPS**



**Indicate which Items are Included:**

Attachment Sequence	Contents	Checklist
Attachment 1a	<p>DMA Exhibit (Required)</p> <p>See DMA Exhibit Checklist.</p>	<input checked="" type="checkbox"/> Included
Attachment 1b	<p>Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)*</p> <p>*Provide table in this Attachment OR on DMA Exhibit in Attachment 1a</p>	<input checked="" type="checkbox"/> Included on DMA Exhibit in Attachment 1a <input type="checkbox"/> Included as Attachment 1b, separate from DMA Exhibit
Attachment 1c	<p>Design Capture Volume Worksheet Worksheet B-2.1</p>	<input checked="" type="checkbox"/> Included
Attachment 1d	<p>Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs)</p> <p>Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7.</p>	<input checked="" type="checkbox"/> Included <input type="checkbox"/> Not included because the entire project will use infiltration BMPs
Attachment 1e	<p>Form I-8, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs)</p> <p>Refer to Appendices C and D of the BMP Design Manual to complete Form I-8.</p>	<input checked="" type="checkbox"/> Included <input type="checkbox"/> Not included because the entire project will use harvest and use BMPs
Attachment 1f	<p>Pollutant Control BMP Design Worksheets / Calculations (Required)</p> <p>Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines</p>	<input checked="" type="checkbox"/> Included



## Attachment 1a: DMA Exhibit

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

The DMA Exhibit must identify:

- Underlying hydrologic soil group (see Attachment 9)
- Approximate depth to groundwater
- Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- Critical coarse sediment yield areas to be protected (see attachment 2b)
- 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, and size/detail)



Placeholder – **Tabular Summary of DMAs (if separate from DMA Exhibit)**

Leave placeholder intact if not applicable.

Not Applicable – Tabular Summary included on DMA Exhibit





LEGEND	
PROJECT BOUNDARY	-----
DMA BOUNDARY	- - - - -
PERVIOUS AREAS	■ (Green)
STREETS/DRIVEWAYS/SIDEWALK	■ (Grey)
ROOFTOPS	■ (Pink)
TREATMENT CONTROL (STRUCTURAL) BMPs	
BIOFILTRATION BASIN	■ (Yellow)
GREEN STREETS DESIGN AREAS	■ (Light Green)
SOURCE CONTROL BMPs	
MARK INLETS WITH NO DUMPING!	⊙
FLOWS TO BAY OR SIMILAR	→
NOTES	
GROUNDWATER FOUND	○ (Red)
14 FEET BELOW SURFACE	
GROUNDWATER FOUND	□ (Red)
31 FEET BELOW SURFACE	



PREPARED BY:  
 **HUNSAKER & ASSOCIATES**  
 SAN DIEGO, CA  
REGISTERED PROFESSIONAL ENGINEER  
 LICENSE NO. 49675  
 EXPIRES 07/2007

**DMA MAP**  
**NORTH RIVER FARMS**  
 OCEANSIDE, CALIFORNIA

SHEET  
**1**  
 OF  
**1**

R:\1250\4442\0200\1250-DMA-RT.dwg(JF4-37-2018)30

### Attachment 1c: Design Capture Volume Worksheet

DMA 1 BASIN 1: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	59.76	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.63	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate $DCV = (3630 \times C \times d \times A) - TCV - RCV$	DCV=	99,315	cubic-feet

DMA 2 BASIN 2: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	56.87	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.63	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate $DCV = (3630 \times C \times d \times A) - TCV - RCV$	DCV=	94,381	cubic-feet

DMA 3 BASIN 3A &3B SWALE: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.73	inches
2	Area tributary to BMP (s)	A=	2.49	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.24	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate $DCV = (3630 \times C \times d \times A) - TCV - RCV$	DCV=	1,608	cubic-feet



