Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING

PROJECT SPECIFIC PRELIMINARY WATER QUALITY MANAGEMENT PLAN (P-WQMP)

FOR:
P20-00004
FIRST MARCH LOGISTICS – BUILDING 2
NATWAR LANE
PERRIS, CALIFORNIA 92571
APNs: 294-180-032

PREPARED FOR:
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MARCH 16, 2021
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JOB NO. 3933

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FOR

"FIRST MARCH LOGISTICS – BUILDING 2"

PREPARED BY LUIS PRADO
UNDER THE SUPERVISION OF:

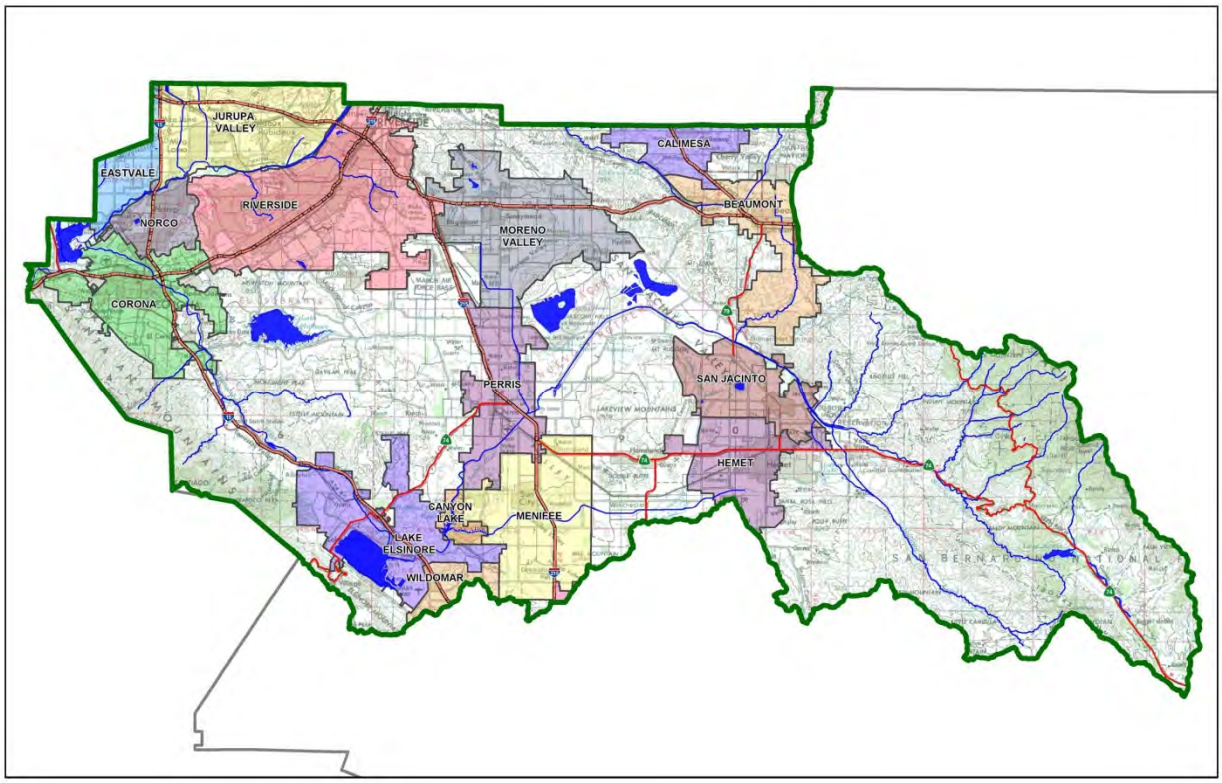
11/11/21

REINHARD STENZEL DATE
R.C.E. 56155
EXP. 12/31/2022

Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: First March Logistics - Building 2
Development No: P20-00004
Design Review/Case No: TPM 37965 / P20-00004 – Bldg 2
APN No: 294-180-032



☒ **Preliminary**
☐ **Final**

Original Date Prepared: March 16, 2021

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Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**

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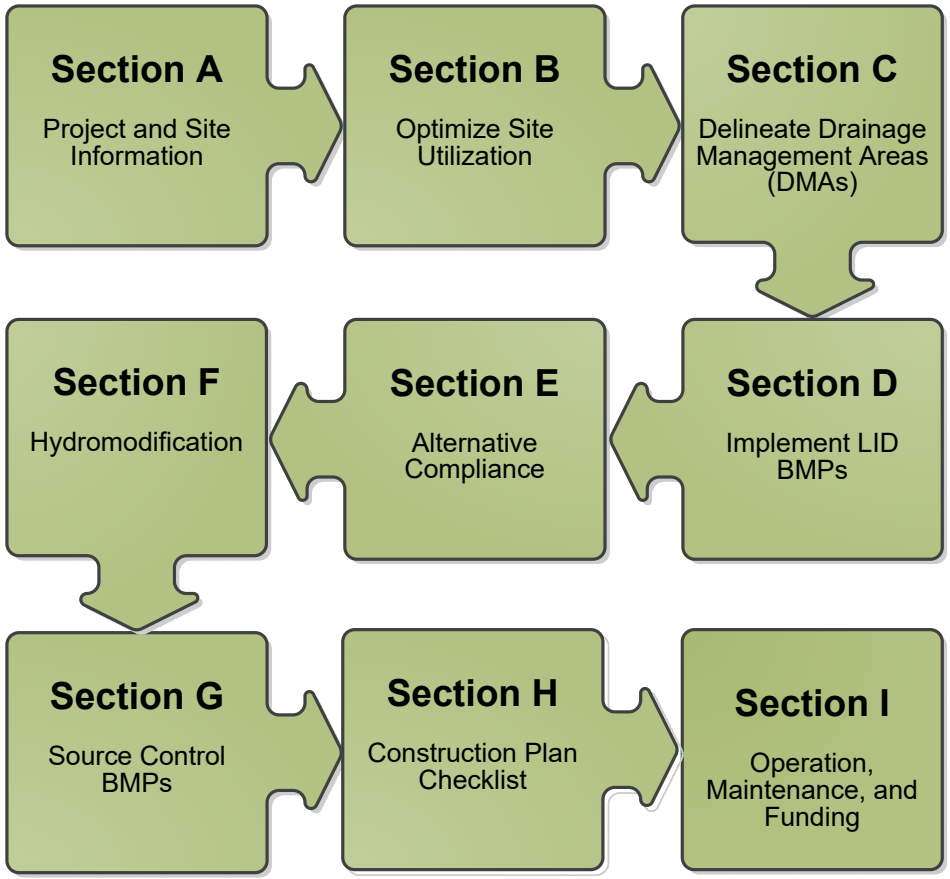
Job No. 3933

A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for **First Industrial Realty Trust, Inc.** by **Thienes Engineering, Inc.** for the **First March Logistics - Building 2** project (P20-00004).

This WQMP is intended to comply with the requirements of **City of Perris** for **Ordinance No. 1194** which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under **City of Perris** Ordinance **No. 1194**.

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Michael Goodwin	
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	Date
Reinhard Stenzel	Director of Engineering
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure:

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Light Industrial Warehouse
Planning Area:	Industrial/Business Park
Community Name:	N/A
Development Name:	First March Logistics - Building 2
PROJECT LOCATION	
Latitude & Longitude (GIS): 33.869566, -117.258133	
Project Watershed and Sub-Watershed: Santa Ana River & San Jacinto	
APN(s): 294-180-032	
Total Project Area: 6.40 acres	
Map Book and Page No.: Assessor's Map BK294 PG. 18	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Light Industrial
Proposed or Potential SIC Code(s)	4225
Area of Existing Impervious Project Footprint (SF)	0
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement	254,826 (5.85 acres)
Does the project consist of offsite road improvements?	☐ Y ☒ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y ☒ N
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the project limits (SF)	0
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	Infiltration Report Available
What is the Water Quality Design Storm Depth for the project?	0.61

Project Description:

The project site encompasses approximately 6.40 acres. Proposed improvements to the site include a light industrial warehouse (Building 2) of approximately 139,971 square feet utilized for the transfer and storage of finished goods. There will be a truck yard on the south side of the building. Vehicle parking lots will be on the east and west sides of the project. Landscaping will be adjacent to the street and scattered throughout the site. Per the infiltration report, infiltration rates resulted in less than 0.3 inches per hour; therefore, the project proposes to use underground detention systems (StormTech MC-4500 Chambers) and proprietary biotreatment units (Bio Clean Modular Wetlands Systems) to treat runoff produced by the 85th percentile storm rainfall depth. In addition, catch basin filters will be provided in order to pre-treat runoff prior to entering the water quality features.

Existing Site:

Under existing conditions, the site is a vacant lot covered in natural grasses and sparse vegetation. Runoff from the site generally drains from west to east toward Western Way.

Hydrology:

Runoff from the westerly parking stalls and drive aisle will surface drain to a catch basin within the northerly portion of the parking lot. Flow from the building, truck yard, and southeasterly parking lot will surface drain to catch basins located in the truck yard area. A proposed onsite storm drain system, Line A, will convey stormwater from the northwest parking to the south, turn east around the building, and confluence with flows from the building and truck yard. Line A will continue east, turn north around the southeast corner of the building and

collect runoff from the northeasterly parking lot that will surface drain to a catch basin on the east side of the building.

The drive aisle north of the building will surface drain to several catch basins adjacent to the northerly face of the building. A proposed storm drain system, Line B, will convey flow to the east and confluence with Line A. Line A continues north and ultimately discharges to the proposed 84" public storm drain traversing through the site.

Drainage from the landscaping along the easterly property line and a portion of the driveway (DMA B-2) will surface drain directly into Western Avenue. These landscaped areas are considered self-treating areas.

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, and the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Perris Valley Storm Drain	None	None	Not classified as a RARE waterbody.
San Jacinto River, Reach 3	None	AGR, GWR, REC1, REC2, WARM, WILD	Not classified as a RARE waterbody.
Canyon Lake (aka San Jacinto River, Reach 2)	Nutrients, Pathogens	MUN, AGR, GWR, REC1, REC2, WARM, WILD	Not classified as a RARE waterbody.
San Jacinto River, Reach 1	None	MUN, AGR, GWR, REC1, REC2, WARM, WILD	Not classified as a RARE waterbody.
Lake Elsinore	Nutrients, Organic Enrichment/Low Dissolved Oxygen, Indicator Bacteria	REC1, REC2, WARM, WILD	Not classified as a RARE waterbody.

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage (dependent on tenant)	☒ Y	☐ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* City of Perris Grading Permit	☒ Y	☐ N
Other *(please list in the space below as required)* City of Perris Building Permit	☒ Y	☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

- *There are no creeks, wetlands, or riparian habitats nearby.*
- *Existing drainage patterns flow from west to east toward Western Way and ultimately into the Perris Valley Storm Drain. Proposed condition drainage patterns mimic pre-development conditions.*

Did you identify and protect existing vegetation? If so, how? If not, why?

- *Not applicable, the entire site was previously disturbed (mass-graded).*
- *Not applicable, there are no sensitive areas.*
- *No applicable, there are no existing trees or vegetation to preserve.*

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

- *Per the infiltration report, infiltration rates resulted in less than 0.3 inches per hour; therefore, the project proposes to use underground detention systems and proprietary biotreatment units to treat runoff produced by the 85th percentile storm rainfall depth.*

Did you identify and minimize impervious area? If so, how? If not, why?

- *Impervious area on the site has been minimized to City standards.*
- *Due to the nature of the project site (large trucks), substitution of pavement for landscaping is not feasible. The project does not propose overflow parking where substitution of pavement for*

landscaping would be optimal. Landscaping has been provided wherever applicable and to the maximum extent practicable.

- *The entire Design Capture Volume (DCV) is handled by the proposed underground detention systems and proprietary biotreatment units. Permeable pavement is not needed to meet the DCV.*

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

- *Roof runoff is directed to the underground detention systems and proprietary biotreatment units for treatment.*
- *The site is not on a hillside.*
- *All stormwater runoff will be piped or sheet flow into the underground detention systems and proprietary biotreatment units; therefore, curb-cuts into landscaped areas are not utilized.*

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1]	Area (Sq. Ft.)	Area (Acres)	DMA Type
A-1	Roofs/Conc/Asphalt	254,826	5.85	Type D
A-2	Ornamental Landscaping	13,068	0.30	Type D
B-2	Ornamental Landscaping	10,890	0.25	Type D

[1]Reference Table 2-1 in the WQMP Guidance Document to populate this column.

DMA B-2 consists of landscape areas that drain offsite.

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
B-2	10,890	California Native Vegetation	Timed Sprinklers
n/a	n/a	n/a	n/a

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]
n/a	n/a	n/a	n/a	n/a	n/a	n/a

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Runoff factor	Product	DMA name /ID	Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]		[D]	[C]/[D]
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
A-1	StormTech MC-4500 Chambers & Modular Wetlands System (STC-A & MWS-A)
A-2	StormTech MC-4500 Chambers & Modular Wetlands System (STC-A & MWS-A)

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site. If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?	X	
If Yes, list affected DMAs: Per the infiltration report, infiltration rates resulted in less than 0.3 inches per hour; therefore, the project proposes to use underground detention systems and proprietary biotreatment units to treat runoff produced by the 85th percentile storm rainfall depth for the entire site.		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies*:*

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐ Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☐ The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

☒ None of the above

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If neither of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: 0.55 acres

Type of Landscaping (Conservation Design or Active Turf): Conservative Design

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 5.85 acres

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: 0.79

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: 4.62 acres

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
4.62 acres	0.55 acres

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: 56 (approximate # of parking stalls)

Project Type: Light Industrial

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 5.85

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-2 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: 172

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: 1,006

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
1,006	56

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

N/A

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: N/A

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: N/A

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-3 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-3: N/A

Step 4: Multiply the unit value obtained from Step 4 by the total of impervious areas from Step 3 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: N/A

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
N/A	N/A

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D.3 below.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				Alternative Compliance (Modular Wetlands System)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
A-1	☐	☐	☐	☐	☒
A-2	☐	☐	☐	☐	☒

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)**
	[A]		[B]	[C]	[A] x [C]			
A-1	254,826	Roofs/Conc/Asphalt	*1.00*	*0.89*	*227,304.8*	*0.61*	*11554.7*	*11,768*
A-2	13,068	Ornamental Landscaping	*0.10*	*0.11*	*1,443.5*	*0.61*	*73.4*	
	267,894				*228,748*	0.61	11,628	11,768

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

*Proposed volume = Installed Storage Volume + Processed through MWS + MWS Linear Static Capacity
= 11,188 cu-ft + 475 cu-ft + 105 cu-ft = 11,768 cu-ft

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P(2)
☒ Commercial/Industrial Development	P(3)	P	P(1)	P(1)	P(5)	P(1)	P	P
☐ Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☒ Parking Lots (>5,000 ft^2)	P(6)	P	P(1)	P(1)	P(4)	P(1)	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☐	☒	☐	☐	☐	☐	☒	☒

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
N/A	
Total Credit Percentage[1]	

[1]Cannot Exceed 50%

[2]Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imp Fraction, I_f	DMA Runoff Factor	DMA Area x Runoff Factor				
	[A]		[B]	[C]	[A] x [C]				
N/A	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*Design Storm Depth (in)*	*Minimum Design Capture Volume (cubic feet)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E.2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
Modular Wetlands System	Metals	38%-69%
Modular Wetlands System	Trash & Debris/TSS	85%
Modular Wetlands System	Oil & Grease	95%

[1] *Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.*
[2] *Cross Reference Table E.1 above to populate this column.*
[3] *As documented in a Co-Permittee Approved Study and provided in Appendix 6.*

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐Y ☒N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐Y ☒ N

If yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

F.2 HCOC Mitigation

As an alternative to the HCOC Exemption Criteria above, HCOC criteria is considered mitigated if the project meets one of the following conditions, as indicated:

☐ a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

☐ b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

☐ c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

☐ d. None of the above.

All pertinent documentation used in analysis of the items a, b or c can be found in Appendix 7.

The project site is located within the exempted HCOC area, as presented in the April 20, 2017 approved WAP/HCOC document. Refer to HCOC map provided in Appendix 7.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
A. On-site storm drain inlets	• Mark all inlets with the words "Only Rain Down the Storm Drain" or similar.	• Maintain and periodically repaint or replace inlet markings annually. • Provide stormwater pollution prevention information to new site owners, lessees, or operators upon occupancy and annually thereafter. • See CASQA fact sheet SC-44 for "Drainage System Maintenance," included in Appendix of this document. • Include the following lease agreements: "Tenant shall not allow anyone to discharge anything to storm drain or to store or deposit materials so as to create a potential discharge to storm drains."

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
B. Interior floor drains and elevator shaft sump pumps	• Interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	• Inspect and maintain drains semi-annually to prevent blockages and overflow.
D2. Landscape / Outdoor Pesticide Use	• Landscape plans will minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. • Pest-resistant plans will be used adjacent to hardscape. • The landscape plans will consider plants appropriate to the site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	• Maintain landscaping only using minimum pesticides, when needed. • See Appendix 10 for "Landscape and Gardening" brochure by RCFlood. • Provide Integrated Pest Management (IPM) information to new owners, lessees and operators upon occupancy and annually thereafter. IPM is an effective and environmentally sensitive approach to pest management.
G. Refuse Areas	• Site refuse will be handled by contractor on a weekly basis. • Signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	• A minimum of two receptacles will be provided and located indoors. Receptacles are to be inspected daily and repairs or replacements to leaky receptacles will be completed immediately. Receptacles are to remain covered when not in use. Dumping of liquid or hazardous wastes is prohibited. A "no hazardous materials" sign will be posted. Spills will be cleaned immediately upon discovery. Spill control materials will be available onsite. See Appendix 10 for CASQA fact sheet SC-34 for "Waste Handling and Disposal."
H. Industrial processes	• All process activities to be performed indoors. No processes to drain to exterior or to storm drain system.	• See Appendix 10 for CASQA fact sheet SC-10 for "Non-Stormwater Discharges"
M. Loading Docks	• Spills will be cleaned up immediately and disposed of properly.	• Move loaded and unloaded items indoors as soon as possible. • See Appendix 10 for CASQA fact sheet SC-30 for "Outdoor Loading and Unloading"
O. Miscellaneous Drain or Wash Water or Other Sources	• A drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.	
P. Plazas, sidewalks, and parking lots		• Sweep plazas, sidewalks, and parking lots monthly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)	Latitude	Longitude
A	On-site storm drain inlets	Conceptual Grading Plan Sheets 1 and 4	---	---
B	Interior floor drains and elevator shaft sump pumps	N/A	---	---
D2	Landscape / Outdoor Pesticide Use	On-site Landscape Improvement Plans	---	---
G	Refuse Areas	Conceptual Grading Plan Sheet 1	---	---
H	Industrial processes	Grading Plans (indoors, if any)	---	---
M	Loading Docks	Conceptual Grading Plan Sheet 1	---	---
P	Plazas, sidewalks, and parking lots	Conceptual Grading Plan Sheet 1	---	---
MWS-A	Modular Wetlands System	Conceptual Grading Plan Sheets 1 and 4	33.869081	-117.257377
STC-A	Underground Detention	Conceptual Grading Plan Sheets 1 and 4	33.869097	-117.257989

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

This section will be completed and addressed at the time of the final WQMP Submittal.