BASIN 1: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	99,315	cubic-feet
<b>Partial Retention</b>			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.00	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.00	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.00	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.00	inches
7	Assumed surface area of the biofiltration BMP	9,551.0	sq-ft
8	Media retained pore storage	0.10	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	1,433	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	97,882	cubic-feet
<b>BMP Parameters</b>			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	12.00	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.00	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18.00	inches
14	Freely drained pore storage	0.20	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.00	in/hr.
<b>Baseline Calculations</b>			
16	Allowable Routing Time for sizing	6.00	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.00	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	22.80	inches
19	Total Depth Treated (Line 17 + Line 18)	52.80	inches
<b>Option 1 - Biofilter 1.5 times the DCV</b>			
20	Required biofiltered volume (1.5 x Line 10)	146,823	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	33,369	sq-ft
<b>Option 2 - Store 0.75 of remaining DCV in pores and ponding</b>			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	N/A	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	N/A	sq-ft
<b>Footprint of the BMP</b>			
24	Area draining to the BMP	2,603,329	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.63	unitless
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	unitless
27	Minimum BMP Footprint (Line 24 x Line 25 x Line 26)	48,977	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	48,977	sq-ft
<b>Check for Volume Reduction [Not applicable for No Infiltration Condition]</b>			
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	N/A	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	N/A	unitless
31	Is the fraction of DCV retained $\geq 0.375$ ? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	



BASIN B: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	94,381	cubic-feet
<b>Partial Retention</b>			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.00	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.00	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.00	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.00	inches
7	Assumed surface area of the biofiltration BMP	6,654.00	sq-ft
8	Media retained pore storage	0.10	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	998.10	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	93,383.37	cubic-feet
<b>BMP Parameters</b>			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	12.00	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.00	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18.00	inches
14	Freely drained pore storage	0.20	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.00	in/hr.
<b>Baseline Calculations</b>			
16	Allowable Routing Time for sizing	6.00	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.00	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	22.80	inches
19	Total Depth Treated (Line 17 + Line 18)	52.80	inches
<b>Option 1 - Biofilter 1.5 times the DCV</b>			
20	Required biofiltered volume (1.5 x Line 10)	140,075.06	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	31,835	sq-ft
<b>Option 2 - Store 0.75 of remaining DCV in pores and ponding</b>			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	N/A	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	N/A	sq-ft
<b>Footprint of the BMP</b>			
24	Area draining to the BMP	2,477,244.86	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.63	unitless
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03000	unitless
27	Minimum BMP Footprint (Line 24 x Line 25 x Line 26)	46,544	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	46,544	sq-ft
<b>Check for Volume Reduction [Not applicable for No Infiltration Condition]</b>			
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	N/A	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	N/A	unitless
31	Is the fraction of DCV retained $\geq 0.375$ ? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	



BASIN B: Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1	
1	Remaining DCV after implementing retention BMP's	1,608	cubic-feet
<b>Partial Retention</b>			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.00	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36.00	hours
4	Depth of runoff that can be infiltrated (Line 2 x Line 3)	0.00	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain (Line 4/ Line 5)	0.00	inches
7	Assumed surface area of the biofiltration BMP	6,654.00	sq-ft
8	Media retained pore storage	0.10	in/in
9	Volume retained by BMP (Line 4+(Line 12 x Line 8)/12) x Line 7	998.10	cubic-feet
10	DCV that requires biofiltration (Line 1 - Line 9)	610.04	cubic-feet
<b>BMP Parameters</b>			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	12.00	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18.00	inches
13	Aggregate Storage above underdrain invert (12 inches typical) - use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18.00	inches
14	Freely drained pore storage	0.20	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5.00	in/hr.
<b>Baseline Calculations</b>			
16	Allowable Routing Time for sizing	6.00	hours
17	Depth filtered during storm (Line 15 x Line 16)	30.00	inches
18	Depth of Detention Storage (Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5))	22.80	inches
19	Total Depth Treated (Line 17 + Line 18)	52.80	inches
<b>Option 1 - Biofilter 1.5 times the DCV</b>			
20	Required biofiltered volume (1.5 x Line 10)	915.07	cubic-feet
21	Required Footprint (Line 20/ Line 19) x 12	208	sq-ft
<b>Option 2 - Store 0.75 of remaining DCV in pores and ponding</b>			
22	Required Storage (surface + pores) Volume (0.75 x Line 10)	N/A	cubic-feet
23	Required Footprint (Line 22/ Line 18) x 12	N/A	sq-ft
<b>Footprint of the BMP</b>			
24	Area draining to the BMP	108,368.44	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.63	unitless
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03000	unitless
27	Minimum BMP Footprint (Line 24 x Line 25 x Line 26)	2,036	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	2,036	sq-ft
<b>Check for Volume Reduction [Not applicable for No Infiltration Condition]</b>			
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	N/A	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	N/A	unitless
31	Is the fraction of DCV retained $\geq 0.375$ ? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	



## Harvest and Use Feasibility Checklist

Form I-7

1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season?