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: City of Perris:

Covenant and Agreement

Water Quality Management Plan and Urban Runoff BMP Transfer, Access and Maintenance Agreement

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☐ Y ☒ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

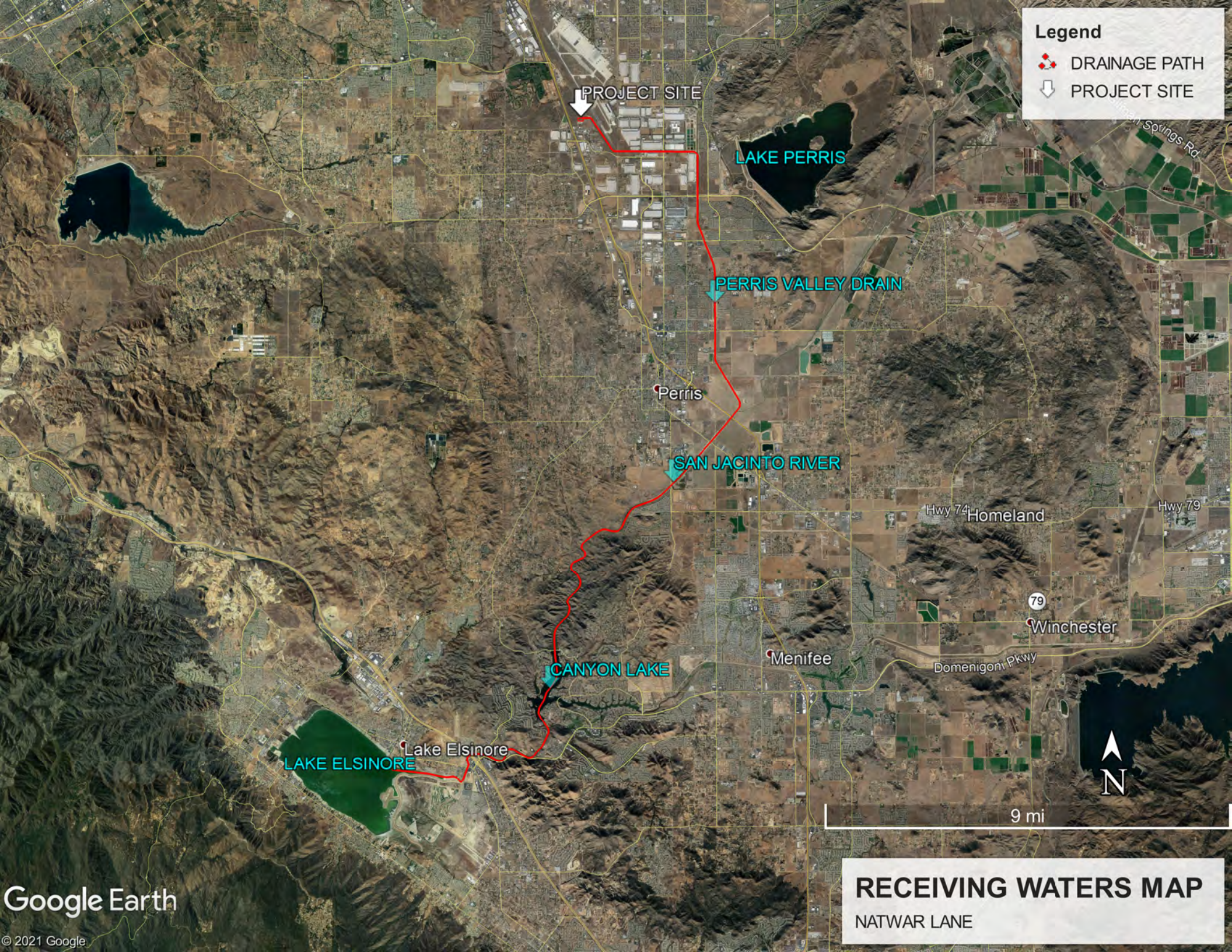
This section will be completed and addressed at the time of the final WQMP Submittal

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

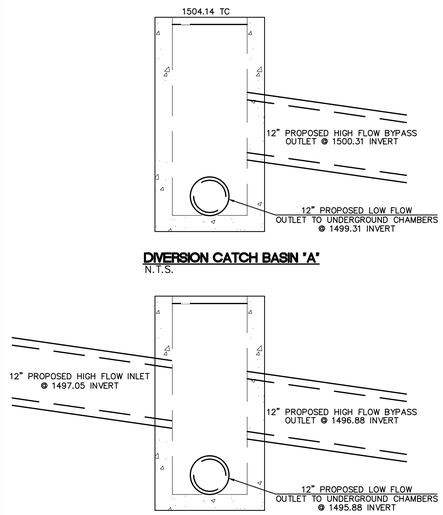
VICINITY MAP

NATWAR LANE



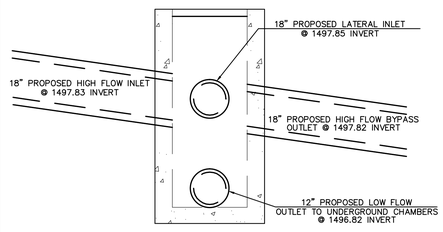
RECEIVING WATERS MAP

NATWAR LANE

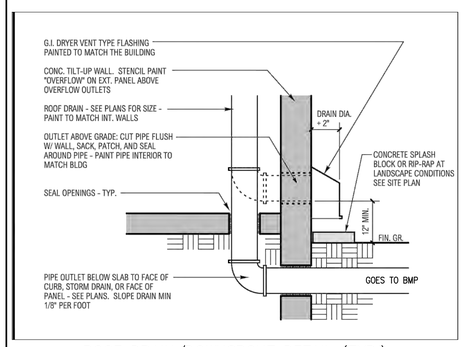


DIVERSION CATCH BASIN "A"
N.T.S.

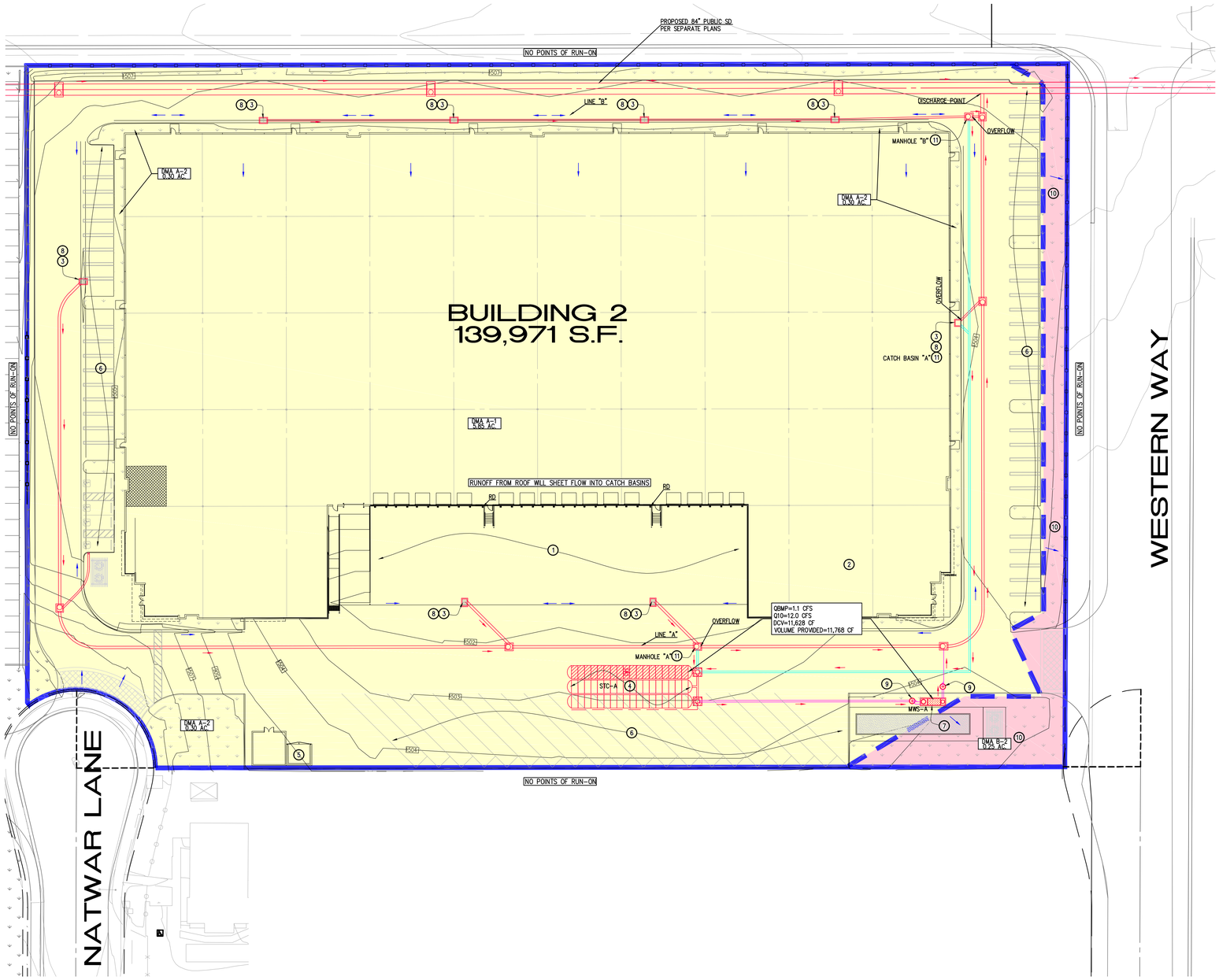
DIVERSION MANHOLE "B"
N.T.S.

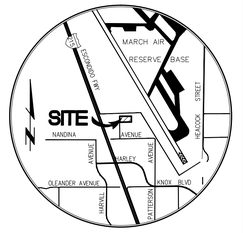


DIVERSION MANHOLE "A"
N.T.S.



ROOF DRAIN/DOWNSPOUT DETAIL (TYP.)





VICINITY MAP
N.T.S.

LEGEND

1. LOADING/UNLOADING TRUCK DOCKS
2. EDUCATIONAL MATERIAL
3. STORM DRAIN STENCIL
4. MC-4500 STORMTECH CHAMBERS W/ IMPERMEABLE LINER
5. TRASH ENCLOSURE
6. PARKING LOT MAINTENANCE (SWEEPING)
7. PROPRIETARY BIOTREATMENT UNIT (MODULAR WETLANDS SYSTEM)
8. DRAIN INSERT(S)
9. SUMP PUMP
10. SELF-TREATING LANDSCAPE
11. DIVERSION STRUCTURE

NOTE:

RD ROOF DRAIN
BOUNDARY
SUBAREAS
SURFACE FLOW LINE
SD FLOW LINE
DMA A
DMA B
LANDSCAPE AREA

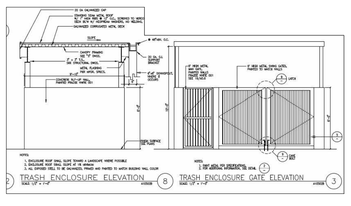
STORM DRAIN NOTES:

MAIN STORM DRAIN
INBOUND TO CHAMBERS
OUTBOUND FROM CHAMBERS

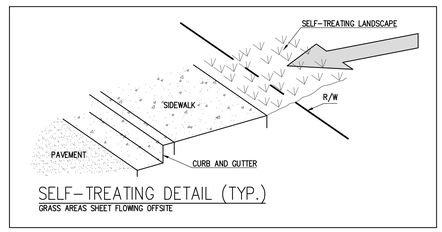
SAMPLE STORM DRAIN STENCIL

SUMMARY TABLE									
			MODULAR WETLANDS SYSTEM (MWS)			MC-4500 STORMTECH CHAMBERS			
DMA	AREA (ACRES)	DCV (CF)	MWS MODEL	VOLUME PROCESSED THROUGH MWS (CF)	LINEAR STATIC CAPACITY (CF)	DETENTION REQUIRED (CF)	DETENTION PROVIDED (CF)	# OF CHAMBERS	TOTAL VOLUME PROVIDED (CF)
A	6.15	11,628	MWS-L-4-15	475	105	11,048	11,188	53	11,768
TOTAL	6.15	11,628		475	105	11,048	11,188	53	11,768

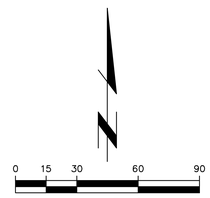
DMA Name or ID	Surface Type(s)[1]	Area (Sq. Ft.)	Area (Acres)	DMA Type
A-1	Roofs/Conc/Asphalt	254,826	5.85	Type D
A-2	Ornamental Landscaping	13,068	0.30	Type D
B-2	Ornamental Landscaping	10,890	0.25	Type D



TRASH ENCLOSURE DETAIL



SELF-TREATING DETAIL (TYP.)
GRASS AREAS SHEET FLOWING OFFSITE



Last Update:11/11/21
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CITY OF PERRIS
PUBLIC WORKS DEPARTMENT

POST-CONSTRUCTION BMP SITE PLAN

FIRST MARCH LOGISTICS BUILDING 2 NATWAR LANE P20-00004 - BLDG 2

3933/1 OF 2 SHEET

PREPARED FOR:
FIRST INDUSTRIAL REALTY TRUST, INC.
898 N. PACIFIC COAST HIGHWAY STE. 175
EL SEGUNDO, CA 90245
PHONE: (310) 321-3813

PREPARED BY:
Thienes Engineering, Inc.
CIVIL ENGINEERING * LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173

Designed by _____ Date _____
Checked by _____ Date _____
Designed by _____ Date _____
Checked by _____ Date _____
Approved by _____ Date _____
Public Works Director _____ R.C.E. _____

Sheet 1 of 2 Sheets

BIO CLEAN FULL CAPTURE FILTER WITH TROUGH SYSTEM

FOR USE IN CURB INLETS

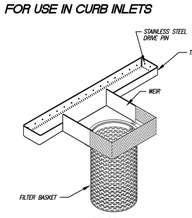


FIGURE 1:
DETAIL OF PARTS

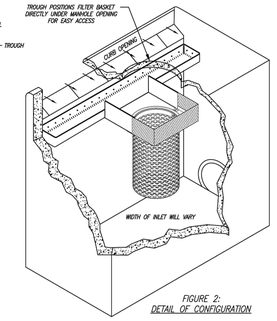


FIGURE 2:
DETAIL OF CONFIGURATION

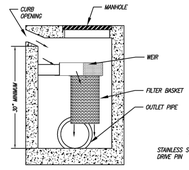


FIGURE 4:
DETAIL OF PROFILE

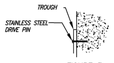


FIGURE 3:
DETAIL OF MOUNTING

NOTES:

1. TROUGH SYSTEM PROVIDES FOR ENTIRE COVERAGE OF INLET OPENING SO TO DIVERT ALL FLOW TO FILTER.
2. TROUGH SYSTEM MANUFACTURED FROM MARINE GRADE FIBERGLASS, GEL COATED FOR UV PROTECTION.
3. SYSTEM ATTACHED TO THE CATCH BASIN WITH ALL STAINLESS STEEL HARDWARE.
4. FILTER MANUFACTURED OF 100% STAINLESS STEEL.
5. FILTER MADE OF NON-CLOGGIN SCREEN WITH 4.7 MM OPENINGS AND MEETS FULL CAPTURE REQUIREMENTS.
6. FILTER CAN BE FITTED WITH HYDROCARBON ABSORBENT BOOM
7. FILTER IS LOCATED DIRECTLY UNDER THE MANHOLE FOR EASY REMOVAL AND MAINTENANCE.
8. LENGTH OF TROUGH CAN VARY FROM 2' TO 30'
9. OTHER STANDARD AND CUSTOM MODEL SIZES AVAILABLE – CONTACT BIO CLEAN FOR MORE INFORMATION.
10. CONSIDERS A SAFETY FACTOR OF 2.0.
11. BYPASS IS FACILITATED VIA OVERFLOW OF THE TROUGH SYSTEM AND IS EQUAL TO THE CAPACITY OF THE CURB OPENING
12. STORAGE CAPACITY BASED ON THE BASKET HALF FULL
13. ADDITIONAL TREATMENT AND STORAGE CAPACITY CAN BE ACHIEVED BY UTILIZING MULTIPLE FILTER BASKETS.

MODEL NUMBER	TREATMENT FLOW (cfs)*	SOLIDS STORAGE CAPACITY (cu ft)
BIO-CURB-FULL-24	2.85	1.40
BIO-CURB-FULL-18	2.85	1.05
BIO-CURB-FULL-12	2.85	0.70

*SEE PAGE 2 FOR EXPLANATION OF FLOW RATES

DRAWING: BIO CLEAN CURB INLET FILTER DETAILS — MEETS FULL CAPTURE REQUIREMENTS

TREATMENT FLOW RATE: 2.85 cfs — MODEL #: BIO-CURB-FULL

WARRANTY: 8 YEAR MANUFACTURERS

BIO CLEAN ENVIRONMENTAL SERVICES, INC.
398 VIA EL CENTRO, OCEANSIDE CA 92058
PHONE: 760-433-7640 FAX: 760-433-3176

DATE: 10/12/2017 — SCALE: NTS

DRAWN BY: M.C.P. — UNITS = INCHES

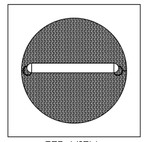
PROJECT: — REVISIONS: — DATE:

Bio Clean
A Forterra Company

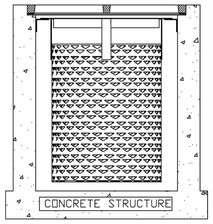
PAGE 1

BIO CLEAN FULL CAPTURE FILTER

FOR USE IN GRATE INLETS

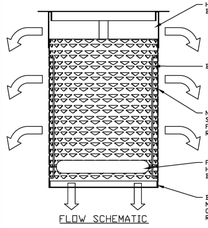


TOP VIEW



NOTES:

1. ALL HARDWARE, FLANGE, FRAME, SCREENS SHALL BE STAINLESS STEEL
2. HYDROCARBON BOOM SHALL BE 3" DIAMETER AND CONNECTED MECHANICALLY TO THE FILTER FRAME WITH RAILS ALLOWING IT TO FLOAT ON THE WATER SURFACE REGARDLESS OF HEIGHT
3. SEE PERFORMANCE REPORTS IN MANUFACTURES SPECIFICATIONS
4. OTHER STANDARD AND CUSTOM MODEL SIZES AVAILABLE – CONTACT BIO CLEAN FOR MORE INFORMATION.
5. BASED ON 37% OPEN AREA.
6. CONSIDERS A SAFETY FACTOR OF 2.0.
7. CONSIDERS A LOCAL DEPRESSION PONDING DEPTH OF 6 INCHES.
8. STORAGE CAPACITY BASED ON THE BASKET HALF FULL.
9. CONCRETE STRUCTURES SOLD SEPARATELY.



MODEL #	TREATMENT FLOW (CFS)	BYPASS FLOW (CFS)	SOLIDS STORAGE CAPACITY (CF)
BIO-GRATE-FULL 12-12-12	1.55	1.55	0.27
BIO-GRATE-FULL 18-18-18	4.32	3.68	1.05
BIO-GRATE-FULL 24-24-24	7.67	4.83	2.41
BIO-GRATE-FULL 30-30-24	12.97	6.21	3.98
BIO-GRATE-FULL 25-38-24	13.53	6.59	4.16
BIO-GRATE-FULL 36-36-24	19.64	7.60	5.94
BIO-GRATE-FULL 48-48-18	25.59	10.13	7.92

DRAWING: BIO CLEAN GRATE INLET FILTER DETAILS — MEETS FULL CAPTURE REQUIREMENTS

TYPICAL MODEL DETAIL

WARRANTY: 8 YEAR MANUFACTURERS

BIO CLEAN ENVIRONMENTAL SERVICES, INC.
398 VIA EL CENTRO, OCEANSIDE CA 92058
PHONE: 760-433-7640 FAX: 760-433-3176

DATE: 10/12/17 — SCALE: SF = 15 — UNITS = INCHES

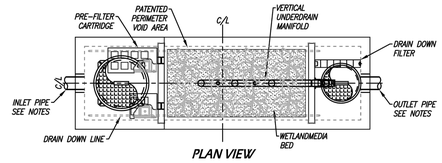
DRAWN BY: M.C.P.

PROJECT: — REVISIONS: — DATE:

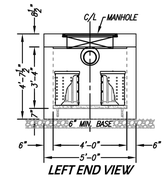
Bio Clean
A Forterra Company

PAGE 1

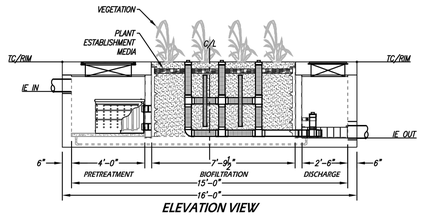
SITE SPECIFIC DATA			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PARKWAY	OPEN PLANTER	PARKWAY
FRAME & COVER	ø30"	N/A	ø24"
WETLANDMEDIA VOLUME (CY)			4.30
WETLANDMEDIA DELIVERY METHOD			TBD
ORIFICE SIZE (DIA. INCHES)			ø1.89"
MAXIMUM PICK WEIGHT (LBS)			31000
NOTES:			



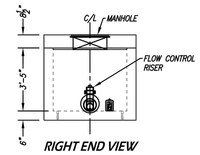
PLAN VIEW



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.

MODULAR WETLANDS
www.modularwetlands.com | (619) MWSD-WET

TREATMENT FLOW (CFS)	0.175
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	TBD
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MWS-L-4-15-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

StormTech — ADS

MC-4500 CHAMBER

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.

STORMTECH MC-4500 CHAMBER
(not to scale)

Nominal Chamber Specifications

Size (L x W x H)
52" x 100" x 60"
1,321 mm x 2,540 mm x 1,524 mm

Chamber Storage
106.5 ft³ (3.01 m³)

Min. Installed Storage*
162.6 ft³ (4.60 m³)

Weight
120 lbs (54.4 kg)

Shipping
7 chambers/pallet
11 pallets/truck

*Assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below chambers, 9" (230 mm) of stone between chambers/end caps and 40% stone porosity.

STORMTECH MC-4500 END CAP
(not to scale)

Nominal End Cap Specifications

Size (L x W x H)
35.1" x 90.2" x 59.4"
891 mm x 2,291 mm x 1,509 mm

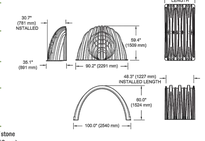
End Cap Storage
35.7 ft³ (1.01 m³)

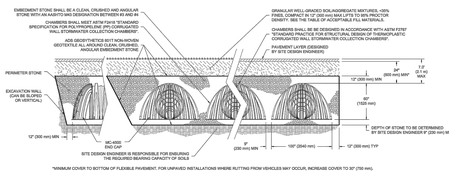
Min. Installed Storage*
108.7 ft³ (3.08 m³)

Weight
120 lbs (54.4 kg)

Shipping
7 end caps/pallet
11 pallets/truck

*Assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below, 6" (150 mm) of stone perimeter, 9" (230 mm) of stone between chambers/end caps and 40% stone porosity.





MC-4500 CHAMBER SPECIFICATIONS

STORAGE VOLUME PER CHAMBER FT³ (M³)

	Bare Chamber Storage ft³ (m³)	Chamber and Stone Foundation Depth in. (mm)			
		9" (230 mm)	12" (300 mm)	15" (375 mm)	18" (450 mm)
MC-4500 Chamber	106.5 (3.02)	162.6 (4.60)	166.3 (4.71)	169.6 (4.81)	173.6 (4.91)
MC-4500 End Cap	35.7 (1.0)	108.7 (3.08)	111.9 (3.17)	115.2 (3.26)	118.4 (3.35)

Note: Assumes 9" (230 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume. End cap volume assumes 12" (300 mm) stone perimeter.

AMOUNT OF STONE PER CHAMBER

ENGLISH TONS (yds³)	Stone Foundation Depth			
	9"	12"	15"	18"
MC-4500 Chamber	7.4 (5.2)	7.8 (5.5)	8.3 (5.9)	8.8 (6.2)
MC-4500 End Cap	9.6 (6.8)	10.0 (7.1)	10.4 (7.4)	10.9 (7.7)
METRIC KILOGRAMS (m³)	230 mm	300 mm	375 mm	450 mm
MC-4500 Chamber	6,681 (4.0)	7,117 (4.2)	7,552 (4.5)	7,987 (4.7)
MC-4500 End Cap	8,691 (5.2)	9,075 (5.4)	9,460 (5.6)	9,845 (5.9)

Note: Assumes 12" (300 mm) of stone above and 9" (230 mm) row spacing and 12" (300 mm) of perimeter stone in front of end caps.

VOLUME EXCAVATION PER CHAMBER YD³ (M³)

	Stone Foundation Depth			
	9" (230 mm)	12" (300 mm)	15" (375mm)	18" (450 mm)
MC-4500 Chamber	10.5 (8.0)	10.8 (8.3)	11.2 (8.5)	11.5 (8.8)
MC-4500 End Cap	9.3 (7.1)	9.6 (7.3)	9.9 (7.6)	10.2 (7.8)

Note: Assumes 9" (230 mm) of separation between chamber rows, 12" (300 mm) of perimeter in front of the end caps, and 24" (600 mm) of cover. The volume of excavation will varyas depth of cover increases.

StormTech ADS DESIGN TOOL

Working on a project?
Visit us at www.stormtech.com
and utilize the StormTech Design Tool

For more information on the StormTech MC-4500 Chamber and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710

THE MOST ADVANCED NAME IN WATER MANAGEMENT SOLUTIONS™

Advanced Drainage Systems, Inc.
4640 Trueman Blvd., Hilliard, OH 43026
1-800-821-6710 www.ads-pipe.com

Last Update:11/11/21
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CITY OF PERRIS
PUBLIC WORKS DEPARTMENT

POST-CONSTRUCTION BMP SITE PLAN

FIRST MARCH LOGISTICS BUILDING 2
NATWAR LANE
P20-00004 – BLDG 2

3933/2 OF 2 SHEET

PREPARED FOR:
FIRST INDUSTRIAL REALTY TRUST, INC.
898 N. PACIFIC COAST HIGHWAY STE. 175
EL SEGUNDO, CA 90245
PHONE: (310) 321-3813

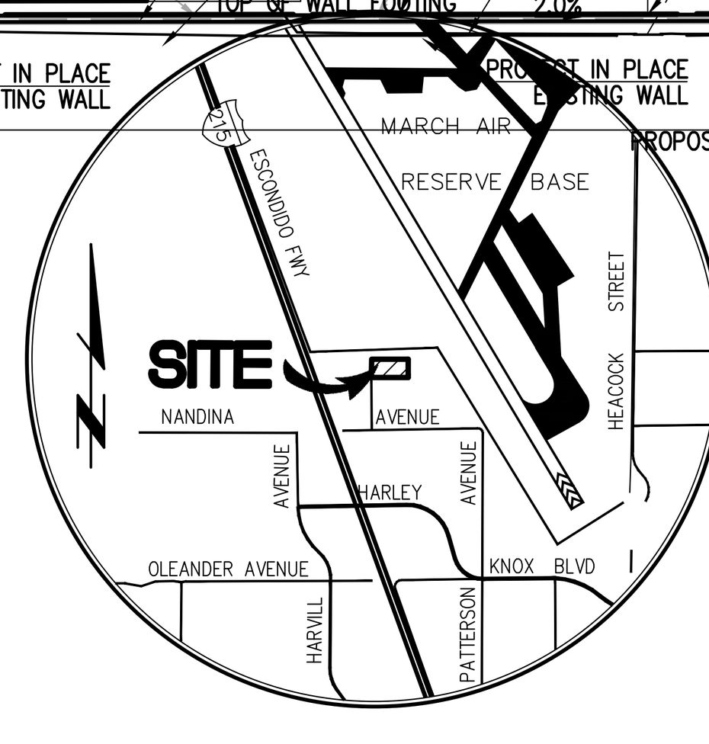
PREPARED BY:
Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173

Designed by _____ Date _____
Checked by _____ Date _____
Designed by _____ Date _____
Checked by _____ Date _____

Approved by _____ Date _____
Public Works Director _____ R.C.E. _____

Sheet 2 of 2 Sheets

NATWAR LANE



VICINITY MAP
N.T.S.

		EARTHWORK BALANCE CALCULATIONS	2/10/2021
PROJECT:		CONCEPTUAL GP (LEVEL FLOOR)	JN3933
JOB#		215 FWY & NATWAR LANE	QUANTITY
		BLDG AREA	138,713
	K.	SITE AREA:	265,688
	L.	SUBSIDENCE FACTOR:	0.163
	M.	SHRINKAGE FACTOR:	13.0
	N.	SITE STRIPPING FACTOR:	0.00
	O.	OVEREXCAVATION:	15,412.56
	A.	CALCULATED CUT:	14,660
	B.	TOTAL SPOILS	**4,006**
		SPOILS FROM BASIN	-
		ADDITIONAL CUT (FLOOR SLAB)	-
	C.	**TOTAL CUT: (A+B)**	**18,666**
	D.	CALCULATED FILL:	12,637
	E.	LIGHT PAVING FILL:	
	F.	SUBSIDENCE: (LxK)/27=	1,599
	G.	SHRINKAGE: (M/100)C=	2,427
	H.	SITE STRIPPING	-
	I.	OVEREXCAVATION SHRINKAGE	2,004
	J.	**TOTAL FILL: (D+E+F+G+H)=**	**18,666**
	K.	**TOTAL (IMPORT) OR EXPORT:**	**(0)**
		SITE ADJUSTMENT	(0.00)

0 10 20 40 60

SCALE: 1"=20'

Last Update: 11/10/21
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PREPARED FOR:

FIRST INDUSTRY REALTY TRUST, INC.
898 N. PACIFIC COAST HIGHWAY STE. 175
EL SEGUNDO, CA 90245
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14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173

CITY OF PERRIS
PUBLIC WORKS DEPARTMENT

CONCEPTUAL GRADING PLAN
FIRST MARCH LOGISTICS
BUILDING 2
NATWAR LANE

Designed by ________
Date ________
Checked by ________
Date ________
Designed by ________
Date ________
Checked by ________
Date ________

Approved by ________ Date ________

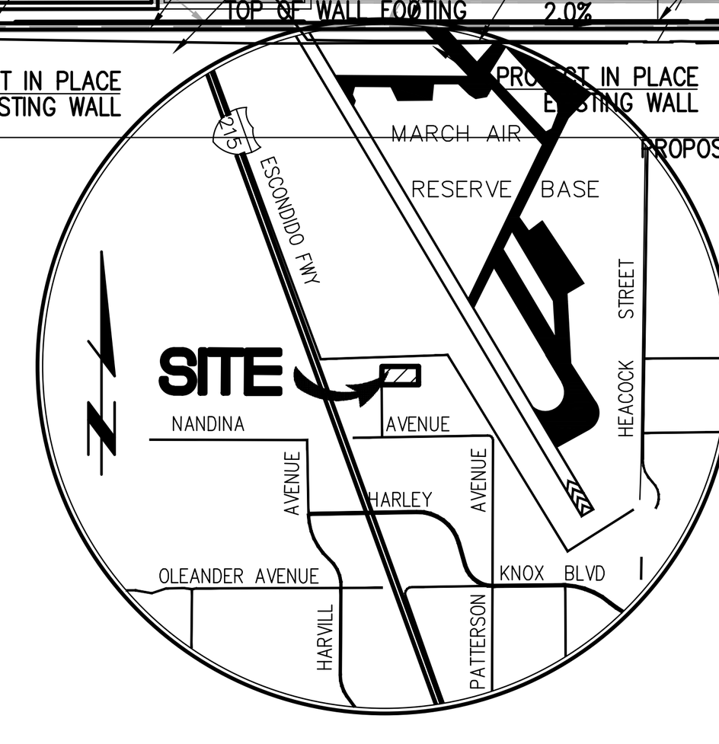
Public Works Director R.C.E. XXXXX

Sheet 1 of 6 Sheets

39331 OF 6 SHEET

Appendix 2: Construction Plans

Grading and Drainage Plans



VICINITY MAP
N.T.S.

SCALE: 1"= 20'

		EARTHWORK BALANCE CALCULATIONS	2/10/2021
PROJECT:		CONCEPTUAL GP (LEVEL FLOOR)	JN3933
JOB#		215 FWY & NATWAR LANE	QUANTITY
		BLDG AREA	138,713
	K.	SITE AREA:	265,688
	L.	SUBSIDENCE FACTOR:	0.163
	M.	SHRINKAGE FACTOR:	13.0
	N.	SITE STRIPPING FACTOR:	0.00
	O.	OVEREXCAVATION:	15,412.56
	A.	CALCULATED CUT:	14,660
	B.	TOTAL SPOILS	**4,006**
		SPOILS FROM BASIN	-
		ADDITIONAL CUT (FLOOR SLAB)	-
	C.	**TOTAL CUT: (A+B)**	**18,666**
	D.	CALCULATED FILL:	12,637
	E.	LIGHT PAVING FILL:	
	F.	SUBSIDENCE: (LxK)/27=	1,599
	G.	SHRINKAGE: (M/100)C=	2,427
	H.	SITE STRIPPING	-
	I.	OVEREXCAVATION SHRINKAGE	2,004
	J.	**TOTAL FILL: (D+E+F+G+H)=**	**18,666**
	K.	**TOTAL (IMPORT) OR EXPORT:**	**(0)**
		SITE ADJUSTMENT	(0.00)

Last Update: 11/10/21
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PREPARED FOR:

FIRST INDUSTRY REALTY TRUST, INC.
898 N. PACIFIC COAST HIGHWAY STE. 175
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CITY OF PERRIS
PUBLIC WORKS DEPARTMENT

CONCEPTUAL GRADING PLAN
FIRST MARCH LOGISTICS
BUILDING 2
NATWAR LANE

Designed by ______
Date ______
Checked by ______
Date ______
Designed by ______
Date ______
Checked by ______
Date ______

Approved by ______ Date ______

Public Works Director R.C.E. XXXXX

Sheet 1 of 6 Sheets

39331 OF 6 SHEET

SEE STREET IMPROVEMENT PLANS PER MARCH JOINT POWERS AUTHORITY FILE NO. MJ-073

VAN BUREN BLVD.

BUILDING 2
139,971 S.F.

1505.85 FF
1505.35 PAD

16 DOCK DOORS

NATWAR LANE

NATWAR LANE

BUILDING 1

WESTERN WAY

SEE STREET IMPROVEMENT PLANS PER CITY OF PERRIS FILE NO. 98-1351

SEE SHEET 3

SCALE: 1"=20'

PREPARED FOR:	FIRST INDUSTRY REALTY TRUST, INC. 898 N. PACIFIC COAST HIGHWAY STE. 175 EL SEGUNDO, CA 90245 PHONE: (310) 321-3813 EMAIL: MPIOLI@FIRSTINDUSTRIAL.COM
Thienes Engineering, Inc.	CIVIL ENGINEERING • LAND SURVEYING 14349 FIRESTONE BOULEVARD LA MIRADA, CALIFORNIA 90638 PH.(714)521-4811 FAX(714)521-4173

CITY OF PERRIS
PUBLIC WORKS DEPARTMENT

CONCEPTUAL UTILITY PLAN

FIRST MARCH LOGISTICS
BUILDING 2
NATWAR LANE

Designed by _____ Date _____ Checked by _____ Date _____	Approved by _____ Date _____	3933/2 OF 6 SHEET
Designed by _____ Date _____ Checked by _____ Date _____	Public Works Director _____ R.C.E. XXXXX	
	Sheet 2 of 6 Sheets	

Last Updated:11/10/21
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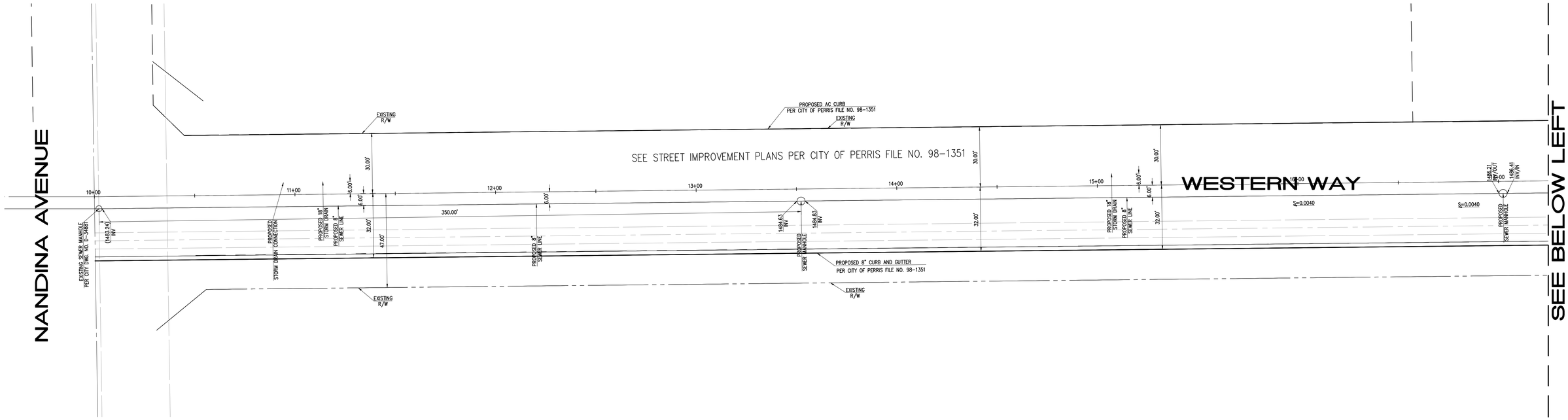
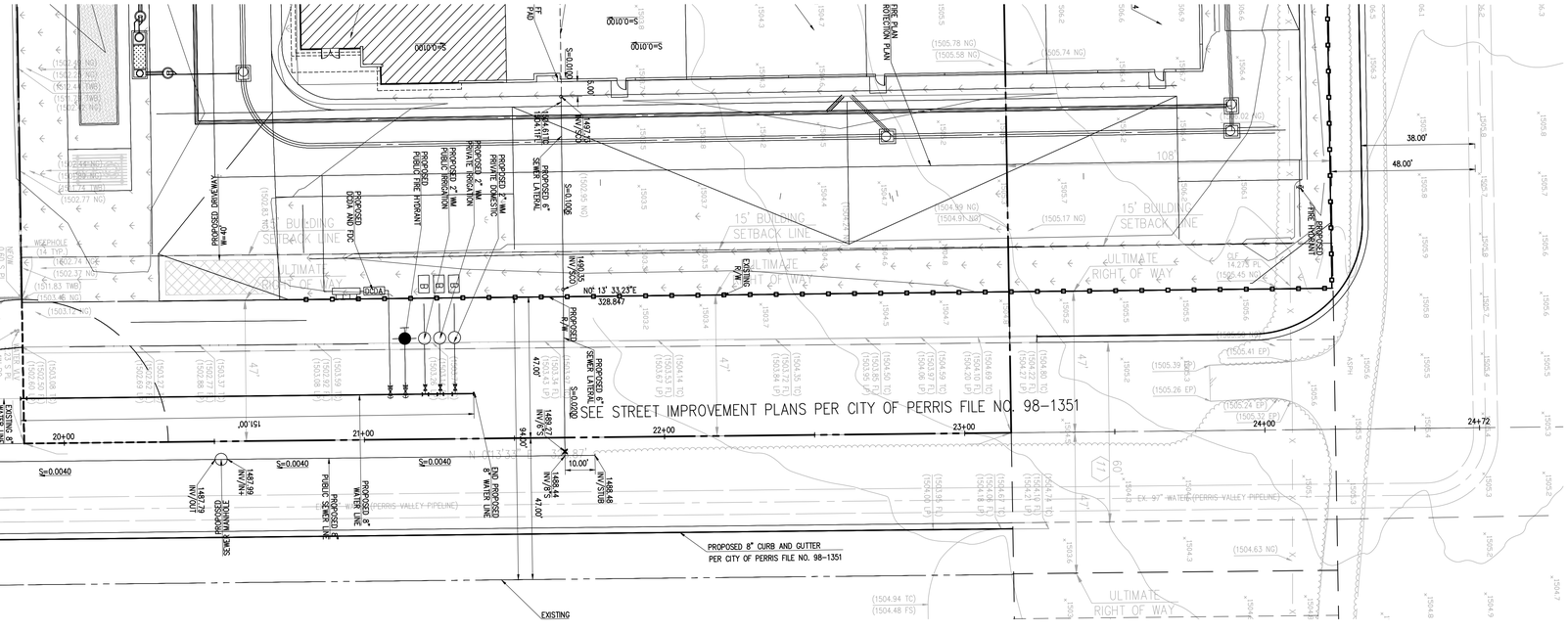
NANDINA AVENUE

SEE BELOW LEFT

SEE ABOVE RIGHT





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SCALE: 1"=20'

Last Update:11/10/21
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CITY OF PERRIS
PUBLIC WORKS DEPARTMENT

CONCEPTUAL UTILITY PLAN

FIRST MARCH LOGISTICS BUILDING 2
NATWAR LANE

3933/3 OF 6 SHEET

PREPARED FOR:

FIRST INDUSTRY REALTY TRUST, INC.
898 N. PACIFIC COAST HIGHWAY STE. 175
EL SEGUNDO, CA 90245
PHONE: (310) 321-3813
EMAIL: MPIOLI@FIRSTINDUSTRIAL.COM

Designed by _____ Date _____
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Approved by _____ Date _____

Public Works Director _____ R.C.E. XXXXX

Sheet 3 of 6 Sheets

BUILDING 2
139,971 S.F.