- Toilet and urinal flushing
- Landscape irrigation
- Other: \_\_\_\_\_

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.

General Landscape: Low plant use: 390GAL/AC\*17AC=6630GAL → 886 cubic feet

3. Calculate the DCV using worksheet B-2.1

Total DCV = 37514 cubic-feet

0.25DCV = 9379 cubic-feet

3a. Is the 36 hour demand greater than or equal to the DCV?

- Yes /  No ⇒  
 ↓

3b. Is the 36 hour demand greater than 0.25DCV but less than the full DCV?

- Yes /  No ⇒  
 ↓

3c. Is the 36 hour demand less than 0.25DCV?

- Yes  
 ↓

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.

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.

Harvest and use is considered to be infeasible.

Is harvest and use feasible based on further evaluation?

- Yes, refer to Appendix E to select and size harvest and use BMPs.
- No, select alternate BMPs.



<b>Categorization of Infiltration Feasibility Condition</b>	<b>Form I-8</b>
---	-----------------

**Part 1 - Full Infiltration Feasibility Screening Criteria**  
**Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?**

Criteria	Screening Question	Yes	No
1	<b>Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Provide basis:

According to Geocon, the proposed compacted fill possesses no void space and therefore the infiltration rate is less than 0.5 inches per hour (see attachment 8)

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

2	<b>Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
---	--	--------------------------	-------------------------------------

Provide basis:

If infiltration were to be allowed the water is expected to infiltrate horizontally, causing seepage problems and would be detrimental to the project.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.





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	<b>Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Provide basis:

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.

6	<b>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?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
---	---	--------------------------	-------------------------------------

Provide basis:

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.





**ATTACHMENT 2**  
**BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES**

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



**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	Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional)  See Section 6.2 of the BMP Design Manual.	<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 checked="" type="checkbox"/> 6.2.1 Verification of Geomorphic Landscape Units Onsite <input checked="" type="checkbox"/> 6.2.2 Downstream Systems Sensitivity to Coarse Sediment <input checked="" type="checkbox"/> 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
Attachment 2c	Geomorphic Assessment of Receiving Channels (Optional)  See Section 6.3.4 of the BMP Design Manual.	<input checked="" type="checkbox"/> Not performed <input type="checkbox"/> Included <input type="checkbox"/> Submitted as separate stand-alone document
Attachment 2d	Flow Control Facility Design and Structural BMP Drawdown Calculations (Required)  Overflow Design Summary for each structural BMP  See Chapter 6 and Appendix G of the BMP Design Manual	<input type="checkbox"/> Included <input type="checkbox"/> Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	<input type="checkbox"/> Included <input checked="" type="checkbox"/> Not required because BMPs will drain in less than 96 hours



## Attachment 2a: Hydromodification Management Exhibit

**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 (see attachment 9)
- Approximate depth to groundwater
- Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- Critical coarse sediment yield areas to be protected (see attachment 2b)
- 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) (See HMP report, Attachment 8)

Please provide the Exhibit in 24"x36" format with map pocket, wet date, and stamp.