16 DOCK DOORS

SEE PUBLIC SD PLAN - SHEETS 5-6

SEE PUBLIC SD PLAN - SHEETS 5-6

LINE A

LINE B

NATWAR LANE

WESTERN WAY

SEE STREET IMPROVEMENT PLANS FOR CITY OF PERRIS FILE NO. 98-135

SCALE: 1"=20'

0 10 20 40 60

PREPARED FOR:

FIRST INDUSTRY REALTY TRUST, INC.
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EL SEGUNDO, CA 90245
PHONE: (310) 321-3813
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PH:(714)521-4811 FAX(714)521-4173

CITY OF PERRIS
PUBLIC WORKS DEPARTMENT

CONCEPTUAL STORM DRAIN PLAN
FIRST MARCH LOGISTICS
BUILDING 2
NATWAR LANE

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Checked by _____ Date _____
Designed by _____ Date _____
Checked by _____ Date _____

Approved by _____ Date _____

Public Works Director _____ R.C.E. XXXXX

Sheet 4 of 6 Sheets

3933/4 OF 6 SHEET

MARCH AIR RESERVE BASE

BUILDING 1

BUILDING 2

NATWAR LANE

WESTERN WAY

NANDINA DRIVE

LINE A

FUTURE 10'X10' RCB
PER WEBB PLAN DATED 2/18/20

EXISTING 97" MWD WATER LINE
SEE PROJECT NUMBER 103962

(1493.20)
INV/GB

1494.46 BOT PROP. 84" S.D.
1491.04 TOP EXIST. 97" WAT.
S89°57'50"W 285.84' CLEAR
84" RCP S=0.0030

STA 12+93.59
END PIPE
1495.44 INV.

STA 12+06.51
± INV.
1495.18 INV.

REMOVE EXISTING 84" C.M.P. RISER
REMOVE EXISTING 84" RCP
PROTECT EXISTING MH

REMOVE EXISTING 24" C.M.P. RISER
REMOVE EXISTING 18" RCP
CAP AT R/W

ABANDON EXISTING
18" RCP

ABANDON EXISTING
18" RCP

EXISTING 97" MWD WATER LINE
SEE PROJECT NUMBER 103962

EXISTING 97" MWD WATER LINE
SEE PROJECT NUMBER 103962

EXISTING 97" MWD WATER LINE
SEE PROJECT NUMBER 103962

FUTURE 24" RCP
PER HUITT-ZOLLARS PLAN P8-1351
DATED 06/24/2020

S=0.0205

(1476.79)
INV/GB

FUTURE 10'X10' RCB
PER WEBB PLAN DATED 2/18/20

FUTURE HEADWALL
PER WEBB PLAN DATED 2/18/20

FUTURE OUTLET AT HEADWALL
PER WEBB PLAN DATED 2/18/20
1486.23 INV.

FUTURE CONNECTION
TO FUTURE 12'X10' RCB
PER PRELIMINARY WEBB
ALTERNATE 2 PLAN

STA. 9+93.16
E.P.
1494.39 INV.

STA. 9+87.82
1494.55 INV.
MANHOLE PER
R.C.F.C.&W.C.D.
MH253

STA. 7+89.78
1497.45 INV.

PROPOSED
EASEMENT

FUTURE 12'X10' RCB
PER PRELIMINARY
PERRIS VALLEY CHANNEL
LATERAL "B" STAGE 4

FUTURE 1 TON-HALF DEPTH
GROUTED RIP RAP
PER WEBB PLAN DATED 2/18/20

EXISTING
CHANNEL
FLOW LINE

Last Update:11/10/21
D:\3900-3999\3933\3933COP-05SDPUB.dwg

CITY OF PERRIS
PUBLIC WORKS DEPARTMENT

CONCEPTUAL STORM DRAIN PLAN
FIRST MARCH LOGISTICS BUILDING 2 NATWAR LANE

PREPARED FOR:
FIRST INDUSTRY REALTY TRUST, INC.
898 N. PACIFIC COAST HIGHWAY STE. 175
EL SEGUNDO, CA 90245
PHONE: (310) 321-3813
EMAIL: MPIOLI@FIRSTINDUSTRIAL.COM

Thienes Engineering, Inc.
CIVIL ENGINEERING * LAND SURVEYING
14349 FIRESTONE BOULEVARD
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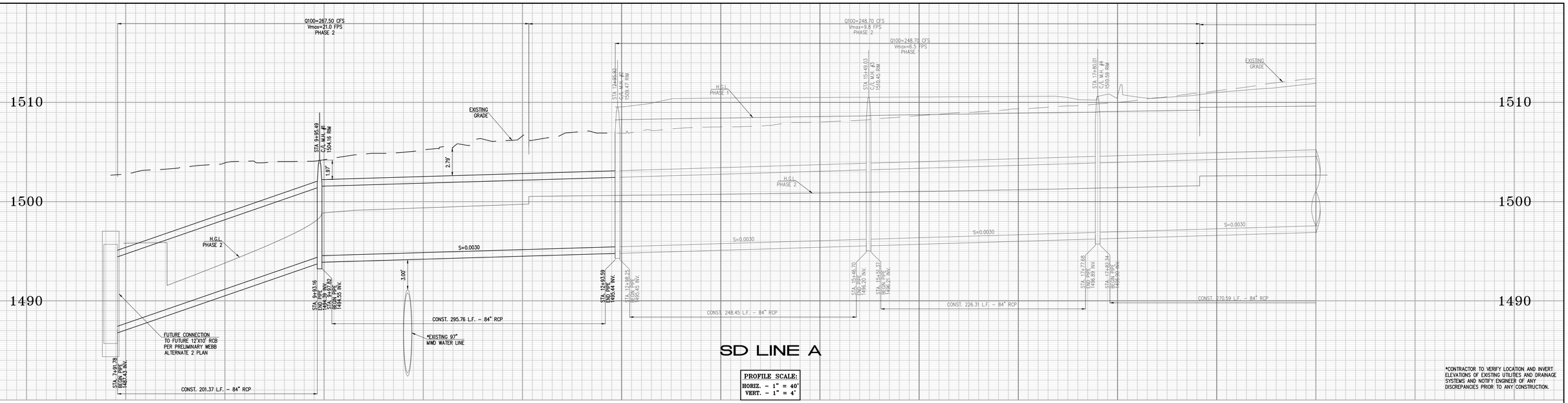
PH.(714)521-4811 FAX(714)521-4173

Designed by _____ Date _____
Checked by _____ Date _____
Designed by _____ Date _____
Checked by _____ Date _____

Approved by _____ Date _____
Public Works Director R.C.E. XXXXX

Sheet 5 of 6 Sheets

3933/5 OF 6 SHEET



SD LINE A

PROFILE SCALE:
HORIZ. - 1" = 40'
VERT. - 1" = 4'

*CONTRACTOR TO VERIFY LOCATION AND INVERT ELEVATIONS OF EXISTING UTILITIES AND DRAINAGE SYSTEMS AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO ANY CONSTRUCTION.

Last Update:11/10/21
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CITY OF PERRIS
PUBLIC WORKS DEPARTMENT

CONCEPTUAL PUBLIC STORM DRAIN PLAN

FIRST MARCH LOGISTICS BUILDING 2
NATWAR LANE

3933/6 OF 6 SHEET

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Designed by _____ Date _____
Checked by _____ Date _____
Designed by _____ Date _____
Checked by _____ Date _____

Approved by _____ Date _____

Public Works Director _____ R.C.E. XXXXX

Sheet 6 of 6 Sheets

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

ARAGÓN GEOTECHNICAL, INC.
Consultants in the Earth & Material Sciences

December 21, 2020
Project No. 4673-SFLI

First Industrial Realty Trust, Inc.
898 N. Pacific Coast Highway, Suite 175
El Segundo, California 90245

Attention: Mr. Matt Pioli

Subject: WQMP Site Assessment & Infiltration Test Results
Building 2, Freeway 215 & Natwar Lane Project (APN 294-180-032)
City of Perris, Riverside County, California.

Dear Mr. Pioli:

In accordance with our proposal dated October 27, 2020, Aragón Geotechnical Inc. (AGI) has completed site testing and analyses of soil infiltration potential. Our conclusions are intended to support the creation of a site-specific water quality management plan (WQMP) and final design of stormwater best management practices (BMPs) at the listed project. Data and recommendations for BMP engineering design and construction of low impact development (LID), hydromodification, and pollution prevention features are required by the Santa Ana Region (SAR) *Water Quality Management Plan* effective January 1, 2013. AGI services were performed concurrently with a preliminary geotechnical design investigation for the proposed logistics building. Subsurface explorations, geological reconnaissance and research, and characterization of the local groundwater regime were requirements for both of AGI's studies. Our primary tasks for the infiltration feasibility assessment consisted of (1) Review of local and regional geologic, soil, and groundwater elevation maps plus proprietary data from other nearby AGI investigations; (2) Machine drilling of percolation test borings to estimated elevations of a proposed infiltration system, using a hollow-stem auger drilling rig; (3) Field tests of water absorption rates; and (4) Preparation of this results report. Calculations or recommendations for the design precipitation event intensity or duration, climate coefficients, storm water retention or treatment flow rates, or treatment volumes were outside of AGI's scope.

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www.aragongeo.com

Proposed Construction

AGI was furnished with a conceptual development plan, Scheme 12 dated October 12, 2020, prepared by the Irvine firm of HPA Architecture. The site plan included a proposed structure outline but lacked existing topographic contours and preliminary finish surface elevations. However, site topography was shown on an earlier design concept for others, which had depicted conversion of the property into a semi-truck trailer parking lot. Building 2 would be a smaller companion to First industrial's Building 1 industrial project to the west. The latter 23.2-acre site was investigated by AGI in 2019. Data from the latter study have influenced our interpretations and conclusions for development on APN 294-180-032.

Building 2 would have a ground-floor area of 133,060 square feet. Fifteen dock doors would face south. Around the building, asphalt or more likely a mix of asphalt and PCC paving for automobiles and semi-truck traffic is anticipated. The plans show vehicle ingress-egress would be from both Natwar Lane, an industrial cul-de-sac, and from newly built Western Way bordering the eastern side of the project. The warehouse building is expected to comprise concrete panel tilt-up walls resting on shallow strip footings, arrays of interior columns for roof support, and an industrial concrete slab-on-grade floor.

One BMP location for stormwater management has been assessed by this study. Per the previous owner's design concept, a proposed subterranean chamber array site in the southeastern corner of the project had originally been assumed. The Building 2 concept could utilize the same BMP style, or could consider a standard open basin. AGI's data are considered applicable to either option. The BMP would be expected to be in the lowest-elevation quadrant in the parcel, just west of Western Way and an already-built Metropolitan Water District buried water transmission pipeline (the 96-inch-diameter welded-steel Perris Valley Pipeline). The area is close to existing metal buildings and a canopy owned by a cardboard recycling business south of the project limits. The tested infiltration boundary surface elevation was selected by AGI at 11 feet below current grade. This deeper-than-average prospective chamber-array or basin floor was selected to maximize possible capture volume, while also assessing less-favorable soils detected during exploration that would impede complete clearance of any selected BMP under a design capture event. Overflows or controlled discharges would presumably be directed east into Western Way.

Subsurface Investigation and Permeability Testing

Site-wide, 4 exploratory soil borings were drilled on December 1, 2020 with a truck-mounted hollow-stem auger rig for the project geotechnical investigation. At the time of AGI's investigations, the project site consisted of a very flat, vacant, and formerly agricultural open field. One boring was specifically placed in the assumed BMP area. Other geotechnical borings were situated within the building envelope and the proposed dock-door yard area. The Building 2 geotechnical borings, plus AGI's year-2019 Building 1 data, aided our feasibility assessments for alternative shallow basins, bioswales, or chambers beyond the preliminarily selected location. All exploratory borings were continuously observed by an AGI civil engineer and logged for materials classifications, interpreted materials origins, relative density as determined from *in situ* penetration tests, presence of groundwater, and other characteristics that can influence water uptake rates. The exploration borings were backfilled with tamped auger cuttings. No permanent wells were created. The Field Boring Log for the BMP-specific exploration hole B-3 is included as an attachment. A modified version of the conceptual plan depicting the structural outline, paved areas, geotechnical and infiltration-related soil borings, and locations of tests done for this study is presented on Plate No. 1 at the back of this report.

AGI's infiltration determinations were based on technical guidelines for percolation testing in small-diameter boreholes. Most California jurisdictions including co-permittees of the Riverside County master discharge permit accept percolation test results for stormwater BMP design, with the proviso that percolation test data be adjusted to an equivalent one-dimensional (1-D) infiltration velocity. Boreholes of course infiltrate water both vertically and laterally. AGI elected to use the constant-head U.S. Bureau of Reclamation Well Permeameter Method (USBR Procedure 7300-89). Measured water takes in units of vol/time are converted by formula into an equivalent infiltration test velocity in units of length/time. All field exploration, percolation testing, and derivations of equivalent infiltration rates were performed by or under direct supervision of the following qualified professionals:

- Fernando Aragón, P.E.: California Registered Civil Engineer and Geotechnical Engineer, with over 15 years of professional experience.
- Mark G. Doerschlag: California Professional Geologist and Certified Engineering Geologist, with over 35 years of professional experience.

The 11-foot-deep permeameter holes were supplied with a 3¼-inch O.D. PVC perforated pipe encased in filter fabric material. Well-bore annular gravel filter packs were added to roughly 6 feet above the hole bottom. Pre-saturation of the test bores was completed with one filling of each hole to the top of the gravel more than a day before testing.

Heads of 5.0 feet (60 inches) were assigned for all 4 tested locations. AGI's intent was to test the roughly 5 feet of materials composing possible bottom and sidewall surfaces for a chamber array. The intended 5.0-foot interval also exceeded the minimum-desired test interval of at least 10 times the 4-inch borehole radius. Regular garden hoses provided pressurized municipal water to each test site. Feed water was introduced at the bottom of infiltration test holes. Maximum-available delivery rates of about 8 gallons per minute were far higher than water-take rates. Water volumes delivered per time-trial increment were directly measured to the nearest 0.1 gallon using a Sensus SR-II magnetic-drive positive displacement water meter. A gate valve downstream of the meter was adjusted as needed to maintain the specified 5.0-foot test head. Absolute water level was monitored with an electric meter probe inserted into a narrow plastic pipe dropped inside the primary perforated pipe. Total input durations of about 2½ hours would normally be sufficient to arrive at near-steady-state water takes; however, two tests were ended at only 60 minutes due to extremely low takes of under one gallon per hour. A typical permeameter test would show incremental (constant-head) rates asymptotically approaching a minimum rate. Record sheets with the field measurement data are included in the Appendix.

FINDINGS

Local Soil Conditions

Surficial soils in the proposed BMP chamber array consist of brown and yellowish-brown colored and medium dense silty sand (Unified Soil Classification System symbol SM). Slightly clayey and lightly cemented conditions occur near 3 feet deep. The base of the surficial subunit is marked by an erosional contact at an approximate depth of 9 feet.

Below 9 feet, materials constitute very dense, partly cemented, and slightly clayey massive silty sand (symbol SM). Fines proportions of around 35% and distinctively weathered coarse sand grains are characteristic. Clayey sand (symbol SC) composes some zones in the interval between 15 and 26½ feet below grade. Vertical variability is gradational in nature, and not marked by sharp stratigraphic boundaries.

From a soil science viewpoint, the National Resources Conservation Service classifies site surficial materials as Greenfield sandy loam GyA. Greenfield soils characteristically do not have indurated duripans, although as noted above there is some cemented soil around 3 feet below grade based on our exploration. Other parts of the parcel and large areas of the Building 1 site feature characteristics of the very common Monserrate soil series in the Perris area, which is marked by hard cemented duripans. Sandy loam GyA is assigned to hydrologic soil group A. Soil classifications and hydrologic soil groups are usually limited to materials shallower than 60 inches or so; thus, we would expect that any reasonably deep basin or chamber-type BMP improvement will completely bypass NRCS soil series and cannot be qualified solely on the basis of a NRCS hydrologic soil group.

AGI's geotechnical studies identified the site materials as early to middle Pleistocene alluvium (unit $Qvof_a$ of Morton & Miller, 2006). Regional maps generally omit shallow veneers of younger sediments that are frequently found near the edges of the Perris Plain. We interpret materials shallower than 9 feet at the BMP site as not technically part of the $Qvof_a$ unit. Weaker soil development would be consistent with a late Pleistocene age assignment. Most of the Perris Plain where the project is sited is considered part of the "Paloma" depositional surface of Woodford et al. (1971), typified by fairly strongly developed illuvial clay and calcic horizons atop the older parent materials. Detrital sediments have originated from granitic bedrock terrains located west and north of the project. The alluvium buries and conceals several deep erosional channels carved into granitic basement bedrock that can be considered tributaries to an ancestral San Jacinto River. The maximum depth of the $Qvof_a$ unit at the project site is not known with certainty, but may be approximately 550 feet based on geophysical survey data (AECOM, 2013). Basement rock rises rapidly toward the Interstate 215 freeway, where it is possibly only 50 to 70 feet deep.

Groundwater

AGI's BMP exploration boring encountered a thin saturated soil zone at around 23 feet deep. A similar minor perched-water horizon was noted in another geotechnical boring west of the BMP at roughly 24 feet deep. We would interpret that the same stratigraphic horizon was saturated in both holes. All other soil borings remained dry.

The project site is within the West San Jacinto groundwater subbasin. According to many years of monitoring well records reviewed through the State GeoTracker website,

groundwater within a radius of about a half-mile from the property becomes shallower to the west and north, with minimum measured depths occasionally under 20 feet. Groundwater gradients steepen near the site. The hydrogeologic regime is complex due to the heterogeneity of the alluvial basin fill, substantial erosional relief of the buried bedrock surfaces under the northern Perris Valley, and municipal groundwater pumping. There is a well-documented record for rising groundwater levels inside the adjacent March Air Reserve Base (ARB). Rising water levels are attributed to changing land uses in the Perris Plain vicinity, such as the cessation of formerly widespread agricultural pumping and introduction of irrigated suburban tracts, golf courses, and the Riverside National Cemetery near the project. Nonetheless, AGI concludes that minimum depths to *permanent* groundwater in the BMP basin area have always been in excess of 30 feet.

Jurisdictional requirements usually mandate a minimum separation between stormwater BMPs and groundwater of at least 10 feet and up to 40 feet (for very permeable soils). Data thus indicate there should be zero limitations on chamber design or construction due to groundwater at the project.

Permeameter Test Results

The table below summarizes the obtained field test results. Based on the drilling log, the test results are interpreted as representative of poor uptake capacity in very dense and cemented materials found below approximately 9 feet. Very little water was infiltrated. The single test at Site B that had any noticeable take volume probably intercepted one or more very thin cleaner-sand lenses known to exist in other areas above the 9-foot depth. We would expect that the marginally better performance would be short-lived and limited in volume.

Test Location	Tested Interval (depth below existing ground surface, feet)	Constant-Head Percolation Rate (gal/hr)	Field Test Infiltration Velocity I_t (in/hr)
A (West end)	5.8 - 10.8	0.3	<0.1
B	5.8 - 10.8	7.5	0.15
C	5.2 - 10.2	0.9	<0.1
D (East end)	6.0 - 11.0	0.6	<0.1

Measured percolation rates were converted to 1-D infiltration velocities by the USBR 7300-89 formula:

$$Ks = \frac{Q[\ln(H/r + (H/r + 1)^{0.5})-1](\mu_T/\mu_{20})}{2\pi H^2}$$

Where:

K_s = saturated hydraulic conductivity (infiltration rate, inches/hour)
H = height of water in well (inches)
Q = percolation flow rate from selected time interval (cubic inches/hour)
r = effective radius of well (inches)
μ_T = viscosity of water at water temperature, t
μ_{20} = viscosity of water at 20˚C

The calculated result K_s is close to but not exactly the same as an infiltration test velocity I_t calculated from a ring infiltrometer test. The minor difference is ignored for stormwater BMP design.

The calculated velocities would be judged very poor for infiltration BMPs. We think the results correctly characterize the very dense and fines-rich test-area sediments deeper than 9 feet. We do not think there are significantly better soil conditions above or below the tested intervals.

Conclusions, Recommendations, and Advice

The SAR *Water Quality Management Plan* explicitly requires any infiltration-based BMP to be clear of water in 72 hours or less after the design storm event. Mathematically, for typical volume-based BMP improvements, this requires field infiltration velocities I_t of roughly 1.6 inches per hour or faster. There also must be adequate storage and transmission velocities some distance below the BMP to accept design volumes, i.e., indurated materials below the BMP will ultimately stop absorption and cause system failure. AGI recommends a mean field-test infiltration test velocity of **zero** inches per hour for large basins or a chamber array. Filtration, detention, and discharge from the site appears to be the only feasible plan to manage water quality and hydromodification goals.

Our reviews of geotechnical boring data did not identify any other site areas that could be considered favorable for either shallow open-basin BMPs or subterranean installations. Landscape areas can be reasonably assigned to "self-capture" status, however, if provided

with suitably loose and amended soils. Soils within 3 feet of grade are not judged suitable for alternative options such as a permeable surface (open-graded gravel, permeable asphalt, or permeable concrete) with a crushed-rock reservoir layer.

It is important to note the test velocities were obtained in carefully prepared test holes as free as practicable of surface sealing and boundary-zone compaction. Field performance of any designed LID improvement could be markedly lower than AGI's achieved results if precautions are not maintained during construction. Even for "zero" absorption systems, incidental volumes that cannot leave the BMP will need to be taken up by local soil. We still recommend that drawings and specifications state that BMP construction practices must minimize excavation bottom compaction. Excavations should be made with backhoes, grade-alls, or excavators working from beside the chamber array bottom. An overall goal of preventing heavy equipment from rolling or tracking any infiltration system excavation bottom should be understood.

Lastly, AGI concludes from test and exploration findings that the selected BMP location should neither cause structural concerns, nor result in significantly increased risks to the proposed trailer lot building or neighboring properties from slope instability, liquefaction, or settlement. Future grading plan reviews are recommended, however, to analyze bottom elevations and lateral setbacks to Western Way and an existing block wall along the southern property line if the southeastern corner is used for stormwater hydromodification storage. We add that MWD may have additional setback requirements for treatment control BMPs near their Perris Valley Pipeline.

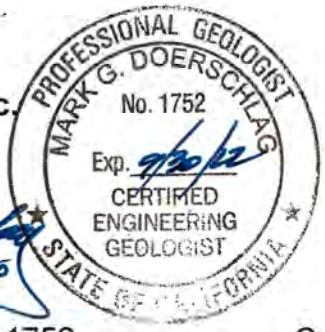
Investigation Limitations

The findings in this report may require modification as a result of later field observations. Our opinions have been based on the results of limited testing within an assumed water-quality BMP site combined with extrapolations of soil conditions away from the test bores. The nature and extent of variations within or beyond the proposed BMP may not become evident until construction. If conditions encountered during construction vary significantly from those indicated by this report, or BMP type or location changes are proposed, then additional site testing, preparation recommendations, or as-built tests may be needed to achieve correct designs for the treatment control BMP system(s).

Closure

This report was prepared for the use of First Industrial Realty Trust, Inc., their civil engineers, and authorized designates in cooperation with this office. Our findings and recommendations were prepared in accordance with generally accepted professional principles and local practice in the fields of engineering geology and geotechnical engineering. We make no other warranties either expressed or implied. Questions concerning the test results or design advice are invited, and may be directed to the undersigned at our Riverside office at (951) 776-0345 or via email at www.aragongeo.com.

Respectfully submitted,
Aragón Geotechnical, Inc.



Mark G. Doerschlag, CEG 1752
Engineering Geologist

C. Fernando Aragón, P.E., M.S.
Geotechnical Engineer, G.E. 2994

Signed 12-29-20

MGD/CFA:mma

Attachments: Exploratory Boring Log, Boring B-3
Permeameter Field Test Data, Sites A through D
Plate No. 1, Geotechnical Map with test locations (fold-out)

Distribution: (4) Addressee

REFERENCES

AECOM Technical Services, Inc., 2013, *Final 2011-2012 Annual Monitoring Report, Long-Term Groundwater Monitoring Program, March Air Reserve Base, Former March Air Force Base, California:* contractor's report dated December 9, 2013 (Contract No. FA8903-09-D-8547-0007, Project No. 60271680-0009AG), digital download from State of California GeoTracker website, https://geotracker.waterboards.ca.gov/

Aragón Geotechnical, Inc., 2019, *Preliminary Geotechnical Investigation, Proposed "Freeway 215 & Natwar Lane" Project, City of Perris, Riverside County, California:* consultant's report dated July 19, 2019 (Project No. 4528-SFI), 39 p. and appendices.

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FIELD LOG OF BORING B - 3

Sheet 1 of 2

Project: ***NATWAR LANE TRAILER PARKING LOT***

Location: ***CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.***

Date(s) Drilled:	**12/1/20**	Logged By:	**L. Arguello**
Drilled By:	**GP Drilling**	Total Depth:	**26.5 Ft.**
Rig Make/Model:	**Mobile B-61**	Hammer Type:	**Automatic trip**
Drilling Method:	**Hollow-Stem Auger**	Hammer Weight/Drop:	**140 Lb./30 In.**
Hole Diameter:	**8 In.**	Surface Elevation:	**± 1503.2 Ft. AMSL per site plan**

Comments: Exploration boring at proposed BMP chamber array.

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	1500			SM	Silty Sand: Yellowish brown; loose 0-1', becoming medium dense below; slightly moist; fine to coarse grained sand in very silty matrix (estimated 40% fines at top); massive. Tilled and bioturbated at top 3 feet. Interpreted slightly younger fan sediments over Paloma-age alluvium. [Very old alluvium]				
5	1495	SPT 4 6 6 N=12		SM	← Silty sand, grades yellowish brown, uncemented, predominantly fine-grained. Drill rate slows; interpreted contact.				
10	1490	SPT 19 32 46 N=78		SM	Silty Sand: Yellowish brown; very dense; slightly moist; fine to coarse-grained sand with weathered grains; slightly clayey, with carbonate cementation; not visibly porous. Top may be erosional contact. [Very old alluvium].				
15									

Continued on next sheet.

FIELD LOG OF BORING B - 3

Sheet 2 of 2

Project: ***NATWAR LANE TRAILER PARKING LOT***

Location: ***CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.***

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
15		SPT 13 21 32 N=53		SM	Silty Sand: Dark yellowish brown; very dense; slightly moist; fine to coarse-grained sand with weathered grains; slightly clayey and cohesive; not visibly porous and not distinctly stratified. [Very old alluvium].				
	1485								
20		SPT 10 12 12 N=24		SM	← Silty sand, becomes medium dense, mostly fine to medium grained, massive, common MnO spots.				
	1480						▼		
25		SPT 6 12 19 N=31		SM, SC	← Layered silty sand and clayey sand, continues mostly fine to medium grained.				

Bottom of boring at 26.5 ft.
Perched groundwater stabilized at 23.1 ft.
Boring backfilled with compacted soil cuttings.

USBR 7300-89 Vadose Zone Well Permeameter Data Sheet

Project: NATWAR TRAILER LOT		Test Bore No. A1 (FAR WEST)	
Project No. 4673-SFLI		Test Date: 12/11/2020	
Site Location: CHAMBER ARRAY		Tested By: KGL	
Boring Bottom Depth (bgs): 10'-10"		Water Temp:	Soil Temp: ~65°F
Boring Diameter: 8"		USCS Soil Class.: SM (cemented)	
Groundwater Depth (bgs): 23.1'		% Pass #200: EST. 35%	
Notes:			

Time	Time Interval (min.)	Total Elapsed Time (min.)	Initial Meter Reading (gal)	Final Meter Reading (gal)	Total Discharge Volume (gal)	Wetted Length (in.)	Flow Rate Q (gal/hr)
9:50 10:10	20	20	1695.9	1696.0	0.1	5'	0.3
10:10 10:30	20	40	1696.0	1696.1	0.1		0.3
10:30 10:50	20	60	1696.1	1696.2	0.1		0.3
10:50 11:10	20	80	1696.2	1696.3	0.1		0.3
11:10 11:30	20	100	1696.3	1696.5	0.2		0.6
11:30 11:50	20	120	1696.5	1696.6	0.1		0.3
11:50 12:10	20	140	1696.6	1696.7	0.1		0.3
				FAIL			

USBR 7300-89 Vadose Zone Well Permeameter Data Sheet

Project: NATWAR TRAILER LOT		Test Bore No. B	
Project No. 4673- SFLI		Test Date: 12/11/2020	
Site Location: CHAMBER ARRAY		Tested By: KGL	
Boring Bottom Depth (bgs): 10'-9"		Water Temp:	Soil Temp: ±65°F
Boring Diameter: 8"		USCS Soil Class.: SM (cemented)	
Groundwater Depth (bgs): 23.1'		% Pass #200: ESTIMATED 35%	
Notes:			

Time	Time Interval (min.)	Total Elapsed Time (min.)	Initial Meter Reading (gal)	Final Meter Reading (gal)	Total Discharge Volume (gal)	Wetted Length (in.)	Flow Rate Q (gal/hr)
12:25 12:45	20	20	702.5	704.7	2.2	5'	6.6
12:45 1:05	40	20	704.7	706.3	1.6	↓	4.8
1:05 1:25	60	20	706.3	708.0	1.7		5.1
1:25 1:45	80	20	708.0	709.8	1.8		5.4
1:45 2:05	100	20	712.0	714.3	2.3		6.9
2:05 2:25	120	20	714.3	716.8	2.5		7.5
2:25 2:45	140	20	716.8	719.4	2.6		7.8
2:45 3:05	160	20	719.4	721.9	2.5	↓	7.5

USBR 7300-89 Vadose Zone Well Permeameter Data Sheet

Project: NATWAR TRAILER LOT		Test Bore No. C	
Project No. 4673-5FL1		Test Date: 12/11/20	
Site Location: CHAMBER ARRAY		Tested By: MGD	
Boring Bottom Depth (bgs): 10'2"		Water Temp:	Soil Temp: 65° EST.
Boring Diameter: 8"		USCS Soil Class.: SM (cemented)	
Groundwater Depth (bgs): 23.1'		% Pass #200: ± 35%	
Notes: PRE-SOAKED TO +5' 2 DAYS PRIOR.			

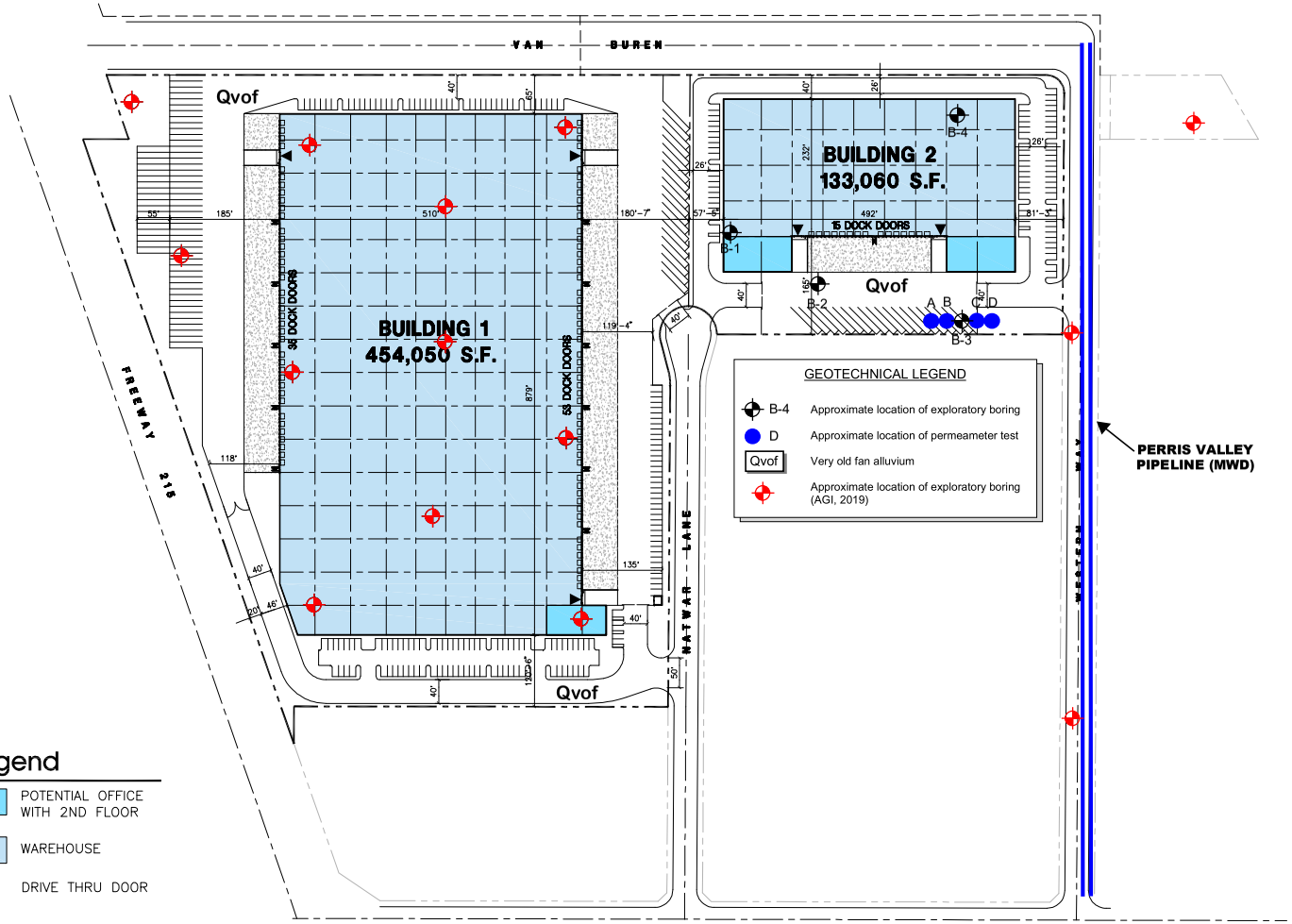
Time	Time Interval (min.)	Total Elapsed Time (min.)	Initial Meter Reading (gal)	Final Meter Reading (gal)	Total Discharge Volume (gal)	Wetted Length (in.)	Flow Rate Q (gal/hr)
12:30							
12:50	20	20	9003.2	9003.7	0.5	60"	1.5
12:50							
1:10	20	40	9003.7	9004.0	0.3	↓	0.9
1:10							
1:30	20	60	9004.0	9004.3	0.3	↓	0.9
		END TEST - FAILED RATE					

USBR 7300-89 Vadose Zone Well Permeameter Data Sheet

Project: NAVWAR TRAILER LOT		Test Bore No. D	
Project No. 4673-SFL		Test Date: 12/11/20	
Site Location: CHAMBER ARRAY		Tested By: MGD	
Boring Bottom Depth (bgs): 132" (11.0')		Water Temp:	Soil Temp: ~65°F
Boring Diameter: 8"		USCS Soil Class.: SM (cemented)	
Groundwater Depth (bgs): 23.1'		% Pass #200: ESTIMATED 35% @ bot.	
Notes:			

Time	Time Interval (min.)	Total Elapsed Time (min.)	Initial Meter Reading (gal)	Final Meter Reading (gal)	Total Discharge Volume (gal)	Wetted Length (in.)	Flow Rate Q (gal/hr)
1:40							
2:00	20	20	10.4	10.9	0.5	60"	1.5
2:00							
2:20	20	40	10.9	11.2	0.3	↓	0.9
2:20							
2:40	20	60	11.2	11.4	0.2	↓	0.6
		END TEST -	FAILING	RATE			< 1 gph

CAUTION: IF THIS SHEET IS NOT 30"X42", IT IS A REDUCED PRINT



Legend

- POTENTIAL OFFICE WITH 2ND FLOOR
- WAREHOUSE
- ▼ DRIVE THRU DOOR

Note: This is a conceptual plan. It is based on preliminary information which is not fully verified and may be incomplete. It is meant as a comparative aid in examining alternate development strategies and any quantities indicated are subject to revision as more reliable information becomes available.

north

1" = 80'
0 80 160 240

Aerial Map

Tabulation

	BLDG.1	BLDG.2	TOTAL	
SITE AREA				
in sq. ft.	899,036	273,655	1,172,691	s.f.
in acres	20.6	6.3	26.9	ac
BUILDING AREA				
Office 1st floor	5,000	5,000	10,000	s.f.
Office 2nd floor	5,000	5,000	10,000	s.f.
Warehouse	444,050	123,060	567,110	s.f.
TOTAL	454,050	133,060	587,110	s.f.
COVERAGE	50.5%	48.6%	50.1%	
AUTO PARKING REQUIRED				
1st 20K @ 1/1,000 sf	20	20	40	stalls
2nd 20K @ 1/2,000 sf	10	10	20	stalls
Over 40K @ 1/5,000 sf	83	19	102	stalls
TOTAL	113	49	162	stalls
AUTO PARKING PROVIDED				
standard (9'x19')	180	74	234	stalls
TRAILER PARKING PROVIDED				
trailer (12' x 55')	84	19	103	stalls

Zoning Ordinance for City

Zoning Designation - Perris Valley Commercial Center SP (PVCC-SP) - Light Industrial

MAXIMUM FLOOR AREA RATIO

F.A.R. - .75

MAXIMUM LOT COVERAGE

Coverage - 50%

SETBACKS

Front Yard / Street side	Side Yard
Local / Collector St. - 10'	Adjoining non-residential - 0'
Arterials - 15'	Adjoining residential - 20'
Expressway/Freeway - 20'	
Rear Yard	
Adjoining non- residential - 0'	
Adjoining residential - 20'	

LANDSCAPE REQUIRED

Percentage	12%			
LANDSCAPE REQUIRED				
Percentage (base on net)	10.1%	12.7%	10.7%	
in sq. ft.	91,050	34,867	125,917	s.f.

HPA architecture

AGL

GEOTECHNICAL MAP

BUILDING 2, NATWAR LANE INDUSTRIAL PROJECT, PERRIS, CALIFORNIA

PROJECT NO. 4673-SFLI | DATE: 12/21/20 | PLATE NO. 1

Conceptual Site Plan

Freeway 215 & Natwar Lane

City of Perris, CA

FIRST INDUSTRIAL REALTY TRUST

18831 Bardeen Ave. - Ste. #100
Irvine, CA 92612
(949) 863-1770
www.hparchs.com

October 12, 2020/ Job #19100

Scheme 12

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use (NOT APPLICABLE)

Phase I Environmental Site Assessment

APN 294-180-032
Perris, California 92571

December 15, 2020

First Industrial Realty Trust, Inc.
One North Wacker Drive, Suite 4200
Chicago, IL 60606

Project Number 20-11-009

Prepared by:

1938 Kellogg Avenue, Suite 116
Carlsbad, CA 92008
(760) 585-7070
www.weisenviro.com

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(760) 585-7070
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December 15, 2020

Mike Reese
First Industrial Realty Trust, Inc.
One North Wacker Drive, Suite 4200
Chicago, IL 60606

Subject: Phase I Environmental Site Assessment
APN 294-180-032
Perris, California 92571
Project Number 20-11-009

Dear Mr. Reese:

Weis Environmental, LLC has completed the contracted environmental consulting services for the above-referenced project. The services were performed in accordance with our proposal and agreement fully executed by all parties. The Phase I Environmental Site Assessment has been performed in accordance with ASTM International (ASTM) Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM Designation E1527-13 and Title 40 of the Code of Federal Regulations (40 CFR) Part 312. We appreciate the opportunity to be of service to you on this project. Please contact us if you have any questions or comments regarding this report or if we can be of further assistance.

Sincerely,

Weis Environmental, LLC

Daniel Weis, R.E.H.S.
Environmental Manager

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FIGURES

APPENDICES

1.0 INTRODUCTION

This report presents the methods and findings of a Phase I Environmental Site Assessment (ESA) of the property identified by Riverside County Assessor's Parcel Number (APN) 294-180-032, in the City of Perris, Riverside County, California (Site) performed in conformance with the contract/agreement for this assignment and the scope and limitations of ASTM Standard Practice E1527-13 and United States Environmental Protection Agency (EPA) Standards and Practices for All Appropriate Inquiries (AAI) as published in 40 Code of Federal Regulations (CFR) Part 312. EPA promulgated the AAI rule that became effective in November 2006 and has indicated that the ASTM E1527 practice is consistent with the requirements of AAI and may be used to comply with the provisions of the AAI rule. This assessment was also completed in accordance with the First Industrial Realty Trust Scope of Work for Phase I ESAs.

1.1 Purpose

The purpose of the ASTM E1527 practice (framework for this Phase I ESA) is to define good commercial and customary practice in the United States of America for conducting an ESA of a parcel of real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (Title 42 United States Code (U.S.C.) Section 9601)) and petroleum products. As such, this practice is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability (hereinafter, the "landowner liability protections," or "LLPs"): that is, the practice that constitutes all appropriate inquiries into the previous ownership and uses of the property consistent with good commercial and customary practice as defined at 42 U.S.C. Section 9601(35)(B).

In defining a standard of good commercial and customary practice for conducting this Phase I ESA of the Site, the goal of the processes established by the ASTM E1527 practice is to identify, to the extent feasible, recognized environmental conditions. The term recognized environmental conditions is defined as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. In addition, controlled recognized environmental conditions, historical recognized environmental conditions and/or de minimis conditions, if identified during the completion of the assessment, are discussed herein. Definitions of these terms and other key terminology relevant to the practice are included in Section 14.0 of this report.