## Attachment 2b: Management of Critical Coarse Sediment Yield Areas



### 6.2.1 Verification of GLUs Onsite (if applicable)



### 6.2.3 Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite (Optional)



Downstream Systems Sensitivity to Coarse Sediment		Form I-10	
When it has been determined that potential critical coarse sediment yield areas exist within the project site, the next step is to determine whether downstream systems would be sensitive to reduction of coarse sediment yield from the project site. Use this form to document the evaluation of downstream systems requirements for preservation of coarse sediment supply.			
Project Name: <b>N/A</b>			
Project Tracking Number / Permit Application Number:			
1	Will the project discharge runoff to a hardened MS4 system (pipe or lined channel) or an un-lined channel?	<input type="checkbox"/> Hardened MS4 system	Go to 2
		<input type="checkbox"/> Un-lined channel	Go to 4
2	Will the hardened MS4 system convey sediment (e.g., a concrete-lined channel with steep slope and cleansing velocity) or sink sediment (e.g., flat slopes, constrictions, treatment BMPs, or ponds with restricted outlets within the system will trap sediment and not allow conveyance of coarse sediment from the project site to an un-lined system).	<input type="checkbox"/> Convey	Go to 3
		<input type="checkbox"/> Sink	Go to 7
3	What kind of receiving water will the hardened MS4 system convey the sediment to?	<input type="checkbox"/> Un-lined channel	Go to 4
		<input type="checkbox"/> Lake <input type="checkbox"/> Reservoir <input type="checkbox"/> Bay	Go to 7
		<input type="checkbox"/> Lagoon <input type="checkbox"/> Ocean	Go to 6
4	Is the un-lined channel impacted by deposition of sediment? This condition must be documented by the local agency.	<input type="checkbox"/> Yes	Go to 7
		<input type="checkbox"/> No	Go to 5



5	End – Preserve coarse sediment supply to protect un-lined channels from accelerated erosion due to reduction of coarse sediment yield from the project site unless further investigation determines the sediment is not critical to the receiving stream. Sediment that is critical to receiving streams is the sediment that is a significant source of bed material to the receiving stream (bed sediment supply) (see Section 6.2.3 and Appendix H.2 of the manual).
6	End – Provide management measures for preservation of coarse sediment supply (protect beach sand supply).
7	End – Downstream system does not warrant preservation of coarse sediment supply, no measures for protection of critical coarse sediment yield areas onsite are necessary. Use the space below to describe the basis for this finding for the project.



Placeholder – **Attachment 2c: 6.3.4 Geomorphic Assessment of Receiving Channels**  
(Optional)

Replace placeholder with required calculations/documentation.

Leave placeholder intact if not applicable.

Not Applicable



**Attachment 2d: Flow Control Facility Design and Structural BMP Drawdown Calculations**

Not Applicable



**Attachment 2e – Vector Control Plan** (required when structural BMPs will drain in 96 hours)

Not Applicable



**ATTACHMENT 3**  
**STRUCTURAL BMP MAINTENANCE INFORMATION**



**Indicate which Items are Included:**

Attachment Sequence	Contents	Checklist
Attachment 3a	Structural BMP Maintenance Thresholds and Actions (Required)	<input checked="" type="checkbox"/> Included  See Structural BMP Maintenance Information Checklist.
Attachment 3b	Draft Maintenance Agreement (when applicable)	<input type="checkbox"/> Included <input checked="" type="checkbox"/> Not Applicable



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

**Preliminary Design / Planning / CEQA level submittal:**

- Attachment 3a must identify:
  - Typical maintenance indicators and actions for proposed structural BMP(s) based on Section 7.7 of the BMP Design Manual
- Attachment 3b is not required for preliminary design / planning / CEQA level submittal.

**Final Design level submittal:**

Attachment 3a must identify:

- Specific maintenance indicators and actions for proposed structural BMP(s). This shall be based on Section 7.7 of the BMP Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)
- 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

Attachment 3b: For private entity operation and maintenance, Attachment 3b shall include a draft maintenance agreement in the local jurisdiction's standard format (PDP applicant to contact the City Engineer to obtain the current maintenance agreement forms).



### Attachment 3a: Structural BMP Maintenance Information

Typical maintenance indicators and actions for proposed Biofiltration structural BMP(s)

**TABLE 7-2. 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 Engineer shall 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, the City Engineer shall be contacted prior to any additional repairs or reconstruction.

Typical Maintenance Indicator(s) for Vegetated BMPs	Maintenance Actions
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.	



**ATTACHMENT 4**  
**Copy of Plan Sheets Showing Permanent Storm Water BMPs**

To be added during Final Engineering



**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.



Placeholder – **Stormwater BMP Plan Sheet(s)**

Replace placeholder with plan sheet(s).