1.2 Scope of the Assessment

In general terms, this Phase I ESA included the acquisition of readily available/accessible and practically reviewable regulatory records and historical information, a site reconnaissance, interviews, and preparation of this written report of findings. A more detailed description of the four primary components of the Phase I ESA is presented below.

Records Review - A review of Federal, State, Tribal, and local standard ASTM and non-ASTM regulatory databases for a myriad of environmental identifiers including but not limited to properties with underground storage tanks (USTs), properties with leaking USTs, properties that have reported spills/releases that did not occur from a leaking UST, businesses that utilize hazardous materials and/or

generate hazardous waste and hazardous waste disposal locations. The regulatory review may also include public records requests with one or more Federal, State, Tribal and/or local agencies. A review of historical sources is also completed to help ascertain previous land uses of the property in question and in the surrounding area.

Site Reconnaissance - A property inspection and viewing of adjacent and surrounding properties for conditions that could be recognized environmental conditions.

Interviews - Interviews with present and past owners, operators and/or occupants of a property and local government officials.

Reporting - Evaluation of the information gathered during the completion of the Phase I ESA and the subsequent preparation of a written report.

1.3 Limitations and Exceptions

Concerns regarding liability under the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. 9601 et seq. (CERCLA) and analogous State laws, have been a primary driver for Phase I ESA assignments in commercial real estate transactions. While the ASTM E1527 practice can be used in many contexts, a familiarity with CERCLA and its potential LLPs is critical in understanding and applying the ASTM E1527 practice. We advise consultation with legal counsel if further inquiry or information is desired.

AAI represents the minimum level of inquiry necessary to support the LLPs. However, it is important to understand that additional inquiry ultimately may be necessary or desirable for legal as well as business reasons depending upon the outcome of this inquiry and the particular risk tolerances of a given user. For example, additional inquiry may assist a user of a Phase I ESA in determining whether he or she would have continuing obligations in the event he or she acquires a given property and may also assist the user in defining the scope of future steps to be taken to satisfy such obligations. In addition, a user may be concerned about business environmental risks or non-scope ASTM considerations that do not fall within the definition of a recognized environmental condition. In addition, this assessment did not include subsurface or other invasive exploration. Users are also cautioned that Federal, State, Tribal and local laws may impose environmental assessment obligations that are beyond the scope of the ASTM E1527 practice.

The evaluation, opinion and conclusions presented herein are based solely on visual observations and regulatory, historical, and personal knowledge related information that existed at the time our assessment was completed. The use of the gathered information is exclusively for the purposes outlined in this report and only for the Site. Our firm can make no warranty, either express or implied, except that the services conducted were performed in accordance with generally accepted environmental assessment practices applicable at the time and location of the assessment and that the conclusions of the assessment have been based in part on professional judgment/experience, an interpretation of readily available data and the standard of care normally followed by similar professionals practicing in a similar locale and under similar circumstances. Any opinions presented cannot apply to Site changes of which our firm is unaware and has not had the opportunity to evaluate. In addition, this report cannot feasibly include any evaluation of undocumented activities at the Site or on adjacent or nearby properties. Lastly, a Phase I ESA meeting or exceeding this practice and completed less than 180 days prior to the date of acquisition of a given property or (for transactions not involving an acquisition) the date of the intended transaction is presumed to be valid.

1.4 Special Terms and Conditions

This Phase I ESA was prepared in accordance with the terms and conditions of the contract/agreement for the work as executed between our firm and the client. There are no other special terms and conditions established between our firm and the client pertinent to the findings of this ESA or methodology used to complete this assessment. In addition, our firm has no final or other vested interest in the Site or adjacent/surrounding properties, or in any entity that owns or occupies the Site or adjacent/surrounding properties.

1.5 Limiting Conditions and Deviations

There were no significant limiting conditions that would inhibit our ability to identify recognized environmental conditions noted during the completion of this assessment. In addition, there were no deviations from the ASTM E1527 standard noted during the completion of this assessment. Any limiting conditions that are not considered to be ones that would inhibit our ability to identify recognized environmental conditions at the Site are referenced in applicable sections of this report.

1.6 Data Failure and Data Gaps

No instances of data failure were encountered during the completion of this assessment. In addition, no data gaps of significance (i.e. those that would inhibit our ability to identify recognized environmental conditions) were identified during the completion of this assessment. Any data gaps that are not considered to be ones that would inhibit our ability to identify recognized environmental conditions at the Site are referenced in applicable sections of this report.

1.7 Reliance

This report has been prepared for the exclusive use of First Industrial Realty Trust, Inc., First Industrial, LP and First Industrial Acquisitions II, LLC. This report may not be relied upon by any other person or entity without the written consent of both our firm and our client. The scope of services performed for this assessment may not be appropriate to satisfy the specific needs of other users, and any use or reuse of this document would be at the sole risk of said users. Any other party seeking liability protection under CERCLA must take independent action to accomplish its objective.

2.0 SITE DESCRIPTION

2.1 Location and Legal Description

The Site is a reported 4.91 acres, has no reported physical address and is identified by Riverside County APN 294-180-032. The Site is situated generally north of Nandina Avenue, south and west of March Air Reserve Base and east of Interstate 215. The Site is also situated generally northeast of the northern terminus of Natwar Lane. A Vicinity Map is included as Figure 1. A Site Plan is included as Figure 2.

2.2 Site and Vicinity Characteristics

The Site and the surrounding vicinity are situated in the City of Perris that consists primarily of commercial properties, vacant land, public roadways, and portions of the March Air Reserve Base. Additional details pertaining to the Site and its adjoining properties are provided in the sections below.

2.3 Current Use of the Site

The Site is currently a vacant and undeveloped lot.

2.4 Description of Site Improvements

There are no habitable structures present at the Site. Indicators of various subsurface utility systems are present at the southeast and southwest corners of the Site. Some of the utilities appear to be just off-Site while others may potentially be on-Site. A higher level of confidence regarding the nature of extent of surface indicators or features can be obtained from a utility consultant.

2.5 Utilities

Utilities that are reported to be present at the Site or provide service in the surrounding area are noted below along with their municipal provider where applicable. If certain utility systems are not provided by public agencies or entities, they are noted as privately maintained.

Utility	Provider (Where Applicable)
Potable Water	Western Municipal Water District
Sewage Maintenance	City of Perris
Electrical	Southern California Edison
Natural Gas	SoCal Gas Company
Solid Waste Disposal	City of Perris

2.6 Description of Adjoining Properties

Adjoining properties are defined as any real property or properties, the border of which is contiguous or partially contiguous with that of the subject property of a Phase I ESA, or that would be contiguous or partially contiguous with that of a subject property but for a street, road, or other public thoroughfare separating them. To the extent feasible, our firm performed a visual inspection of adjoining properties from the Site boundaries and along public right of ways. We did not encroach on to adjoining private property during the completion of this assessment. The following table identifies the adjoining property uses:

Direction	Adjoining Property Use
North	Vacant land, then a fence and March Air Reserve Base property (also vacant land).
South	Western Way recycling Center and a portion of Natwar Lane.
East	Vacant land. A building is under construction to the southeast.
West	Portion of Natwar Lane and vacant land.

2.7 Summary Relative to Environmental Concerns

No recognized environmental conditions were noted in connection with the land use of the Site and improvements at the Site. In addition, the land uses of adjoining properties and properties in the vicinity of the Site do not represent recognized environmental conditions to the Site.

3.0 PHYSICAL SETTING

3.1 Topography

The Site is depicted on the United States Geological Survey (USGS) topographic map for the Steele Peak, California 7.5-minute quadrangle. The Site is shown on the map as being situated at an elevation of approximately 1,500 feet above mean sea level. The Site and surrounding area appear to trend slightly to moderately downward toward the south and southeast. There are no improvements, structures or surface waters depicted on-Site on the map. Adjoining and surrounding roadways are depicted on the map. The Site as depicted on a topographic map is included as Figure 3.

3.2 Hydrology

The Site is situated within the Perris Valley Hydrologic Subarea of the Perris River Hydrologic Area of the San Jacinto Valley Hydrologic Unit. There are no known substantial hydrologic features at the Site including major storm drain inlets or obvious drainages, channels, or surface waters. Infiltration of precipitation can be expected at the Site due to its unimproved nature. Any excess water would appear to flow as surface runoff to streets/roadways and surrounding areas of lower elevation. The Site does not appear to receive significant drainage from off-Site properties.

3.3 Geology

General geologic information pertaining to the Site is presented in the table below.

Geologic Consideration	Details
California Geomorphic Province	Peninsular Ranges.
Mapped Soils or Formation	Early Pleistocene, old alluvial fan deposits.
Description of Soils or Formation	Unconsolidated silts, sands, and clays.
Distance/Direction to Mapped Faults	No known faults are mapped on the Site.

3.4 Hydrogeology

General hydrogeologic information pertaining to the Site is presented in the table below.

Hydrogeologic Consideration	Details
Groundwater Basin or Unit	Perris Valley Hydrologic Subarea.
Beneficial Uses	Municipal, agricultural, industrial, and process.
Estimated Depth to Groundwater	Anticipated to be greater than 30 feet below the surface.
Estimated Flow of Groundwater	South to southeast.

Hydrogeologic Consideration	Details
Known Site or Regional Groundwater Contamination Issues	None.

3.5 Oil and Gas Exploration

According to online resources provided by the California Department of Conservation, Geologic Energy Management Division (CalGEM), there are no oil, gas or geothermal wells located on the Site or its adjacent properties.

3.6 Summary Relative to Environmental Concerns

No recognized environmental conditions were noted in connection with Site physical setting considerations. In addition, physical setting considerations related to the adjoining properties and properties in the vicinity of the Site do not represent recognized environmental conditions to the Site.

4.0 USER PROVIDED INFORMATION

A representative of the user of this report (First Industrial Realty Trust) was interviewed during the completion of this assessment. The questions posed during the interview are defined by the ASTM E1527 practice. The client also provided our firm with any land title records and judicial records that may be available for the Site as part of the required evaluation for environmental liens and activity and use limitations (AULs) in connection with the subject property of a Phase I ESA. As stated in the ASTM E1527 practice, it is the responsibility of the user of the report to provide any available records pertaining to environmental liens and AULs that may exist in connection with a given property. Any land title and judicial recorded provided to our firm are discussed below. If such information is not discussed in the sections below, it was not provided by the user of the report.

In addition to the contact information obtained, the user of the report was also asked if they are aware of other useful documents that may exist and if so whether copies can be provided to the environmental professional within reasonable time and cost constraints. A list of typical useful documents is included in Section 10.8.1 of the ASTM E1527 practice and include but are not limited to environmental assessment reports, compliance audits and permits, registrations for tank and other aboveground or underground systems, safety plans, spill prevention and other facility related plans and geological/geotechnical studies and environmental governmental agency notices and/or correspondence.

4.1 Title Records

Our firm was provided with a Preliminary Title Report for the Site prepared by Chicago Title Company dated October 16, 2020. No environmentally related liens, deed restrictions or AULs pertaining to the Site were noted in the report.

4.2 Environmental Liens

The client is unaware of environmental liens in connection with the Site.

4.3 Activity and Use Limitations

The client is unaware of AULs in connection with the Site.

4.4 Specialized or Actual Knowledge or Experience

The client is unaware of specialized knowledge, actual knowledge or experience that is material to recognized environmental conditions in connection with the Site.

4.5 Commonly Known or Reasonably Ascertainable Information

The client is unaware of commonly known or reasonably ascertainable information within the local community that is material to recognized environmental conditions in connection with the Site.

4.6 Valuation Reduction for Environmental Issues

The client is unaware of information pertaining to an undervalued purchase price of the Site relative to the estimated fair market value of the Site due to the presence of contamination.

4.7 Owner, Property Manager, and Occupant Information

The Site is currently owned and managed by Perris Property Holdings, LLC. The Site is currently vacant with no known occupants.

4.8 Reason for Performing Phase I ESA

The client has commissioned this Phase I ESA as part of a proposed real estate transaction (acquisition and development). The Phase I ESA is also being completed to assist the client in complying with 40 CFR Part 312.

4.9 Proceedings Involving the Site

The client is unaware of pending, threatened, or past litigation and administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the Site. The client is also unaware of notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products in connection with the Site.

4.10 Other Provided Documents

Prior environmental documents pertaining to the Site were not provided to our firm during the completion of this assessment. We were provided with Phase I and II ESA reports for the 23.24 acre adjoining property to the north and west dated July 25, 2019 prepared by others. This adjoining property is further identified by County of Riverside APNs 294-180-13, -028, -029, -030, 295-300-005, -007 and -009.

It was noted in the prior reports that the 23.24 acre property in question was situated adjacent to the south and west of March Air Reserve Base. The base reportedly covers approximately 7,000 acres in and has historically served as a training base and refueling operations base. Operations (including aircraft maintenance and repair) reportedly involved use and disposal of various chemicals and wastes including chlorinated solvents. Various areas of concern have been identified and affected by spills/releases from historical base operations. The Air Force is the responsible party for remediation and investigation pursuant to a 1995 Record of Decision under the oversight of the United States EPA, Regional Water Quality Control Board and Department of Toxic Substances Control. In the proximity of and up-gradient to the adjoining 23.24 acre property, sludge ponds were formerly located west of I-215 (identified as Site 19 of Operable Unit 2 of the base) and a former landfill was located further west at Riverside National Cemetery (identified as Site 24 of Operable Unit 24 of the base). A waste water treatment plant is also present in this area.

The former sludge ponds were investigated and remediated as part of improvements by the Western Municipal Water District. No groundwater contamination was identified as part of the closure process and the former sludge ponds received a no further action status with unlimited use and unrestricted exposure status in 2016. The landfill was remediated by removing wastes and relocating to an engineered landfill within the base. Confirmation sampling completed after removal activities confirmed the removal of wastes to unrestricted land use levels. The Air Force and Air Reserve Board are the lead agencies and potentially responsible parties, with United States EPA and the State of California providing oversight. Based on the cleanup to unrestricted (residential) standards, the former sludge ponds and landfill were not considered to be recognized environmental conditions to the adjoining property of the Site.

In 2018, the Air Force completed groundwater sampling for per- and polyfluoroalkyl substances (PFAS) at the sludge drying beds and waste water treatment plant due to potential for aqueous film forming foams in wastewater associated with firefighting training. Analytical results detected PFAS constituents in groundwater from a monitoring well at concentrations ranging from 352 to 395 nanograms per liter (ng/L) and in excess of the Air Force's screening level of 70 ng/L.

During the 2019 Phase II ESA, the consultant completed soil, sediment and groundwater sampling at the adjoining 23.24 acre property to assess potential impacts from PFAS. In conjunction with the PFAS sampling, samples were also analyzed for volatile organic compounds, total petroleum hydrocarbons, semi-volatile organic compounds, Title 22 metals, polychlorinated biphenyls, and organochlorine pesticides (OCPs). Six (6) soil, two (2) sediment and two (2) groundwater samples were collected and analyzed. No PFAS were detected in soil, sediment or groundwater. Groundwater method detection limits were less than the 70 ng/L screening level. Various metals and OCPs and were detected in the soil and sediment samples; however, the detected concentrations were below residential and commercial screening levels. Barium was detected in groundwater; however, the concentration was below the drinking water maximum contaminant level. No further assessment was recommended and the presence of PFAS to the west of the property was not considered to be a recognized environmental condition.

Given the location of the subject Site of our current Phase I ESA from the areas of concern to the west of Interstate 215, a review of a document titled Final Site Inspection Report for Aqueous Film Forming Foam Areas, Former March Air Force Base dated July 2018 and a review of cases filed on the Geotracker database, we have no basis to believe that the Site has been impacted by PFAS or other contaminants resulting from current or former base operations.

4.11 Summary Relative to Environmental Concerns

No recognized environmental conditions were noted in connection with the user provided information.

5.0 REGULATORY RECORDS REVIEW

Our firm commissioned the preparation of a regulatory database report from Environmental Risk Information Services (ERIS) as part of the regulatory records review. ERIS searches a myriad of Federal, State, and local government environmental databases during the preparation of their deliverables. Certain databases are specifically required by the ASTM E1527 practice and are referenced as "standard ASTM regulatory databases." Such databases are searched to at least the minimum search distance around a given property as defined in the practice. Other regulatory databases are also searched that are not specifically referenced in ASTM E1527. Such databases are referenced as "non-ASTM regulatory databases" and are searched as varying radii around a given property as selected by ERIS.

Descriptions of each database searched and the dates that the regulatory databases were last updated by the applicable agencies are included in the ERIS report. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of an updates. ERIS updates databases in accordance with ASTM E1527 which states that government information from nongovernmental sources may be considered current if the source updates the information at least every 90 days, or, for information that is updated less frequently than quarterly by the government agency, within 90 days of the date the government agency makes the information available to the public.

Our firm also reviewed unplottable sites listed in the database report by cross-referencing reasonably ascertainable information pertaining to such properties that may include facility names, street names, zip codes or other information. Unplottable sites are ones that cannot be formally mapped or geocoded due to various reasons, including limited geographic information. Any unplottable sites that we identify within the specified search radii have been evaluated as part of the preparation of this report. A copy of the regulatory database report is included in Appendix A.

5.1 Standard ASTM Regulatory Database Search

The tables below present the standard Federal, State, Tribal and local ASTM databases that were searched by ERIS including the search distances from the Site. Below the tables are descriptions of any listings for the Site that may appear in the databases. In addition, a discussion of adjoining properties or properties in the Site vicinity that are listed in one or more regulatory databases that in our professional judgment and opinion have the potential to adversely impact the Site due to current or former releases of hazardous substances and/or petroleum products that occurred at said properties is presented. This practice of discussing only properties of potential environmental concern to the Site is noted in ASTM E1527 which states that the environmental professional may make statements applicable to multiple properties listed in regulatory databases that are not likely to have current or former releases of hazardous substances and/or petroleum products with the potential to migrate to the a given subject property. Our professional judgment and opinions discussed herein are based on several factors including the nature of the regulatory database listings, distance of the off-Site listed properties from the Site, orientation of the listed properties relative to the Site, interpreted the direction of groundwater flow and/or regulatory case status information for the various properties as described in the databases.

The following Federal standard ASTM databases were searched:

Standard Environmental Record Source Name	ERIS Regulatory Database Identification	Search Distance From Site (Miles)
National Priorities List (NPL) Site List	NPL – Proposed NPL – Superfund Record of Decision (ROD)	1.0
Delisted NPL Site List	Deleted NPL	0.5
Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) List	CERCLIS - SEMS – SEMS Archive – ODI – IODI – CERCLIS LIENS – SEMS LIENS	0.5
CERCLIS List	CERCLIS LIENS – SEMS LIENS	Site
CERCLIS No Further Remedial Action Planned (NFRAP) Site List	CERCLIS NFRAP	0.5
Resource Conservation and Recovery Act (RCRA) Corrective Action Sites (CORRACTS) Facilities List	RCRA CORRACTS	1.0
RCRA Non-CORRACTS Treatment, Storage and Disposal (TSD) Facilities List	RCRA TSD	0.5
RCRA Generators List	RCRA LQG – RCRA SQG – RCRA CESQG – RCRA NON-GEN – BULK TERMINAL – REFN – FEMA Underground Storage Tank (UST)	0.25
Institutional Control/Engineering Control Registries	FED ENG – FED INST – FED Brownfields	0.5
Emergency Response Notification System (ERNS) List	ERNS – ERNS 1982 to 1986 – ERNS 1987 to 1989	Site

Site – The Site is not listed on any of the standard Federal ASTM regulatory databases.

Adjoining Properties – The adjoining March Air Force Base is listed on the Federal NPL database with a "listing date" of November 21, 1989. No additional details are included in the database. As stated in Section 4.10 above, there are no impacts to the Site anticipated to have occurred as a result of historical or current base operations.

Other Properties – There are 11 listings on the standard Federal ASTM regulatory databases pertaining to multiple properties in the surrounding area that are identified on various databases including RCRA TSD (one listing), RCRA SQG (one listing), and RCRA Non-Gen (eight listings). None of these properties are considered to have the potential to adversely impact the Site.