**ATTACHMENT 5**  
**Drainage Report**

See North River Farms Drainage Report Dated April 12, 2016



**ATTACHMENT 6**  
**Geotechnical and Groundwater Investigation Report**



Placeholder – **Geotechnical and Groundwater Investigation Report**

Replace placeholder with geotechnical and groundwater investigation report.

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



**ATTACHMENT 7**  
**Storm Water Quality Assessment Form**



Placeholder – **Storm Water Quality Assessment Form**

Replace placeholder with a copy of the Storm Water Quality Assessment Form.

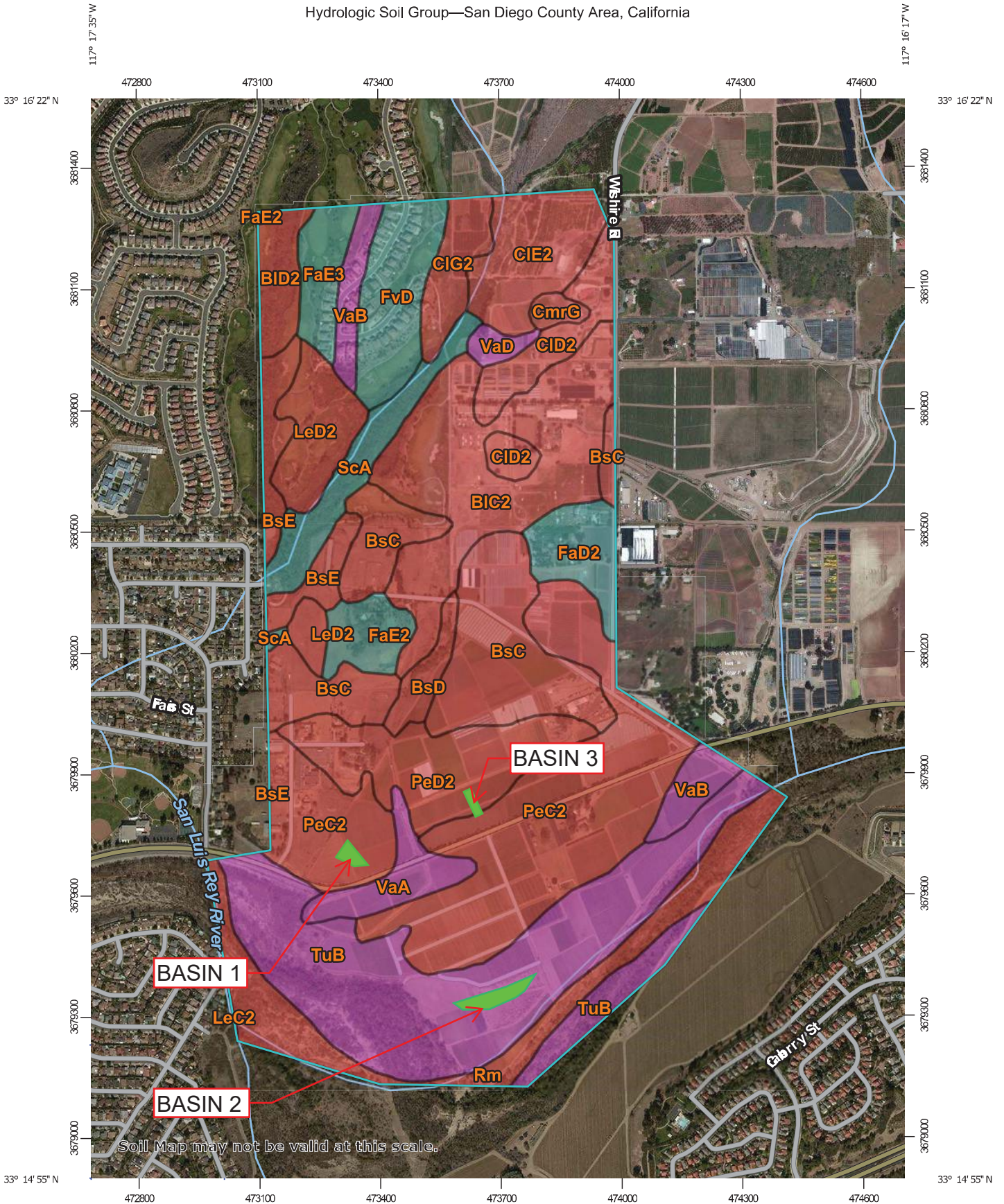


**ATTACHMENT 8**  
**Letter from Geocon**



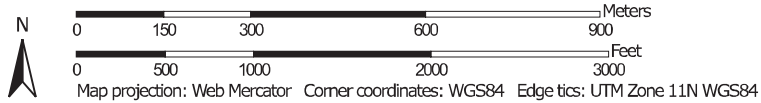
**ATTACHMENT 9**  
**Hydrologic Soil**






Soil Map may not be valid at this scale.

Map Scale: 1:13,000 if printed on A portrait (8.5" x 11") sheet.






## MAP LEGEND

### Area of Interest (AOI)









 Area of Interest (AOI)

### Soils

#### Soil Rating Polygons





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

#### Soil Rating Lines


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

#### Soil Rating Points






 A  
 A/D  
 B  
 B/D

 C  
 C/D  
 D  
 Not rated or not available


### Water Features

 Streams and Canals

### Transportation

 Rails  
 Interstate Highways  
 US Routes  
 Major Roads  
 Local Roads

### Background

 Aerial Photography

## MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: San Diego County Area, California  
 Survey Area Data: Version 10, Sep 12, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 3, 2010—Nov 22, 2014

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

## Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — San Diego County Area, California (CA638)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BIC2	Bonsall sandy loam, 2 to 9 percent slopes, eroded	D	53.4	10.2%
BID2	Bonsall sandy loam, 9 to 15 percent slopes, eroded	D	8.7	1.7%
BsC	Bosanko clay, 2 to 9 percent slopes	D	53.5	10.3%