The following State, Tribal and local standard ASTM databases were searched:

Standard Environmental Record Sources Name	ERIS Regulatory Database Identification	Search Distance From Site (Miles)
Equivalent NPL	RESPONSE	1.0
Equivalent CERCLIS	ENVIROSTOR – DELISTED ENVS – HWP - HHSS	0.5

Standard Environmental Record Sources Name	ERIS Regulatory Database Identification	Search Distance From Site (Miles)
Landfill and/or Solid Waste Disposal Site Lists	SWF/LF – LDS – SWAT – SWRCB SWF	0.5
Leaking Storage Tank Lists	LUST – DELISTED LST – UST CLOSURE – CLEANUP SITES – INDIAN LUST – DELISTED ILST – RIVERSIDE LOP	0.5
Registered Storage Tank Lists	UST – AST – DELISTED TNK – CERS TANK – DELISTED CTNK – HIST TANK – INDIAN UST – DELISTED IUST – DELISTED COUNTY – UST RIVERSIDE	Site and Adjoining Properties
Institutional Control/Engineering Control Registries	LUR – HLUR - DEED	Site
Voluntary Cleanup Sites	VCP	0.5
Brownfield Sites	Not Applicable – No Database Exists	0.5

Site – The Site is not listed on any of the State, Tribal and local standard ASTM regulatory databases.

Adjoining Properties – No adjoining properties are listed on any of the State, Tribal and local standard ASTM regulatory databases.

Other Properties – There are 14 listings on the State, Tribal and local standard ASTM regulatory databases pertaining to multiple properties in the surrounding area that are identified on various databases including RESPONSE (three listings), ENVIROSTOR (three listings), SWF/LF (one listing), LUST (two listings), CERS TANK (one listing), CLEANUP SITES (two listings), and RIVERSIDE LOP (two listings). None of these properties are considered to have the potential to adversely impact the Site.

5.2 Non-ASTM Regulatory Database Search

A myriad of non-ASTM regulatory databases was searched by ERIS as noted in the regulatory database report.

Site – The Site is not listed on any of the non-ASTM regulatory databases.

Adjoining Properties – The south adjoining property is listed on the non-ASTM FINDS/FRS regulatory database as Western Way Recycling Inc. at 6175 Natwar Lane. The database listing pertains to stormwater related permitting. This property is not considered to have the potential to adversely impact the Site.

Other Properties – There are two listings on the non-ASTM regulatory databases pertaining to properties in the surrounding area that are identified on the FUDS (one listing) and DELISTED HAZ (one listing) databases. None of these properties are considered to have the potential to adversely impact the Site.

5.3 Regulatory Agency File Reviews

If a property being assessed under a Phase I ESA or any of the adjoining properties are identified on one or more of the above referenced standard environmental record sources, pertinent regulatory files and/or records associated with such listings should be reviewed to assist the environmental professional in evaluating if recognized environmental conditions existing at a given subject property in connection with any listings. However, if in the environmental professional's opinion, such a review is not warranted, file reviews need not be conducted if the environmental professional provides justification for not doing so.

Agency file reviews for the Site completed during this assessment are noted below. No file reviews for adjoining properties or properties in the surrounding area were deemed warranted with the exception of research completed on the State Water Resources Control Board Geotracker database regarding properties in the surrounding area of the Site. The agency inquiries were performed by way of on-line searches/queries of published databases and/or direct inquiries with public records clerks at one or more agencies. Copies of regulatory agency records are included in Appendix B.

Regulatory Agency	Jurisdiction	Date of Inquiry or Request	Contact	Response or Information From Agency
United States EPA Envirofacts/ECHO/ TRIS	Federal	11/18/2020	Online https://enviro.epa.gov/ https://echo.epa.gov/facilities/facility-search https://www.epa.gov/toxics-release-inventory-tri-program	No Records Identified
California Department of Toxic Substances Control	State	11/18/2020	Online https://www.envirostor.dtsc.ca.gov/public https://hwts.dtsc.ca.gov/report_list.cfm	No Records Identified
State Water Resources Control Board/Regional Water Quality Control Board	State	11/18/2020	Online https://geotracker.waterboards.ca.gov/ https://geotracker.waterboards.ca.gov/historical_ust_facilities	No Records Identified
Riverside County	Local	11/18/2020	Public Records Clerks	No Records Identified

As shown in the table above, no records pertaining to the Site were identified.

5.4 Summary Relative to Environmental Concerns

No recognized environmental conditions were noted in connection with the regulatory records searches. In addition, regulatory resources related to the adjoining properties and properties in the vicinity of the Site do not represent recognized environmental conditions to the Site.

6.0 HISTORICAL RESOURCE REVIEW

The objective of consulting historical sources is to develop a history of the previous uses of a property and surrounding area, in order to help identify the likelihood of past uses having led to recognized environmental conditions in connection with a given property. The goal of the historical research is to identify all obvious uses of a subject property from the present, back to the property's first developed use, or back to 1940, whichever is earlier. The environmental professional exercises professional judgment in reviewing only as many of the standard historical sources referenced in ASTM E1527 that are deemed necessary, are reasonably ascertainable and are likely to be useful. Historical resources reviewed during the completion of this assessment are referenced below. Copies of the historical resources are included in Appendix C.

6.1 Aerial Photographs

We reviewed historical aerial photographs from the years 1938, 1953, 1958, 1966, 1976, 1985, 1994, 2002, 2005, 2010, 2012, 2014. 2016, 2018 and 2020 provided by ERIS. The table below presents the results of the photograph review.

Photograph Year	Site Observations	Adjoining Property Observations
1938-2010	The Site appears to be vacant and undeveloped land.	With the exception of streets and/or roadways, adjoining properties appear to be vacant and undeveloped land. Portions of March Air Force based are visible to the northeast beginning with the 1953 photograph.
2012-2020	The Site remains vacant and undeveloped.	Adjoining properties are predominantly vacant and undeveloped. Natwar Lane and the southern adjoining recycling center are visible in their current configurations.

6.2 Topographic Maps

Our firm reviewed topographic maps from the years 1901, 1942, 1953, 1967, 1973, 1978, and 2015 provided by ERIS. On the topographic maps, the Site is depicted as being vacant and undeveloped. Adjoining properties appear predominantly vacant and undeveloped with roadways and streets depicted nearby. March Air Force Base is depicted to the north and east of the Site with the 1953 photograph.

6.3 Other Historical Sources

Other historical sources are referenced in the ASTM E1527 practice as any source or sources other than the standard historical sources referenced in the practice that are credible to a reasonable person and that identify past uses of a subject property. This category includes, but is not limited to miscellaneous maps and directories, newspaper archives, internet sites, community organizations, local libraries, historical societies, current owners or occupants of neighboring properties, or records in the files and/or personal knowledge of the property owner and/or occupants. No historical sources other than the standard sources described above were deemed necessary and useful to assist in identifying recognized environmental conditions.

6.4 Summary Relative to Environmental Concerns

No recognized environmental conditions were noted in connection with the historical resources reviewed. In addition, historical resources related to the adjoining properties and properties in the vicinity of the Site did not reveal recognized environmental conditions to the Site.

7.0 SITE RECONAISSANCE

The objective of the Site reconnaissance is to obtain information indicating the likelihood of identifying recognized environmental conditions in connection with a subject property. The Site visit for our assessment was completed on November 24, 2020 by Daniel Weis. We were unaccompanied during the reconnaissance.

7.1 Methodology and Limiting Conditions

The Site reconnaissance consisted of observing the Site on foot via various transects and walking publicly accessible areas surrounding the Site. No significant limiting conditions of the Site inspection were noted. Select photographs of the Site obtained during the Site reconnaissance are included in Appendix D.

7.2 Current General Site and Vicinity Characteristics

The Site and the surrounding vicinity are situated in the City of Perris that consists primarily of commercial properties, vacant land, public roadways, and portions of the March Air Reserve Base. The Site is currently a vacant and undeveloped lot. The current use of the Site and adjoining properties are not ones that are indicative of the use, treatment, storage disposal or generation of hazardous substances or petroleum products that may have significantly impacted the Site.

7.3 Indications of Past Site and Vicinity Uses

There are no material differences between the current and past uses of the Site, adjoining properties and the surrounding area Site that were visually and/or physically observed during the Site reconnaissance that pertain to recognized environmental conditions.

7.4 Site-Specific Observations

We examined visible and accessible areas of the Site for the features and conditions noted in the table below.

Feature or Condition	Details
General Description of Structures	There are no habitable structures present at the Site. Indicators of various subsurface utility systems are present at the southeast and southwest corners of the Site.
Drains and Sumps	None observed.
Heating/Cooling Systems	None observed.
Potable Water Supply	Western Municipal Water District.
Roads	None observed. Natwar Lane adjoins the Site to the south and west and a newly graded unimproved road adjoins the Site to the east.
Septic Systems / Sewage Disposal System	City of Perris.
Wastewater and Stormwater Discharges	None observed.
Wells	None observed.

Feature or Condition	Details
Drums	None observed.
Electrical or Hydraulic Equipment Known to Contain PCBs or Likely to Contain PCBs	None observed.
Hazardous Substances and Petroleum Products in Connection with Identified Uses	None observed.
Hazardous Substance and Petroleum Products Not Necessarily in Connection With Identified Uses	None observed.
Odors	None noted.
Pits, Ponds or Lagoons	None observed.
Pools of Liquid	None observed.
Solid Waste (Including Fill Material)	Miscellaneous trash and debris are present along the southern Site boundary. Such materials included an automobile tire, pipe fragments and paper/plastic products. Small soil piles are also present along the southern and eastern Site boundaries. The soil appears to be derived from the Site and not off-Site sources. No staining or other suspect conditions were noted in such areas.
Stained Soil or Pavement	None observed.
Stains or Corrosion	None observed.
Chemical Storage Tanks	None observed.
Stressed Vegetation	None observed.
Unidentified Substance Containers	None observed.

7.5 Summary Relative to Environmental Concerns

No recognized environmental conditions were noted in connection with the current use of the Site during the Site reconnaissance. In addition, no current uses of the adjoining properties or properties in the surrounding area that were visually and/or physically observed during the Site reconnaissance were noted as recognized environmental conditions to the Site.

8.0 INTERVIEWS

Persons interviewed during the completion of this assessment are noted in the table below. Descriptions of the information obtained from the interviews is included in the Sections below. Daniel Weis conducted the interviews during the completion of this assessment. The regulatory agency contacts consulted during the preparation of this assessment are listed in Section 5.3 of this document.

Name	Title or Role of Contact	Organization or Affiliation	Date of Inquiry or Request	Date Information was Provided
Mr. Richard Macias	Designated Site Owner Representative and Key Site Manager	Perris Property Holdings, LLC	December 8, 2020	December 8, 2020

8.1 Site Owner

The designated Site owner representative is unaware of environmental concerns in connection with the Site. A copy of an interview questionnaire completed by the designated Site owner representative is included in Appendix E.

8.2 Key Site Manager

The designated Site owner representative is also the Key Site Manager. Please refer to Section 8.1 above.

8.3 Current Occupants

The Site is vacant with no known occupants.

8.4 Local Government Official

During the preparation of this assessment, public records clerks from Riverside County were contacted by our firm regarding the Site. County representatives indicated that public records requests should be conducted in order to obtain information known by the County regarding the Site. Public records requests were completed by our firm as described in Section 5.3.

8.5 Other Parties

Interviews with other persons were not conducted during the preparation of this assessment. As stated in the ASTM E1527 practice, interviews with past owners, operators, and occupants of a subject property who are likely to have material information regarding the potential for contamination at a given property shall be conducted to the extent that they have been identified and that the information likely to be obtained is not duplicative of information already obtained from other sources. Interviews with persons with past association with the Site were not deemed warranted during the completion of this assessment.

8.6 Summary Relative to Environmental Concerns

No recognized environmental conditions were noted in connection with the interviews completed during the assessment.

9.0 ADDITIONAL SERVICES – NON-SCOPE ASTM CONSIDERATIONS

Several non-scope ASTM considerations are referenced in the ASTM E1527 practice that a user of a report may wish to evaluate. Listed considerations in the practice include asbestos-containing building materials, biological agents, cultural and historic resources, ecological resources, endangered species, health and safety, indoor air quality (unrelated to releases of hazardous substances or petroleum products into the environment), industrial hygiene, lead-based paint, lead in drinking water, mold, radon, regulatory compliance and wetlands. No implication is intended by the practice as to the relative importance of inquiry into such non-scope considerations, and the list of considerations is not intended to be all-inclusive.

The following items/additional services were evaluated during the preparation of this assessment.

Wetlands and Threatened/Endangered Species - A biological assessment of the Site has been completed concurrently with this Phase I ESA. The results of the study has been provided to the Client under separate cover. No wetlands were noted at the Site and no significant biological findings were reported.

Radon Potential - The Site is located within United States EPA Radon Zone 2 which has predicted average indoor levels of radon between 2 and 4 picocuries per liter. Radon is not considered to be a concern at the Site.

Lead in Drinking Water - According to the most recent water quality report prepared by the Western Municipal Water District, the drinking water supplied to the area is in compliance with all Federal and State regulations.

National Pollution Discharge Elimination System (NPDES) – We are unaware of current NPDES related requirements that pertain to the Site.

Landmark/Historical/Cultural Significance Review - Archeological/cultural and paleontological assessments of the Site have been completed concurrently with this Phase I ESA. The results of the studies have been provided to the Client under separate cover. No significant findings were reported.

No other additional services were completed by our firm during the preparation of this assessment.

10.0 FINDINGS AND OPINIONS

No features and/or conditions indicating the presence or likely presence of hazardous substances and/or petroleum products at the Site that are considered to have the potential to adversely impact the Site were identified during the completion of this assessment.

11.0 CONCLUSIONS AND RECOMMENDATIONS

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM International Practice E1527 of the Site identified by Riverside County APN 294-180-032, in the City of Perris, Riverside County, California. Any exceptions to, or deletions from, this practice are described in Section 1.5 of this report. This assessment has revealed no evidence of recognized environmental conditions, controlled recognized environmental conditions or historical recognized environmental conditions in connection with the Site. Additional assessment at the Site is not considered to be warranted at this time.

12.0 ENVIRONMENTAL PROFESSIONAL STATEMENT

I declare that, to the best of my professional knowledge and belief, I meet the definition of environmental professional as defined in Section 312.10 of 40 CFR. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Site. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312. Qualifications of personnel involved with the completion of this report are included in Appendix F.

_____

Daniel Weis, R.E.H.S.
Environmental Manager

13.0 ASSUMPTIONS

No Phase I ESA effort can eliminate uncertainty regarding the potential for recognized environmental conditions to exist in connection with a given property. Performance of the ASTM E1527 practice may reduce such uncertainty but in no way should the findings and report be misconstrued as insurance or a guarantee regarding the potential for recognized environmental conditions in connection with a given property. The ASTM E1527 practice recognizes reasonable limits of time and cost relative to the completion of a Phase I ESA.

During the completion of this ESA, our firm relied on certain information obtained from secondary sources, including but not limited to the user of the report, government agencies, historical research business entities, environmental databases, and interviews with one or more persons. The sources obtained and/or consulted are assumed to be reliable. However, our firm cannot warranty or guarantee that the information provided by these other sources is wholly accurate or complete. Our firm is not responsible for any misrepresentations or false statements that may be provided by others or the lack of pertinent/relevant information that should have been provided/disclosed by others and we assume no responsibility for any consequence as a result of such omissions or withheld information.

Accuracy and completeness of records varies among information sources, including from governmental agencies. As a result, there is a possibility that even with the proper application of the methodologies presented in ASTM E1527, conditions may exist that could not be identified within the scope of this assessment or which were not reasonably identifiable from the available information. In addition, any responses received from Federal, State, Tribal, and local regulatory agency secondary sources of information after the issuance of this report may change certain findings and conclusions of this report.

Estimations and opinions regarding the potential for off-Site properties to adversely impact a given subject property is one of the key components of a Phase I ESA. In most cases, recent property-specific or adjacent-property specific measured groundwater data or other hydrogeological information is not reasonably ascertainable. In the absence of such data, reasonable assumptions regarding the depth and flow of groundwater are made based on various sources including comparisons to surface elevations, land topography and available hydrogeological on the State of California Geotracker database. In addition, estimations and opinions regarding potential impacts from off-Site locations may be based on certain assumptions that a hazardous substance or petroleum product may not migrate laterally within unsaturated soil for a substantial distance and that contaminants that have reached saturated soil and groundwater may attenuate over time and/or may decrease in concentration relative to distance from its source. While any interpretations presented herein may be effective in reducing uncertainty regarding potential impacts to a subject property from off-Site locations, in no way should the findings and report be misconstrued as insurance or a guarantee regarding the potential for such impacts to occur. Greater certainty regarding subsurface conditions at a given property can only be achieved by way of a subsurface sampling effort of one or more media.

14.0 DEFINITIONS

Definitions of key terminology relevant to the ASTM E1527 practice are presented below.

Recognized Environmental Condition - The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.

Controlled Recognized Environmental Condition - A recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).

Data Failure - A failure to achieve the historical research objectives as outlined in the ASTM E1527 practice even after reviewing the standard historical sources that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap.

Data Gap - A lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information. Data gaps may result from incompleteness in any of the activities required by the ASTM E1527 practice, including, but not limited to site reconnaissance (for example, an inability to conduct the site visit), and interviews (for example, an inability to interview the key site manager, regulatory officials, etc.). Data gaps are only considered to be significant if they affect the ability of the environmental professional to identify recognized environmental conditions.

De Minimis Condition - A condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be de minimis conditions are not recognized environmental conditions nor controlled recognized environmental conditions.

Environment - (A) the navigable waters, the waters of the contiguous zone, and the ocean waters of which the natural resources are under the exclusive management authority of the United States under the Magnuson-Stevens Fishery Conservation and Management Act [16 U.S.C. §§ 1801 et seq.], and (B) any other surface water, groundwater, drinking water supply, land surface or subsurface strata, or ambient air within the United States or under the jurisdiction of the United States.

Good Faith - The absence of any intention to seek an unfair advantage or to defraud another party; an honest and sincere intention to fulfill one's obligations in the conduct or transaction concerned.

Hazardous Substance - Includes hazardous substances designated under section 311 of the Clean Water Act (CWA) or Section 102 of CERCLA, any toxic pollutant listed under Section 307(a) of the CWA, any waste that has been listed as a RCRA hazardous waste or possesses a RCRA hazardous waste characteristic, any substance that is identified as a hazardous pollutant under Section 112 of the Clean Air Act (CAA), and any imminently hazardous chemical that EPA has taken action pursuant to Section 7 of the Toxic Substances Control Act (TSCA).

Historical Recognized Environmental Condition - A past release of any hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority or

meeting unrestricted use criteria established by a regulatory authority, without subjecting the property in question to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).

Petroleum Exclusion – While the definition of a CERCLA hazardous substance specifically excludes petroleum products and crude oil, the EPA has determined that the petroleum exclusion applies to petroleum products such as gasoline and other fuels containing lead, benzene or other hazardous substances that are normally added during the refining process. Notwithstanding the existence of the petroleum exclusion, petroleum products are included within the scope of the ASTM E1527 practice for multiple reasons. Petroleum products have historically been widely used at commercial properties. In addition, other federal and state laws may impose liability for releases or spills of petroleum products.

Reasonably Ascertainable Information - Information that is (1) publicly available, (2) obtainable from its source within reasonable time and cost constraints and (3) practically reviewable.

Release or Threatened Release - Spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment (including the abandonment or discarding of barrels, containers and other closed receptacles containing any hazardous substance, or pollutant or contaminant).

15.0 REFERENCES

Sources of information consulted during the completion of our Phase I ESA are noted in the sections below.

15.1 Documents, Plans and Reports

- All Appropriate Inquiry" as necessary to satisfy the defenses available under 42 U.S.C. §§ 9607(b)(3), 9607(r)(1), and 9607(q), relying on definitions provided at 42 U.S.C. §§ 9601(35)(B); and as further explained in 40 CFR §§ 312.1 – 312.31.
- ASTM International, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process," ASTM Designation E 1527-13, Published November 2013.
- California Geological Survey, 2002, California Geomorphic Provinces Note 36, Electronic Copy, Revised December.
- California State Water Resources Control Board, Water Quality Control Plan for the Santa Ana River Basin (8), California, Published 2008.
- ERIS Aerial Photographs Report dated November 20, 2020.
- ERIS Database Report dated November 19, 2020.
- ERIS Topographic Maps dated November 18, 2020.
- USGS topographic map, Steele Peak, California Quadrangle (2018).