BsD	Bosanko clay, 9 to 15 percent slopes	D	5.5	1.1%
BsE	Bosanko clay, 15 to 30 percent slopes	D	13.0	2.5%
CID2	Cieneba coarse sandy loam, 5 to 15 percent slopes, eroded	D	14.6	2.8%
CIE2	Cieneba coarse sandy loam, 15 to 30 percent slopes, eroded	D	20.2	3.9%
CIG2	Cieneba coarse sandy loam, 30 to 65 percent slopes, eroded	D	9.8	1.9%
CmrG	Cieneba very rocky coarse sandy loam, 30 to 75 percent slopes	D	2.3	0.5%
FaD2	Fallbrook sandy loam, 9 to 15 percent slopes, eroded	C	11.4	2.2%
FaE2	Fallbrook sandy loam, 15 to 30 percent slopes, eroded	C	8.7	1.7%
FaE3	Fallbrook sandy loam, 9 to 30 percent slopes, severely eroded	C	9.3	1.8%
FvD	Fallbrook-Vista sandy loams, 9 to 15 percent slopes	C	19.2	3.7%
LeC2	Las Flores loamy fine sand, 5 to 9 percent slopes, eroded	D	0.1	0.0%
LeD2	Las Flores loamy fine sand, 9 to 15 percent slopes, eroded	D	17.3	3.3%
PeC2	Placentia sandy loam, 5 to 9 percent slopes, eroded	D	87.7	16.8%

Hydrologic Soil Group— Summary by Map Unit — San Diego County Area, California (CA638)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
PeD2	Placentia sandy loam, 9 to 15 percent slopes, eroded	D	29.6	5.7%
Rm	Riverwash	D	29.7	5.7%
ScA	Salinas clay, 0 to 2 percent slopes	C	15.2	2.9%
TuB	Tujunga sand, 0 to 5 percent slopes	A	86.7	16.6%
VaA	Visalia sandy loam, 0 to 2 percent slopes	A	10.4	2.0%
VaB	Visalia sandy loam, 2 to 5 percent slopes	A	12.2	2.3%
VaD	Visalia sandy loam, 9 to 15 percent slopes	A	2.8	0.5%
<b>Totals for Area of Interest</b>			<b>521.4</b>	<b>100.0%</b>

## Description

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

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

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

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

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

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

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

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher

**ATTACHMENT 10**  
**HMP Report**

Not Applicable