15.2 Personal Communications

- Designated Site Owner Representative – Mr. Richard Macias
- Key Site Manager – Mr. Richard Macias
- Public Records Clerks – County of Riverside

15.3 Agencies Consulted

- California Department of Conservation, Geologic Energy Management Division (CalGEM)
- California Department of Toxic Substances Control
- California State Water Resources Control Board
- County of Riverside
- United States EPA

FIGURES

FIGURE 1
VICINITY MAP

Figure 1 - Vicinity Map

APN 294-180-032
Perris, California

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Prepared by:

Weis Environmental
1938 Kellogg Avenue, Suite 116
Carlsbad, CA 92008

FIGURE 2
SITE PLAN

Figure 2 - Site Plan

APN 294-180-032
Perris, California

N

Prepared by:

Weis Environmental
1938 Kellogg Avenue, Suite 116
Carlsbad, CA 92008

Weis ENVIRONMENTAL

FIGURE 3
TOPOGRAPHIC MAP

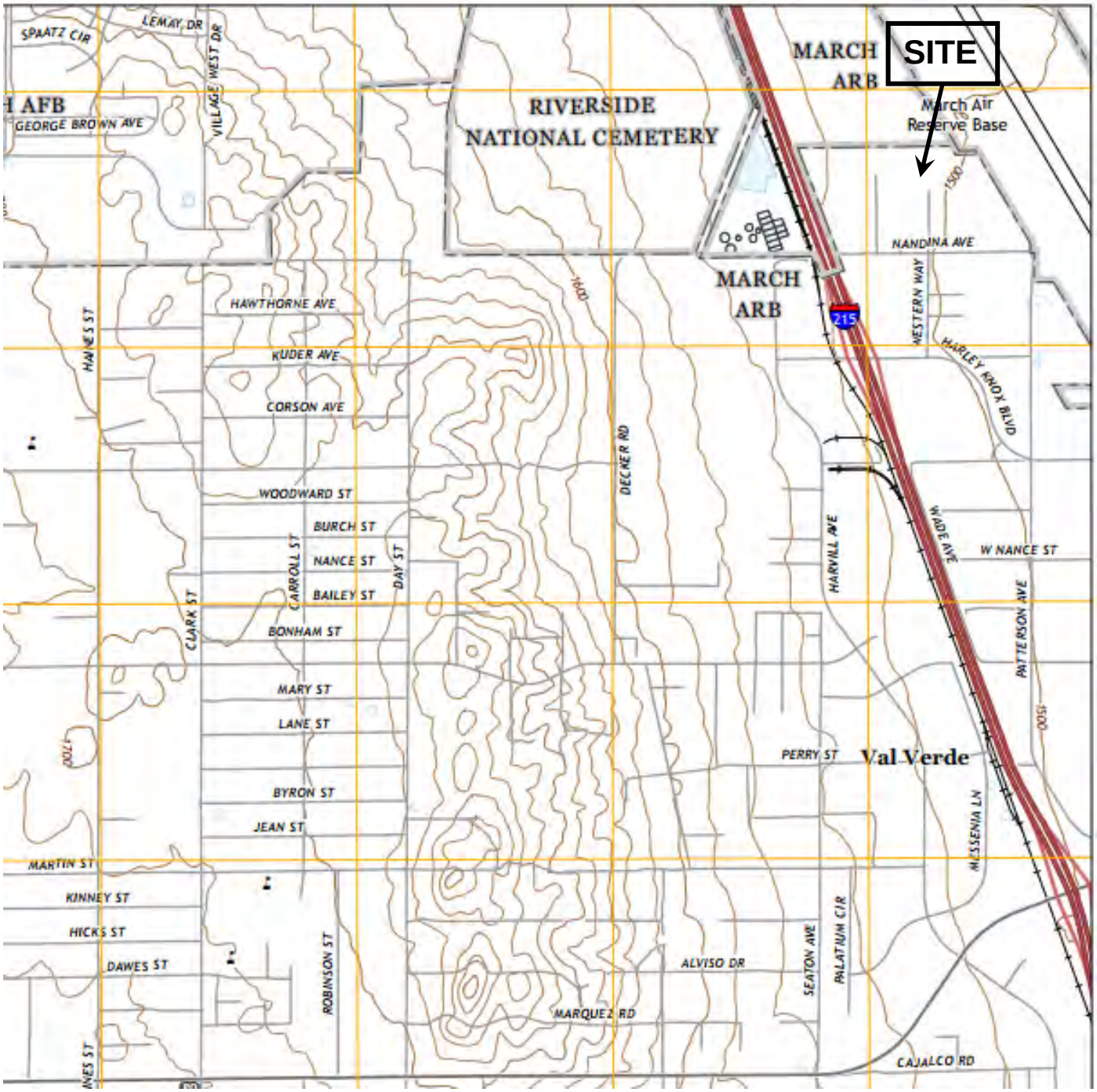


Figure 3 - Topographic Map

APN 294-180-032
Perris, California

N

Prepared by:

Weis Environmental
1938 Kellogg Avenue, Suite 116
Carlsbad, CA 92008

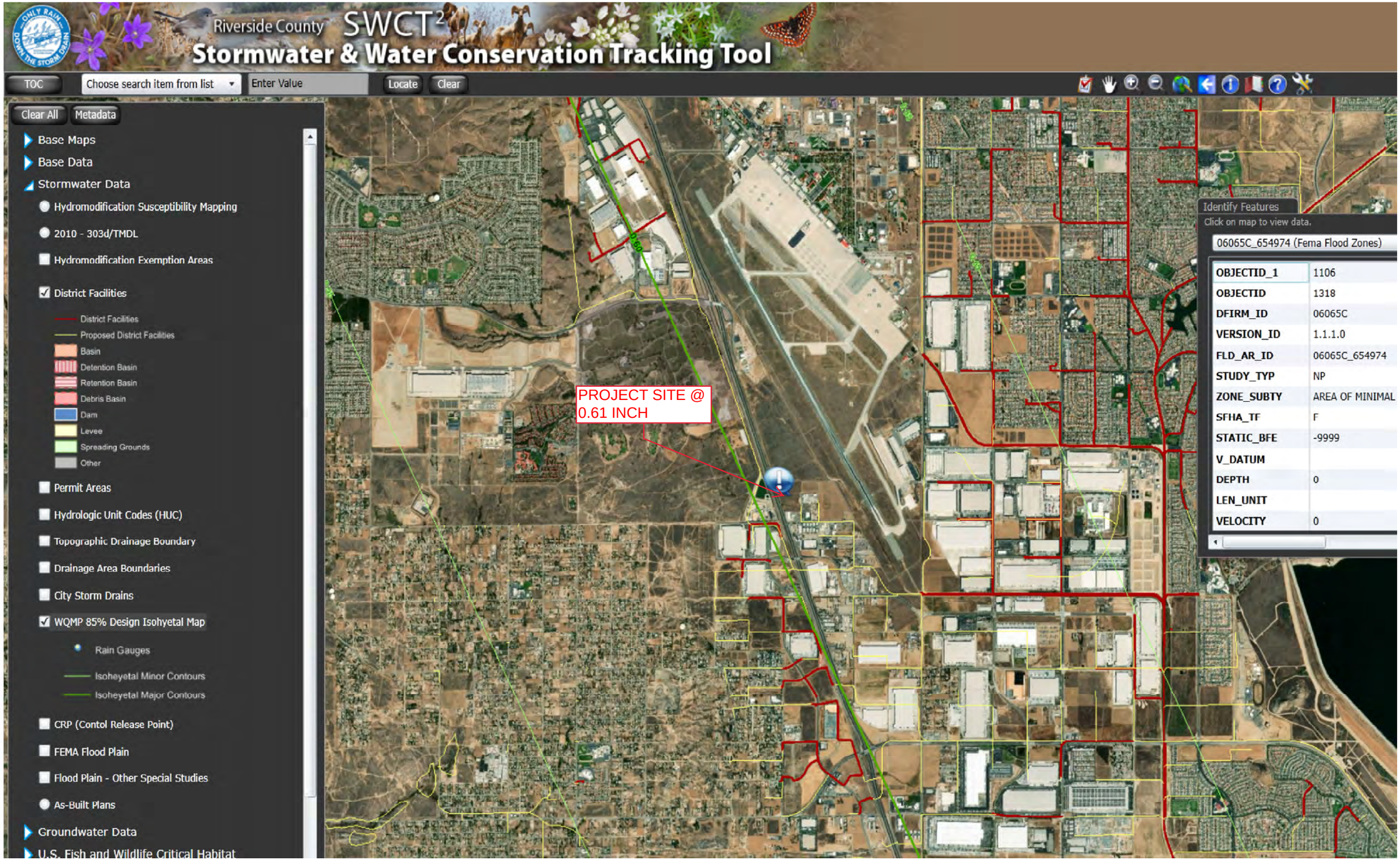
Weis ENVIRONMENTAL

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis (NOT APPLICABLE)

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation


Riverside County SWCT²
Stormwater & Water Conservation Tracking Tool
TOC
Choose search item from list
Enter Value
Locate
Clear
Clear All
Metadata
Base Maps
Base Data
Stormwater Data
Hydromodification Susceptibility Mapping
2010 - 303d/TMDL
Hydromodification Exemption Areas
District Facilities
District Facilities
Proposed District Facilities
Basin
Detention Basin
Retention Basin
Debris Basin
Dam
Levee
Spreading Grounds
Other
Permit Areas
Hydrologic Unit Codes (HUC)
Topographic Drainage Boundary
Drainage Area Boundaries
City Storm Drains
WQMP 85% Design Isohyetal Map
Rain Gauges
Isoheyetal Minor Contours
Isoheyetal Major Contours
CRP (Contol Release Point)
FEMA Flood Plain
Flood Plain - Other Special Studies
As-Built Plans
Groundwater Data
U.S. Fish and Wildlife Critical Habitat
PROJECT SITE @
0.61 INCH
Identify Features
Click on map to view data.
06065C_654974 (Fema Flood Zones)
OBJECTID_1 1106
OBJECTID 1318
DFIRM_ID 06065C
VERSION_ID 1.1.1.0
FLD_AR_ID 06065C_654974
STUDY_TYP NP
ZONE_SUBTY AREA OF MINIMAL
SFHA_TF F
STATIC_BFE -9999
V_DATUM
DEPTH 0
LEN_UNIT
VELOCITY 0

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Thienes Engineering, Inc. — Date: 3/16/2021

Designed by: Vicky Li — Case No:

Company Project Number/Name: First March - Natwar Lane, Perris (3933)

BMP Identification

BMP NAME / ID: MWS-A / DMA A

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E — D_{85}= 0.61 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
A-1	*254826*	*Roofs*	*1*	*0.89*	*227304.8*			
A-2	*13068*	*Ornamental Landscaping*	*0.1*	*0.11*	*1443.5*			
	267894	**Total**			**228748.3**	**0.61**	**11628**	**11768**

Notes:

Tributary area = 6.15 ac.

WetlandMOD VOLUME BASED SIZING SHEET

Horizontal Flow Biofiltration System

Project Location

Project Name	Natwar Lane, Perris (DMA A)
City/Town	Perris
State	California
Zip Code	92571

SIZING CALCULATIONS	**Inputs**	**Units**	**Notes/References**
Impervious Area			
BMP Drainage Area (not required - manual entry - not part of formula)	6.15	**Acres**	This includes all areas that will contribute runoff to the proposed BMP, including pervious areas, impervious areas, and off-site areas, whether or not they are directly or indirectly connected to the BMP.
Watershed Impervious Ratio (not required - manual entry - not part of formula)			Watershed Imperviousness Ratio", is equal to the percent of total impervious area in the "BMP Drainage Area" divided by 100
Runoff Coefficient "C" (not required - manual entry - not part of formula)			
Water Quality Volume (required)	11628	cubic feet	Use sizing procedures provided by state or local agencies to determine the appropriate Water Quality Volume. Intensities and design storms vary widely by region and method.
Design Storm Duration	3	hours	Varies depending on geographical region. Set at 0 for pump system set up. LA County 3 hours. Call for details.
MWS - Linear Sizing			
MWS - Linear Model Number (from matrix)	MWS-L-4-15	quantity	Please choose size from "Model Size Matrix" Tab
# Of Units	1	quantity	Select the number of systems required to treat the water quality volume. Will very depending on drain down time regulaitons.
Discharge Rate (from matrix)	19.80	gallons/minute	Rate of 0.26 gpm/sq ft or 25 in/hr. Field Verified.
Volume Treated During Event			
Processed through MWS - Linear	475.2	cubic feet	**19.80 gals/minute**
Volume Treated Following Event			
MWS - Linear Static Capacity (from matrix)	105	cubic feet	
Volume Needed in *Pre-Storage*	11048	cubic feet	Set at zero to start. Size pre-storage system to hold this volume
			Sizing complete when eqaul to value of zero.
TOTAL STORMWATER TREATED	**11628**	cubic feet	Note: This amount should be equal to the "Water Quality Volume"
Drain Down Time	**70.40**	hours	Drain down time must be equal to or less than requirement of local juristiction. Default 48 hours.

Feel free to fax or email proposed sizing calculations to Modular Wetlands Systems, Inc. for assistance with sizing, compliance, and design.

Phone: 760.433.7640
Fax: 760.433.3176
Email: Info@modularwetlands.com

StormTech
Detention • Retention • Recharge
Subsurface Stormwater Management℠

MC-4500 Site Calculator

Project Information:

Project Name:	Natwar Lane, Perris (DMA A)
Location:	Perris, CA
Date:	2/24/2021
Engineer:	Thienes Engineering, Inc.
StormTech RPM:	

System Requirements

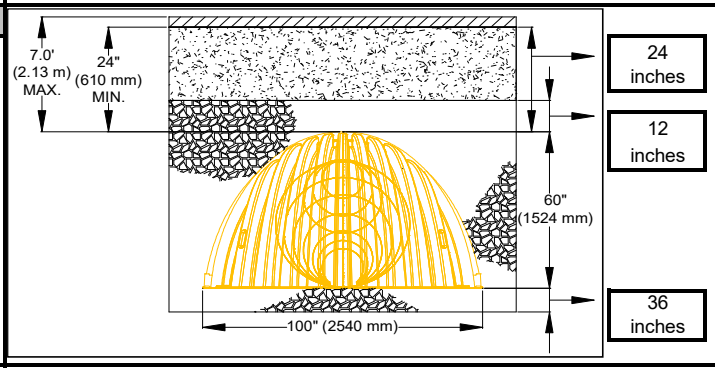
Units		Imperial	
Required Storage Volume		11048	CF
Stone Porosity (Industry Standard = 40%)		40	%
Stone Above Chambers	(12 inch min.)	12	inches
Stone Foundation Depth	(9 inch min.)	36	inches
Average Cover over Chambers	(24 inch min.)	24	inches
Bed size controlled by WIDTH or LENGTH?		WIDTH	
Limiting WIDTH or LENGTH dimension		35	feet
Storage Volume per Chamber		195.5	CF
Storage Volume per End Cap		137.7	CF

System Sizing

Number of Chambers Required	53	each
Number of End Caps Required	6	each
Bed Size (including perimeter stone)	2,213	square feet
Stone Required (including perimeter stone)	738	tons
Volume of Excavation	820	cubic yards
Non-woven Filter Fabric Required (20% Safety Factor)	849	square yards
Length of Isolator Row	79.6	feet
Woven Isolator Row Fabric (20% Safety Factor)	219	square yards
Installed Storage Volume	11,188	cubic feet

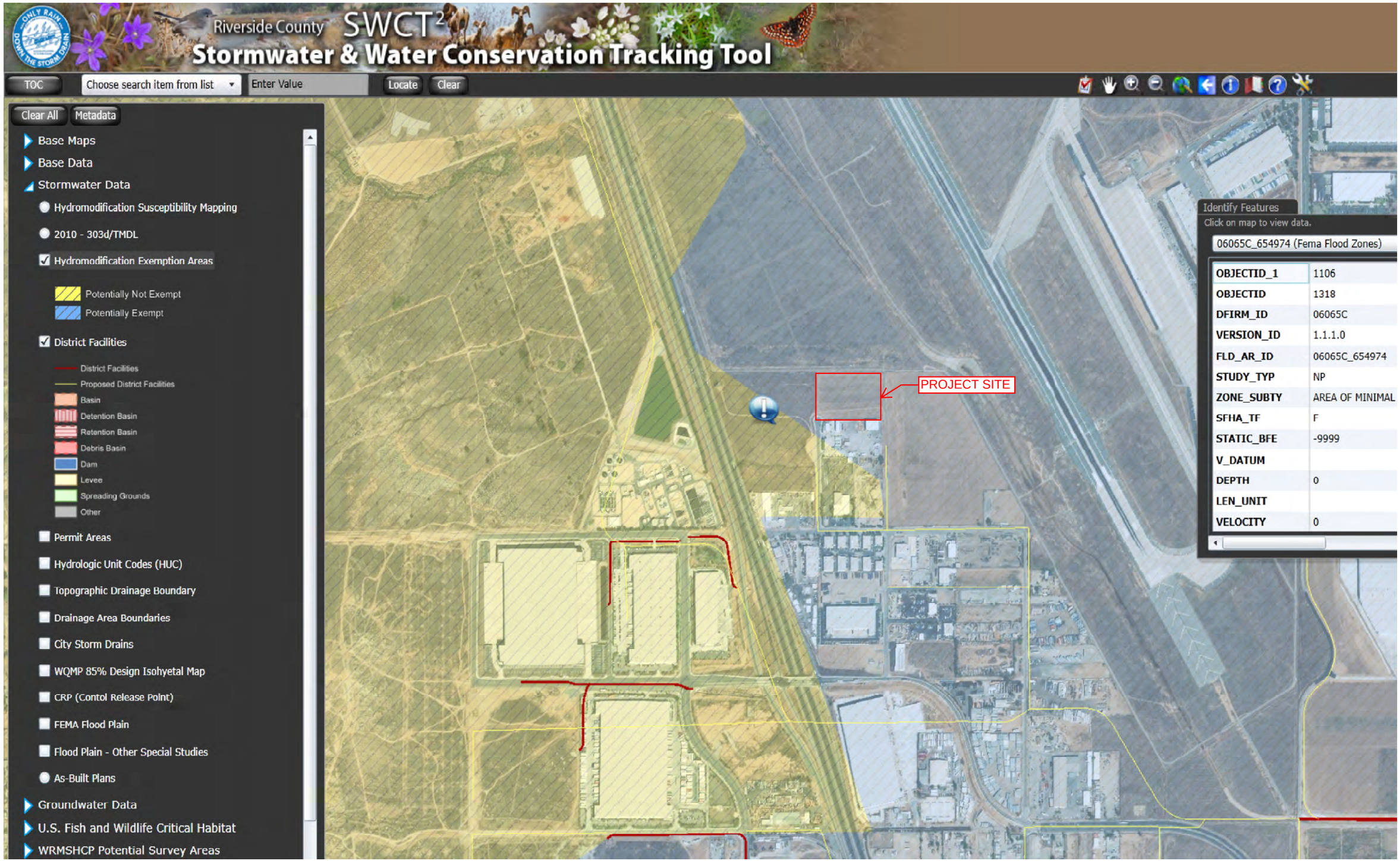
Controlled by Width (Rows)

Maximum Width =	35	feet
2 rows of 18 chambers		
1 row of 17 chambers		
Maximum Length =	79.6	feet
Maximum Width =	28.5	feet



Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern


Riverside County SWCT²
Stormwater & Water Conservation Tracking Tool
TOC
Choose search item from list
Enter Value
Locate
Clear
Clear All
Metadata
Base Maps
Base Data
Stormwater Data
Hydromodification Susceptibility Mapping
2010 - 303d/TMDL
Hydromodification Exemption Areas
Potentially Not Exempt
Potentially Exempt
District Facilities
District Facilities
Proposed District Facilities
Basin
Detention Basin
Retention Basin
Debris Basin
Dam
Levee
Spreading Grounds
Other
Permit Areas
Hydrologic Unit Codes (HUC)
Topographic Drainage Boundary
Drainage Area Boundaries
City Storm Drains
WQMP 85% Design Isohyetal Map
CRP (Contol Release Point)
FEMA Flood Plain
Flood Plain - Other Special Studies
As-Built Plans
Groundwater Data
U.S. Fish and Wildlife Critical Habitat
WRMSHCP Potential Survey Areas
PROJECT SITE
Identify Features
Click on map to view data.
06065C_654974 (Fema Flood Zones)
OBJECTID_1 1106
OBJECTID 1318
DFIRM_ID 06065C
VERSION_ID 1.1.1.0
FLD_AR_ID 06065C_654974
STUDY_TYP NP
ZONE_SUBTY AREA OF MINIMAL
SFHA_TF F
STATIC_BFE -9999
V_DATUM
DEPTH 0
LEN_UNIT
VELOCITY 0

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information